National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1000	05/15/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1000

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 6, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1000

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1000

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 5/15/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1000 is to incorporate CR 2687 Build Electrical Connector Mockups: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is 43,607. Work is to be completed by August 6, 2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	43,607.00	43,607.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 43,607.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2687	DX CHANGE REQUEST

CR TITLE: Build Electrical Connector Mockups

REQUESTOR: Danny Brandon	2. PHONE: 281.792.5861	3. E-MAIL: daniel.k.brandon@nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 871056

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Manufacture Zero G Receptacles (Jacks) and Connectors (Plugs) to replace stock.

7. RATIONALE:
Connectors and receptacles are expensive when purchased in small quantities. This CR is to allow manufacturing in bulk runs (more cost efficient) to support new mockups and consumed hardware used for maintenance repairs. These additional units are required to replenish stock.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2) (See Table for more details)
See Table page 2.

No Safety Review or TRR required see J. Haas e-mail.

9. NEED DATE: (support date in block 7 rationale) 9/26/14	10. CR SUBMISSION DATE: 10/29/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J. Haas (ICE) Date: 11/4/13

12. NASA POC: Ed Turcotte	13. PHONE: 281-483-5730	14. E-MAIL: Edgar.J.Turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4)@nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: **FY14 - $43,700**	20. NEGOTIATED DELIVERY DATE: **8/6/14**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	COTR for CRs with Cost Impact Only COTR: _____ Date: _____

Closed by:_____ Date: _____

CR NO.: 2687	DX CHANGE REQUEST

CR TITLE: Build Electrical Connector Mockups

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Receptacle, Zero G NBT (Size 15)	(b) (4)	NSOC C/DM (Attached)	30	Per Dwg	(b) (4)
2	Receptacle, Zero G NBT (Size 17)		NSOC C/DM (Attached)	30	Per Dwg	
3	Receptacle, Zero G NBT (Size 25)		NSOC C/DM (Attached)	30	Per Dwg	
4	Receptacle, Zero G NBT (Size 33)		NSOC C/DM (Attached)	10	Per Dwg	
5	Connector, Zero G NBT (Size 15)		NSOC C/DM (Attached)	30	Per Dwg	
6	Connector, Zero G NBT (Size 17)		NSOC C/DM (Attached)	30	Per Dwg	
7	Connector, Zero G NBT (Size 25)		NSOC C/DM (Attached)	30	Per Dwg	
8	Connector, Zero G NBT (Size 33)		NSOC C/DM (Attached)	10	Per Dwg	

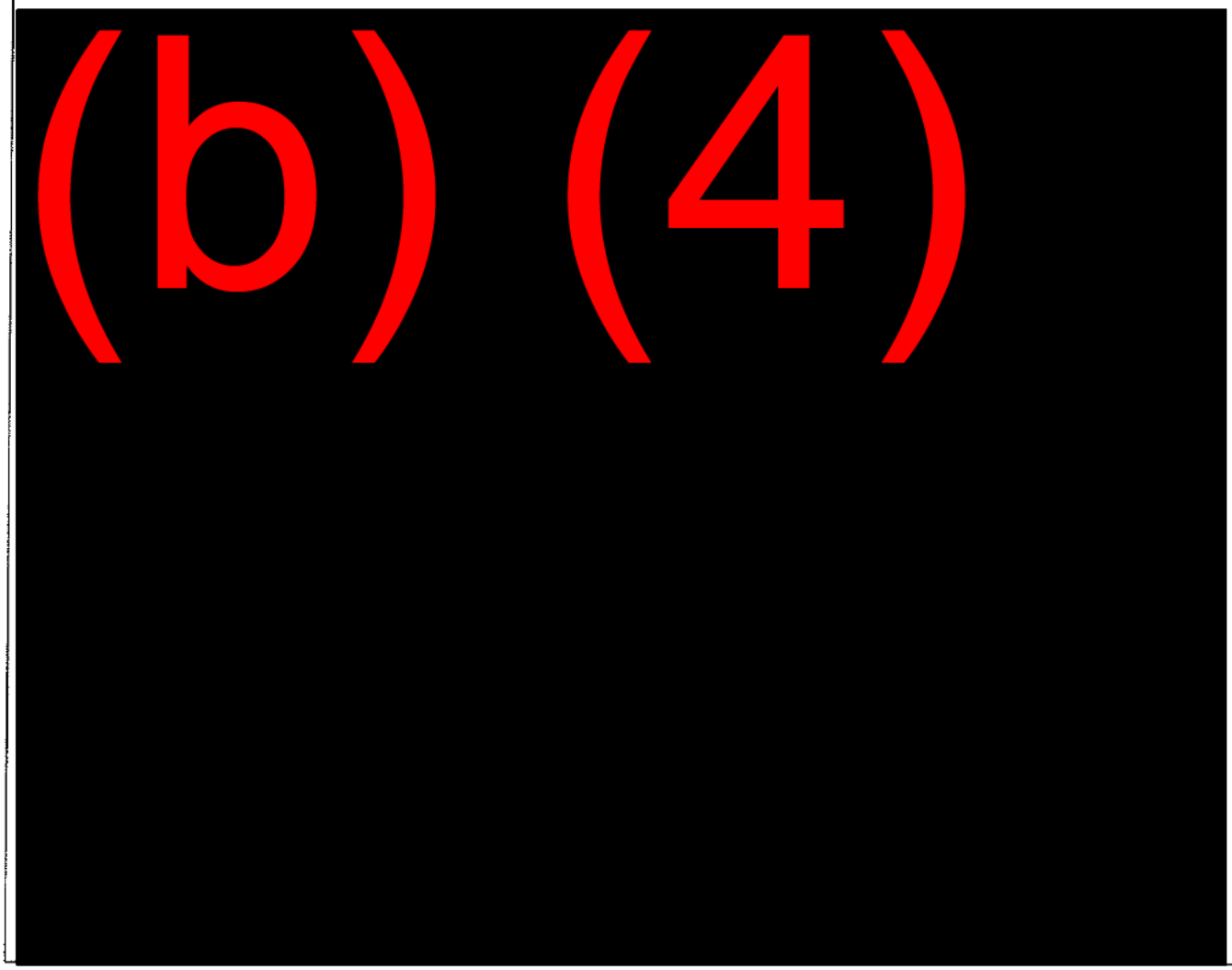
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	Verification
1	Receptacle, Zero G NBT (Size 15)	30	
2	Receptacle, Zero G NBT (Size 17)	30	
3	Receptacle, Zero G NBT (Size 25)	30	
4	Receptacle, Zero G NBT (Size 33)	10	
5	Connector, Zero G NBT (Size 15)	30	
6	Connector, Zero G NBT (Size 17)	30	
7	Connector, Zero G NBT (Size 25)	30	
8	Connector, Zero G NBT (Size 33)	10	

CR NO.: 2687	DX CHANGE REQUEST

CR TITLE: Build Electrical Connector Mockups

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2687	DX CHANGE REQUEST

CR TITLE: Build Electrical Connector Mockups

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGINEER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
FY14	(b) (4)				

CR NO.: 2687	DX CHANGE REQUEST
CR TITLE: Build Electrical Connector Mockups	

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1000A	09/14/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1000A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1000A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1000

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

CYNTHIA MACLEAN — Contracting Officer
09/14/04 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1000A is to incorporate a revised delivery date for CR 2687 Build Electrical Connector Mockups: Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.					

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1000A

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.: NNJ10HD35C DO 1001
2. Date of Order: 05/29/14

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1001

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1001

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1001

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 5-29-14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1001 is to incorporate CR 506 Rev A Pool Structure and Hi-Bay Floor Loading Analysis Update: The estimated cost (b) (4) The estimated awar The estimated incer The total value of this Delivery Order is $167,320 Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	167,320.00	167,320.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total: 167,320.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 506 Rev A	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (609524)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Perform market research, develop requirements, prepare statement of work, and solicit proposals for a contract with a structural engineering firm with the purpose of determining the structural load capacity of the SCTF/NBL pool walls, floor and Hi-bay floors.
Rev A: Phase II. Contract a structural engineering firm to perform a detailed load analysis of the floors and pool wall performed to assess the limitations of the facility per SOW (NBL-CR 506-RS-076).

7. RATIONALE:
Obtaining a baseline of the facility's pool wall and floor loading capacity would allow us to minimize the cost of potential future repairs and preventing any structural damage.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Phase I:

Safety Review not required (This is a study CR with no impact to current configuration).

1. Perform market research, Solicit proposals to perform the work.
2. Develop requirements and prepare statement of work to capture requirements for Phase II.

Rev A: Phase II

3. Contract with the structural engineering firm selected in phase 1 to provide a report, sealed by a structural engineer licensed in the state of Texas per the SOW.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 9/3/2013
Phase I: 3/26/2014 Rev A: Phase II: 9/26/2014	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Ed Turcotte 9/9/2013
Date: 9/9/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	Global
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
Phase I: NTE $16,000 Rev A (Phase I and II): $183,300	Phase 1: 3/26/2014 Rev A (Phase II): 9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 506 Rev A	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
	Phase I					
1	Statement of work	EA	1	Inspection		(b) (4)
2	Proposals to perform work	EA	1	Inspection		
	Rev A: Phase II					
3	Analysis and report per SOW	EA	1	Inspection		

CR NO.: 506 Rev A	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 506 Rev A	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Engineering and Program Support	Management	Technicians	Material
		[redacted]			
Rev A:					

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1002	06/13/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1002

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
6/13/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1002

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
1002

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1002

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean — Contracting Officer
6/16/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1002 is to: Build a BEAM Mocku The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $8,614.00 Work is to be completed by 6/13/2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	8,614.00	8,614.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 8,614.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2649B	DX CHANGE REQUEST

CR TITLE: Build a BEAM Mockup

1. REQUESTOR	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	(b) (4) nasa.gov (b) (4) nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Build a Bigelow Expandable Activity Module (BEAM) mockup to support EVA development testing and crew training.

REV A: Due to delays receiving the complete CAD Models, and late changes in the design, additional time was required to complete the mockup design.

REV B: Due to a change in flight design data, both of the mockup handrails had to be relocated, delays in getting the new flight models pushed the due date out until 4/22/2014.

7. RATIONALE:
BEAM will be berthed to the Node 3 aft CBM after arriving on SpaceX in 2015. EVA must verify access to the install flight releasable grapple fixture (FRGF) pin release bolts when BEAM is berthed to Node 3, in the event the SSRMS cannot release. EVA must also verify access to the disposal FRGF pin release bolts when BEAM is held in the POA via the install FRGF. These evaluations will be performed during the November, 2013 NBL development testing.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

TRR required per Safety Review held on 6-20-2013

See pages 2 – 4.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
November 1, 2013	**May 9, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas Date:6/3/13 In ICE

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~FY13 $50,000, FY14 $33,000; TOTAL $83,000~~ ~~Rev A: FY13 $30,300 FY14 $61,600; TOTAL $91,900~~ **Rev B: FY13 $30,300 FY14 $70,300; TOTAL $100,600**	~~11/1/2013~~ 6/13/14, REV. B

AUTHORIZATION TO PROCEED

CR NO.: 2649B	DX CHANGE REQUEST

CR TITLE: Build a BEAM Mockup

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	REQUIREMENTS/NOTES	QTY	FID. CODE	TECHNICAL CONTACT
1	Build BEAM mockup in the packed configuration	BEAM Packed – Express 3D CAD model (can be found in: \\jsc-mod-nbl1\TRANSFER FOLDER\A-L Transfe(b) (4) (b) (4) BEAM)	1.1 The mockup shall be capable of being installed on Node 3 aft 1.2 Endcone with FRGFs shall be removable 1.3 The mockup shall be capable of being installed on the POA via FRGF 1. Just the endcone with FRGFs can be attached if POA cannot accommodate the entire BEAM mockup 1.4 Inflated/expanded configuration not required 1.5 See Figure 1	1	II/.C	(b) (4)
2	FRGF		2.1 Both shall have two ½" grapple shaft release bolts (static or free spinning) 2.2 Both shall allow for a LEE mockup to be attached 2.3 FRGF 1 shall be capable of being attached to the POA such that it supports the entire mockup or endcone 2.4 Note: CAD model shows interference between FRGF 2 and BEAM structure. FRGF 2 position will be confirmed.	2	II.C	
3.	Handrails		3.1 Handrails shall be 12". Flight P/N is (b) (4) 3.2 Handrails and underlying structure shall support BRT loads 3.3 Position in CAD model is incorrect; correct position will be provided.	2	II.B	
4.	Soft good translation aids		4.1 Shall support crew translation loads 4.2 Shall be similar to translation aid on P6 long spacer aft blanket (b) (4) 4.3 Exact location, number, and configuration of translation aids will be provided. 4.4 See Figure 2	5	II.C	

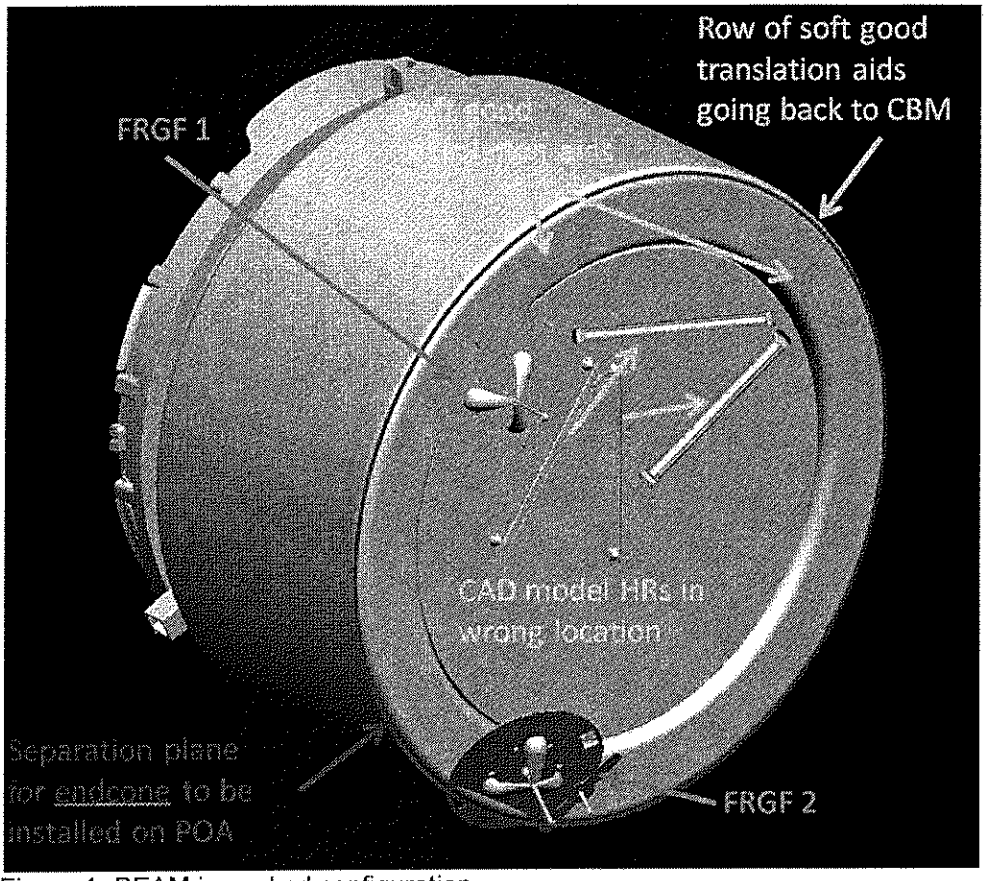


Figure 1- BEAM in packed configuration

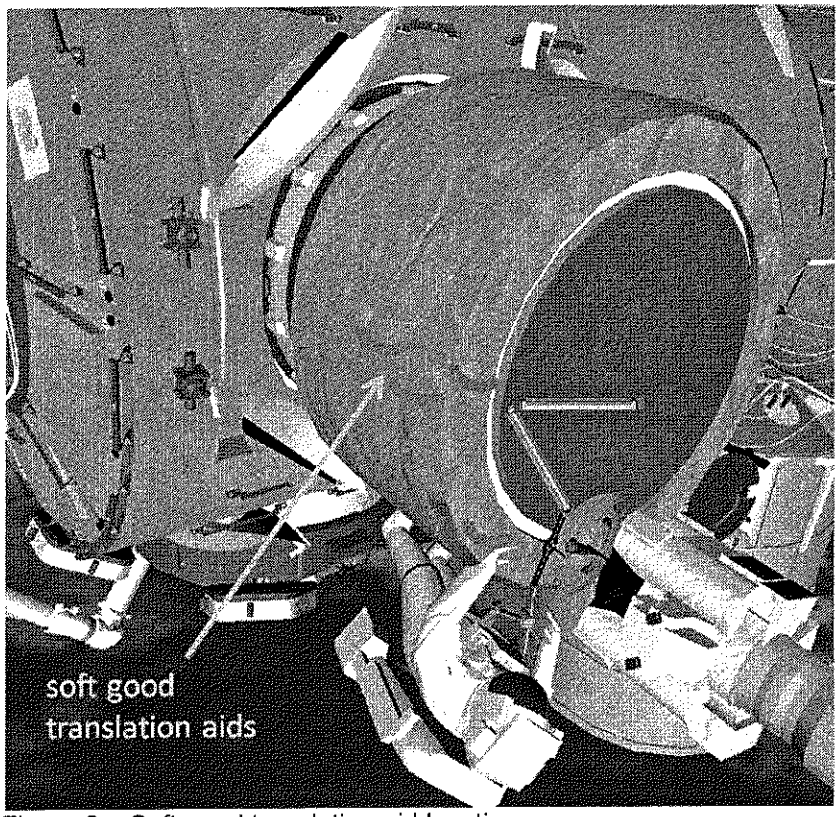
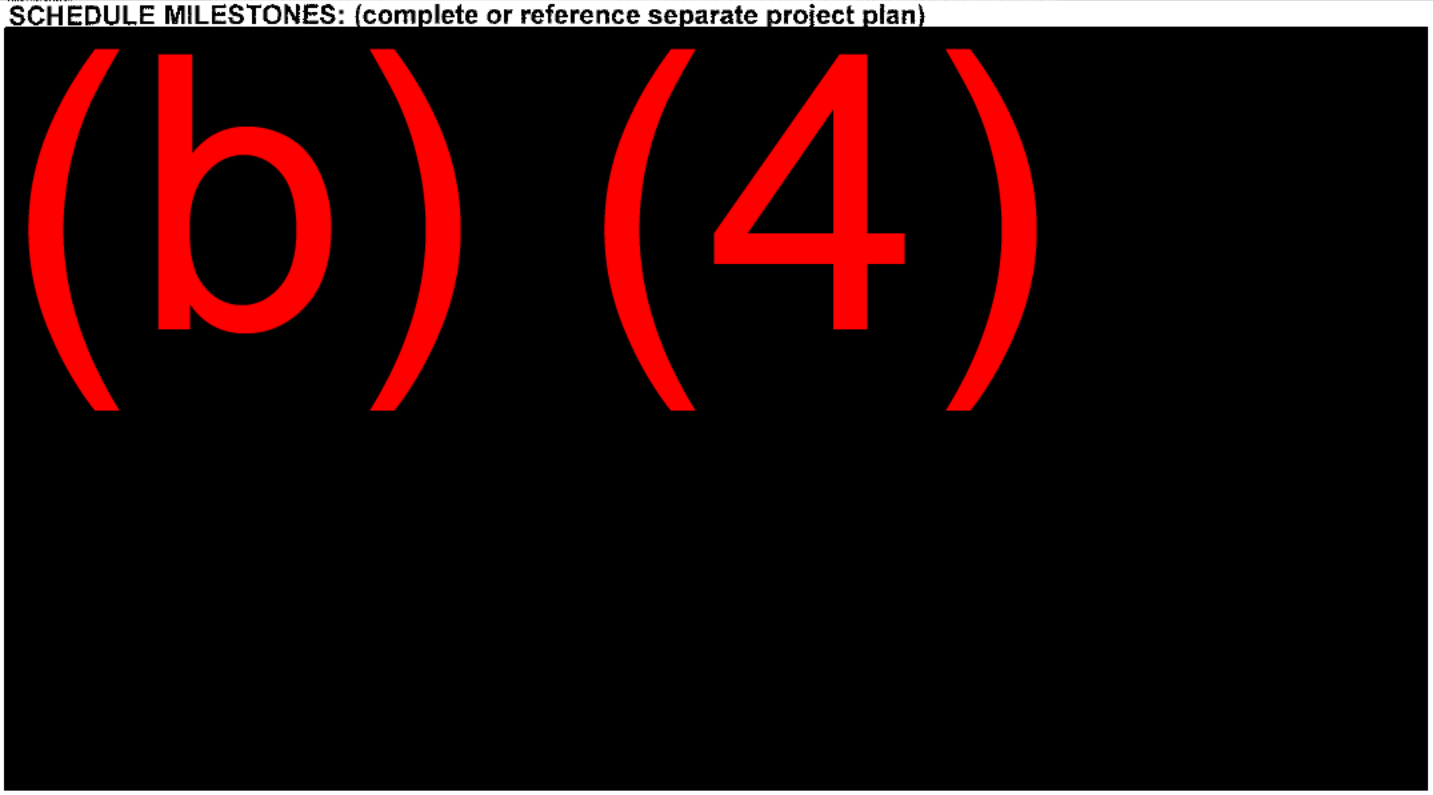


Figure 2 – Soft good translation aid locations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

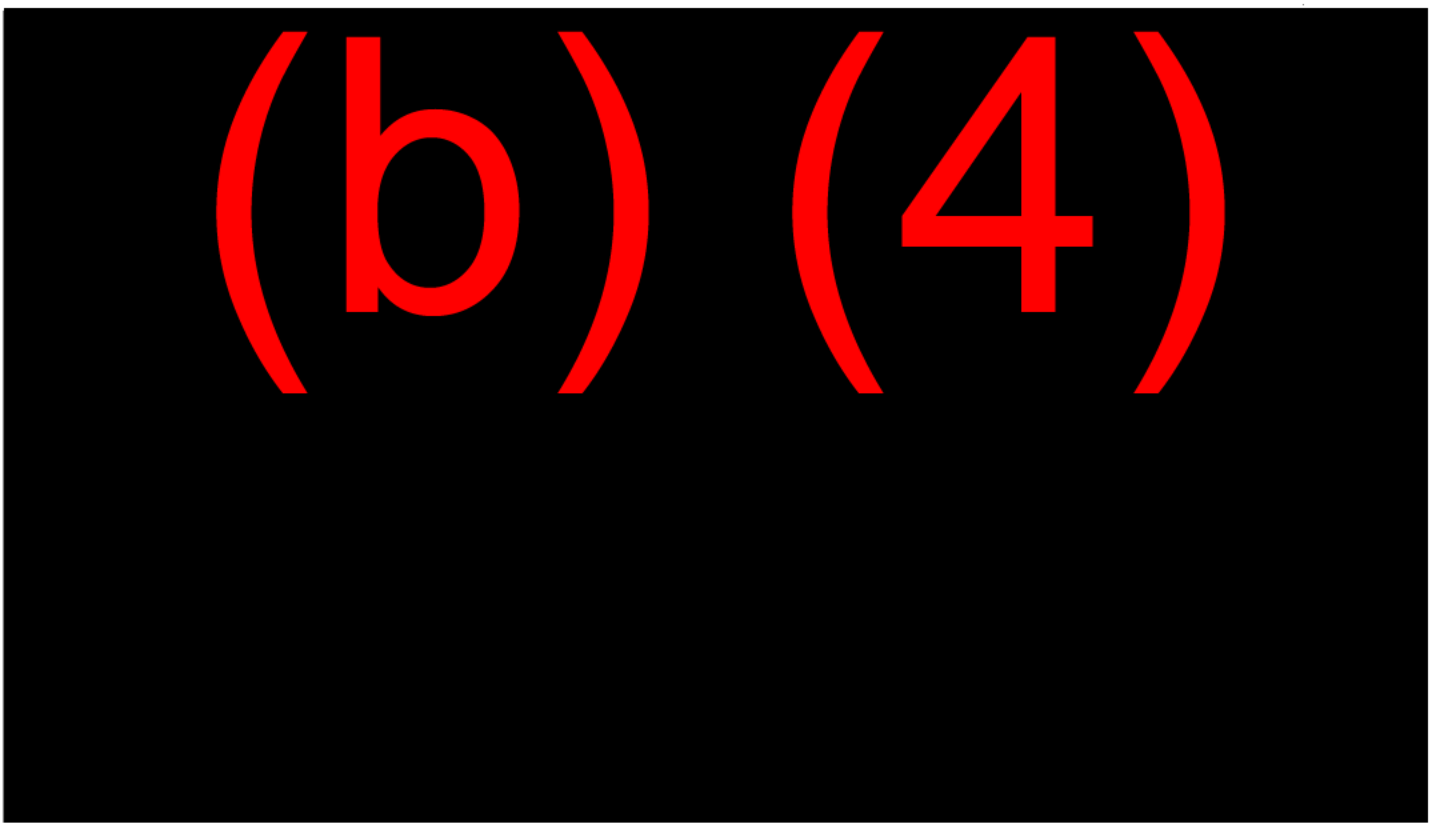
Item #	Deliverable Description	REQUIREMENTS/NOTES	QTY	FID. CODE	Verification
1	Build BEAM mockup in the packed configuration	1.6 The mockup shall be capable of being installed on Node 3 aft 1.7 Endcone with FRGFs shall be removable 1.8 The mockup shall be capable of being installed on the POA via FRGF 1. Just the endcone with FRGFs can be attached if POA cannot accommodate the entire BEAM mockup 1.9 Inflated/expanded configuration not required 1.10 See Figure 1	1	II.C	
2	FRGF	2.5 Both shall have two ½" grapple shaft release bolts (static or free spinning) 2.6 Both shall allow for a LEE mockup to be attached 2.7 FRGF 1 shall be capable of being attached to the POA such that it supports the entire mockup or endcone 2.8 Note: CAD model shows interference between FRGF 2 and BEAM structure. FRGF 2 position will be confirmed.	2	II.C	
3.	Handrails	3.4 Handrails shall be 12". Flight P/N is (b) (4) 3.5 Handrails and underlying structure shall support BRT loads 3.6 Position in CAD model is incorrect; correct position will be provided.	2	II.B	
4.	Soft good translation aids	4.5 Shall support crew translation loads 4.6 Shall be similar to translation aid on P6 long spacer aft blanket (b) (4) 4.7 Exact location, number, and configuration of translation aids will be provided. 4.8 See Figure 2	5	II.C	

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)



MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

~~Design~~	~~Engineering and Program Support~~	~~Management~~	~~Technicians~~	~~Material~~
(b) (4)				

Rev A FY13: (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

~~FY14:~~ (b) (4)

~~Design~~	~~Engineering and Program Support~~	~~Management~~	~~Technicians~~	~~Material~~
(b) (4)				

~~Rev A FY14~~ (b) (4)

~~Design~~	~~Engineering and Program Support~~	~~Management~~	~~Technicians~~	~~Material~~
(b) (4)				

Rev B FY14 (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1003	06/12/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1003

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1003

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1003

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia W Maclean — Contracting Officer
06/12/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1003 is to incorporate CR 2711 SVMF FY14 Facility Support Purchases: The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $178,978.00. Work is to be completed by 9/26/2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government	1	JOB	178,978.00	178,978.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 178,978.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1003

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2711	DX CHANGE REQUEST

CR TITLE: SVMF FY14 Facility Support Purchases

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Purchase various items for use in the SVMF including 3D printer consumables, communications equipment, Lexan stock, and storage lockers. Reference detailed list in Section 8.

7. RATIONALE:

These items will provide spares and supplies to help operate the facility through 2020.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Procure 12 additional stanchions similar to Lavi 50-3100A models purchased by CR2536 in FY12

8.2 Procure 5 additional sign frames similar to Lavi 50-1141F models purchased by CR2536 in FY12

8.3 Procure 2 ITunes gift cards wit(b) (4)on each (to allow Ops-Lan iPads to be configured more like flight)

8.4 Procure 3 sheets of 1/2" thick Abrasion resistant clear polycarbonate 4'x8'

continued on page 2

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	5/8/2014

Rev

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1

Signature: Mcintyre, Allison L. (JSC-DX141) Date: 5/7/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Newman, Ronny L. (JSC-DX141)		ronny.l.newman@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
(b) (4)		

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:	**COTR for CRs with Cost Impact Only** COTR:

(b) (4)

Date: 6/1/2014

CCB CHAIR:

Date:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

8.5 Procure 1 sheet of 1" thick clear polycarbonate 4'x8'

8.6 Procure 13 each wall lockers (McMaster 45965T16) (to replace damaged lockers)

8.7 Procure 3 sheets of 3/4" thick polycarbonate 4'x8'

8.8 Order via ACES 7 laptops and one server replacement for THOR

8.9 Order via ACES 2 each 3TB USB 3.0 external harddrives (for SVMF system backups / System images)

8.10 Procure 10 additional HME BP210 wireless belt units with headsets

8.11 Procure replacement wireless lapel mic system in an unlicensed frequency band, coordinated thru JSC frequency management, with at least 6 belt units, remote antenna capability, and compatible batteries and recharger

8.12 Procure Nylon12 upgrade kit for the SVMF FDM 3d printer

8.13 Procure 1 each: Vero Grey, Vero Black and one Vero WhitePlus photopolymer, 1 each TangoBlackplus (OBJ-03231)photopolymer, 2 each DurusWhite photopolymer, 3 each VeroClear (OBJ-03272), 1 each TangoBlackPlus FLX980 (FLX980) and 6 each support material cartridges (OBJ-03201) for SVMF polyjet 3d printer

8.14 Procure coffee machines for SVMF (1 each K145 or equiv, 1 each VP17-3 with 3 decanters or equiv, 1 each Vp17-1 with 1 decanter or equiv, 2 cases of paper filters 20115 or equiv.)

8.15 Procure 10 additional ISS hatch blank panels

8.16 **DELETED**

8.17 Procure 1 ea convection microwave Cuisinart CMW-200 or equivalent

8.18 Procure 1 winder assembly, 10 bobbins, 2 bobbin cases, 1 knurled screw, 1 wrench, 2 screw drivers, and 4.8 mm presser foot components for Adler sewing machine.

8.19 Procure 20 sheets .22 to .25 inch thick polycarbonate 4 x 8 sheets for catwalk displays.

8.20 Procure 200 economy standoffs WM15 with panel spacer PC31 or equivalent for catwalk displays.

8.21 Procure one Vacuum cleaner, Dyson Digital DC59 Model 64961-01 or equivalent.

8.22 Procure 500 challenge coins with MOD and SVMF logos

8.23 Procure 2 Hydraflow 55114-10-3000 hoses for Airlock

8.24 Procure one Bescor LED-1000S 1 Light AC Kit or equivalent

8.25 Procure 20 yds Outdoor Fabric-Sunbrella 60" Black or equivalent

8.26 Procure 2 each Motorola BDA-S2 CATV spliter amps, 2 each F terminators, 1 each 100FT RG-6 F cable, and 1 each 5 ft RG-6 F-cable

8.27 **DELETED**

8.28 Procure 1 ea microwave panasonic NN-SD962S or equivalent -Derived requirement (NN-SD997S)

8.29 Procure 1 each Heavy Duty Coated Steel Wire Shelving for Shop Supplies (McMaster 45955T76)

8.30 Procure 3 each SMT1500RM2U or equivalent rack mount sine wave UPS systems

8.31 Procure 4 additional battery packs for the Loose Equipment laptops Lenovo 92P1132 or equivalent.

8.32 Procure 2 wireless speaker systems for remote listening.

8.33 Procure FDM 360mc system recertification and 1 yr service contract from manufacturer (or equivalent)

8.34 Procure 3 each Surface Pro 2/128GB with MS-Office, docking stations,covers, keyboards, and HDMI adapters

8.35 Procure Cat6 ethernet cables: 2 each 100ft, 4 each 50 ft, 4 each 25ft

8.36 Procure Panasonic DMC-FZ200 camera, with 4 ea class 10 16GB SDHC cards, AC adapter, USB high speed SDHC card reader, protective lens filter, mini hdmi cable, and bag/case

The following items are derived requirements for CR2711 after block 11 approval and have been priced by NSOC as part of the CR.

8.37 Procue one Insulated Beverage Cooler Dispenser 10 Gallon Jug, McMaster-Carr P/N 5616T14.

8.38 Procure one Oscilloscope Logic Analyzer Pattern Generator, Link Instrument P/N MSO-19 for crew training.

8.39 Procure one Oscilloscope Logic Analyzer Spectrum Analyzer, Link Instrument P/N MSO-28

8.40 Procure one Rack Mounted Dual 6G-SDI Monitors, HD Waveform Monitor, Blackmagic Design HDL, P/N HDL-SMTWSCOPEDUO4K

8.41 Procure one NION n6 Audio Processor with CobraNet.

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Deliverable List and Acceptance:

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Inspection	Label requirement satisfied.		
8.1	Verify that twelve (12) additional stanchions similar to Lavi 50-3100A have been delivered.	Inspection	Inspect delivery receipt of items.		
8.2	Verify that five (5) additional sign frames similar to 50-1141S have been delivered	Inspection	Inspect delivery receipt of items		
8.3	Verify that two (2) iTunes gift cards with (b) (4) on each have been delivered.	Inspection	Inspect delivery receipt of items		
8.4	Verify that three (3) 4 ft by 8 ft sheets of ½ inch thick abrasion resistant clear polycarbonate have been delivered.	Inspection	Inspect delivery receipt of items		
8.5	Verify that one (1) 4 ft by 8 ft sheet of 1 inch thick clear polycarbonate has been delivered.	Inspection	Inspect delivery receipt of items		
8.6	Verify that 13 wall lockers, McMaster-Carr P/N 45965T16 have been delivered.	Inspection	Inspect delivery receipt of items		
8.7	Verify that three (3) 4 ft by 8 ft sheets of ¾ inch thick clear polycarbonate been delivered.	Inspection	Inspect delivery receipt of items		
8.8	Verify that ACES has on order 7 laptops and one server replacement for THOR.	Inspection	Inspect request for ACES Support to order seven (7) laptops and one (1) server.		
8.9	Verify that ACES has on order two (2) each 3TB USB 3.0 external hard drives for SVMF system have been delivered.	Inspection	Inspect request for ACES Support to order 2 each 3TB USB 3.0 external hard drives.		
8.10	Verify that 10 HME BP210 wireless belt units with headsets have been delivered.	Inspection	Inspect delivery receipt of items		
8.11	Verify that a replacement wireless lapel mic system with at least 6 belt units, 2 remote antennas, and batteries and recharger have been delivered.	Inspection	Inspect delivery receipt of items		
8.12	Verify that a Nylon 12 upgrade kit for the SVMF Stratasys FDM 360 3-D printer has been delivered.	Inspection	Inspect delivery receipt of items		
8.13	Verify that the following items have been delivered: one Vero Gray cartridge, one Vero Black cartridge, one Vero White Plus cartridge, one Tango Black Plus Cartridge, two Durus White Cartridges, three Vero Clear Cartridges, one Tango Black Plus FLX980, and six each support material (OBJ-03201) cartridges.	Inspection	Inspect delivery receipt of items		

8.14	Verify that one Keurig K145 coffee brewer, one Bunn 3 warmer pour over coffee brewer with 3 decanters, and one Bunn pour over coffee brewer with one decanter and two cases of paper filters	Inspection	Inspect delivery receipt of items		
8.15	Verify that ten (10) ISS hatch blank panels, 21-250-20-105 have been delivered.	Inspection	Inspect delivery receipt of items and c of c sheet meets rqmts		

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
8.16	Requirement Deleted	Inspection	none		
8.17	Verify that one (1) convection microwave oven has been delivered, Cuisinart CMW-200.	Inspection	Inspect delivery receipt of items		
8.18	Verify that one winder assembly, 10 bobbins, 2 bobbin cases,1 knurled screw, 1 wrench, 2 screwdrivers, and 4.8 mm presser foot components for Adler sewing machine have been delivered.	Inspection	Inspect delivery receipt of items		
8.19	Verify that twenty (20) 4 ft by 8 ft sheets of .22 thick clear polycarbonate have been delivered.	Inspection	Inspect delivery receipt of items.		
8.20	Verify that 200 economy standoffs WM15 with panel spacer PC31 have been delivered.	Inspection	Inspect delivery receipt of items		
8.21	Verify that one (1) vacuum cleaner, Dyson Digital DC59 has been delivered.	Inspection	Inspect delivery receipt of items		
8.22	Verify that five hundred (500) challenge coins with MOD, SVMF Logos have been delivered.	Inspection	Inspect delivery receipt of items		
8.23	Verify that two (2) Hydraflow 55114-10-3000 hoses have been delivered.	Inspection	Inspect delivery receipt of items		
8.24	Verify that one (1) Bescor LED-1000S 1 light AC kit has been delivered.	Inspection	Inspect delivery receipt of items		
8.25	Verify that twenty (20) yards of Outdoor fabric, Sunbrella 60 inch wide, color black, has been delivered.	Inspection	Inspect delivery receipt of items		
8.26	Verify that two Motorola BDA-S2 CATV splitter amps, 2 F terminators, one 100 ft roll of RG-6F cable, and one 5 ft RG-6F cable have been delivered.	Inspection	Inspect delivery receipt of items		
8.27	Requirement Deleted.	Inspection	none		
8.28	Verify that one (1) Panasonic microwave P/N NN-SD997S (NN-SD962Shas been delivered.	Inspection	Inspect delivery receipt of items		
8.29	Verify that one (1) heavy duty steel wire shelving, McMaster-Carr P/N 45955T76, has been delivered.	Inspection	Inspect delivery receipt of items		
8.30	Verify that three (3) SMT1500RM2U rack mount sine wave UPS systems have been delivered.	Inspection	Inspect delivery receipt of items		
8.31	Verify that four (4) additional battery packs for the Loose Equipment laptops, Lenovo P/N 92P1132 or equivalent.	Inspection	Inspect delivery receipt of items		
8.32	Verify that two (2) HME WS200 wireless speaker systems with battery packs, BAT850, have been delivered.	Inspection	Inspect delivery receipt of items		
8.33	Verify that a Stratasys FDM 360 system recertification and 1 yr service contract has been purchased.	Inspection	Inspect delivery receipt of items		
	Verify that three each of the following have been	Inspection	Inspect		

8.34	delivered: Surface Pro 2 128 GB with MS Office, docking stations, covers, keyboards, HDMI adapters.		delivery receipt of items		
8.35	Verify that two 100 ft Ethernet Cat6 cables, four 50 ft Ethernet Cat6 cables, four 25 ft Ethernet Cat6 cables have been delivered.	Inspection	Inspect delivery receipt of items		
8.36	Verify that one (1) Panasonic DMC-FZ200 camera with 4 each class 10 16 GB SDHC cards, AC adapter, USB high speed SDHC card reader, protective lens filter, mini HDMI cable, and bag have been delivered.	Inspection	Inspect delivery receipt of items		
8.37	Verify that one (1) insulated beverage cooler dispenser 10 gallon jug, McMaster-Carr P/N 5616T14 has been delivered.	Inspection	Inspect delivery receipt of items		
8.38	Verify that one (1) Oscilloscope, Link Instrument P/N MSO-19 has been delivered.	Inspection	Inspect delivery receipt of items		
8.39	Verify that one (1) Oscilloscope, Link Instrument P/N MSO-28 has been delivered.	Inspection	Inspect delivery receipt of items		
8.40	Verify that one (1) Rack mounted dual 6G-SDI monitors, HD waveform monitor, Blackmagic Design HDL, P/N SMTWSCOPEDOU4K.	Inspection	Inspect delivery receipt of items		
8.41	Verify that one (1) NION n6 Audio processor with CobraNET has been delivered.	Inspection	Inspect delivery receipt of items		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Materials are the major cost driver for this project.

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1003A	08/21/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1003A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1003A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1003A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 08/21/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1003A is to incorporate revised CR 2711A SVMF FY14 Facility Support Purchases: The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $125,462 Work is to be completed by 9/26/2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	125,462.00	125,462.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 125,462.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 1003A	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)	Page 2 of

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2711A	DX CHANGE REQUEST

CR TITLE: SVMF FY14 Facility Support Purchases

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
[redacted] (b) (4)		Global

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Purchase various items for use in the SVMF including 3D printer consumables, communications equipment, Lexan stock, and storage lockers. Reference detailed list in Section 8.

Rev.A: Incorporates SCIF-01 for $32,600, SCIF-02 for $5,300, SCIF-03 for $86,000, and revises requirement 8.34.

7. RATIONALE:

These items will provide spares and supplies to help operate the facility through 2020.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Procure 12 additional stanchions similar to Lavi 50-3100A models purchased by CR2536 in FY12

8.2 Procure 5 additional sign frames similar to Lavi 50-1141F models purchased by CR2536 in FY12

8.3 Procure 2 ITunes gift cards with [redacted] (b) (4) on each (to allow Ops-Lan iPads to be configured more like flight)

Rev. A: 8.4 Procure 3 sheets of 1/2" thick ~~Abrasion~~ impact resistant clear polycarbonate 4'x8'

continued on page 2

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	5/8/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Mcintyre, Allison L. (JSC-DX141) Date: 5/7/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Newman, Ronny L. (JSC-DX141)		ronny.l.newman@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$179,000~~ Rev. A $304,500	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Mcintyre, Allison L. (JSC-DX141)

Date: 6/9/2014

CCB CHAIR:

Rainwater, Susan B. (JSC-DX111)

Date: 6/16/2014

COTR for CRs with Cost Impact Only

COTR:

Mcdaniel, Randall S. (JSC-DX111)

Date: 6/16/2014

Closed by:

Date:

REQUIREMENTS/REFERENCES (cont.):

8.5 Procure 1 sheet of 1" thick clear polycarbonate 4'x8'

8.6 Procure 13 each wall lockers (McMaster 45965T15) (to replace damaged lockers)

8.7 Procure 3 sheets of 3/4" thick polycarbonate 4'x8'

8.8 Order via ACES 7 laptops and one server replacement for THOR

8.9 Order via ACES 2 each 3TB USB 3.0 external harddrives (for SVMF system backups / System images)

8.10 Procure 10 additional HME BP210 wireless belt units with headsets

8.11 Procure replacement wireless lapel mic system in an unlicensed frequency band, coordinated thru JSC frequency management, with at least 6 belt units, remote antenna capability, and compatible batteries and recharger

8.12 Procure Nylon12 upgrade kit for the SVMF FDM 3d printer

8.13 Procure 1 each: Vero Grey, Vero Black and one Vero WhitePlus photopolymer, 1 each TangoBlackplus (OBJ-03231)photopolymer, 2 each DurusWhite photopolymer, 3 each VeroClear (OBJ-03272), 1 each TangoBlackPlus FLX980 (FLX980) and 6 each support material cartridges (OBJ-03201) for SVMF polyjet 3d printer

8.14 Procure coffee machines for SVMF (1 each K145 or equiv, 1 each VP17-3 with 3 decanters or equiv, 1 each Vp17-1 with 1 decanter or equiv, 2 cases of paper filters 20115 or equiv.)

8.15 Procure 10 additional ISS hatch blank panels

8.16 **DELETED**

8.17 Procure 1 ea convection microwave Cuisinart CMW-200 or equivalent

8.18 Procure 1 winder assembly, 10 bobbins, 2 bobbin cases, 1 knurled screw, 1 wrench, 2 screw drivers, and 4.8 mm presser foot components for Adler sewing machine.

8.19 Procure 20 sheets .22 to .25 inch thick polycarbonate 4 x 8 sheets for catwalk displays.

8.20 Procure 200 economy standoffs WM15 with panel spacer PC31 or equivalent for catwalk displays.

8.21 Procure one Vacuum cleaner, Dyson Digital DC59 Model 64961-01 or equivalent.

8.22 Procure 500 challenge coins with MOD and SVMF logos

8.23 Procure 2 Hydraflow 55114-10-3000 hoses for Airlock

8.24 Procure one Bescor LED-1000S 1 Light AC Kit or equivalent

8.25 Procure 20 yds Outdoor Fabric-Sunbrella 60" Black or equivalent

8.26 Procure 2 each Motorola BDA-S2 CATV spliter amps, **Rev A** or equivalent, 2 each F terminators, 1 each 100FT RG-6 F cable, and 1 each 5 ft RG-6 F-cable

8.27 **DELETED**

8.28 Procure 1 ea microwave panasonic NN-SD962S or equivalent -Derived requirement (NN-SD997S)

8.29 Procure 1 each Heavy Duty Coated Steel Wire Shelving for Shop Supplies (McMaster 45955T76)

8.30 Procure 3 each SMT1500RM2U or equivalent rack mount sine wave UPS systems

8.31 Procure 4 additional battery packs for the Loose Equipment laptops Lenovo 92P1132 or equivalent.

8.32 Procure 2 wireless speaker systems for remote listening.

8.33 Procure FDM 360mc system recertification and 1 yr service contract from manufacturer (or equivalent)

Rev. A: 8.34 Procure ~~3~~ 4 each Surface ~~Pro 2~~ Pro 3 / 128GB with MS-Office, docking stations,covers, keyboards, and HDMI adapters

8.35 Procure Cat6 ethernet cables: 2 each 100ft, 4 each 50 ft, 4 each 25ft

8.36 Procure Panasonic DMC-FZ200 camera, with 4 ea class 10 16GB SDHC cards, AC adapter, USB high speed SDHC card reader, protective lens filter, mini hdmi cable, and bag/case

The following items are derived requirements for CR2711 after block 11 approval and have been priced by NSOC as part of the CR.

8.37 Procue one Insulated Beverage Cooler Dispenser 10 Gallon Jug, McMaster-Carr P/N 5616T14.

8.38 Procure one Oscilloscope Logic Analyzer Pattern Generator, Link Instrument P/N MSO-19 for crew training.

8.39 Procure one Oscilloscope Logic Analyzer Spectrum Analyzer, Link Instrument P/N MSO-28

8.40 Procure one Rack Mounted Dual 6G-SDI Monitors, HD Waveform Monitor, Blackmagic Design HDL, P/N HDL-SMTWSCOPEDUO4K

8.41 Procure one NION n6 Audio Processor with CobraNet.

Rev. A: 8.42 Provide cabinets and work benches for SVMF shop that consist of the following: 2 base cabinets with doors, 36 inches high, 2 cabinets 36 inches high with 5 drawers, 2 cabinets 36 inches high with 7 drawers, 1 cabinet 59 inches high with 12 drawers, 2 butcher block counter tops 14 feet long by 31 inches wide, 4 parts bin cabinets 36 inches high, 16 Pull Out Shelves and 24 drawer divider sets.

Rev. A: 8.43 Procure one (1) aluminum skin honeycomb ISS hatch panel blank.

Rev. A: 8.44 Procure raw materials to be used to build a Cipher lock door frame for the Orion mockup. (Aluminum stock, LEXAN, and fasteners.)

Rev. A: 8.45 Procure one (1) HandyScan 700 3-D scanner with Geomagic Design X software. (To be used to capture models of mockups and flight hardware where models are not available.)

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Deliverable List and Acceptance:

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Inspection	Label requirement satisfied.		
8.1	Verify that twelve (12) additional stanchions similar to Lavi 50-3100A have been delivered.	Inspection	Inspect delivery receipt of items.		
8.2	Verify that five (5) additional sign frames similar to 50-1141S have been delivered	Inspection	Inspect delivery receipt of items		
8.3	Verify that two (2) iTunes gift cards with (b) (4) on each have been delivered.	Inspection	Inspect delivery receipt of items		
8.4	**Rev. A:** Verify that three (3) 4 ft by 8 ft sheets of ½ inch thick ~~abrasion~~ impact resistant clear polycarbonate have been delivered.	Inspection	Inspect delivery receipt of items		
8.5	Verify that one (1) 4 ft by 8 ft sheet of 1 inch thick clear polycarbonate has been delivered.	Inspection	Inspect delivery receipt of items		
8.6	Verify that 13 wall lockers, McMaster-Carr P/N 45965T15 have been delivered.	Inspection	Inspect delivery receipt of items		
8.7	Verify that three (3) 4 ft by 8 ft sheets of ¾ inch thick clear polycarbonate been delivered.	Inspection	Inspect delivery receipt of items		
8.8	Verify that ACES has on order 7 laptops and one server replacement for THOR.	Inspection	Inspect request for ACES Support to order seven (7) laptops and one (1) server.		
8.9	Verify that ACES has on order two (2) each 3TB USB 3.0 external hard drives for SVMF system have been delivered.	Inspection	Inspect request for ACES Support to order 2 each 3TB USB 3.0 external hard drives.		
8.10	Verify that 10 HME BP210 wireless belt units with headsets have been delivered.	Inspection	Inspect delivery receipt of items		
8.11	Verify that a replacement wireless lapel mic system with at least 6 belt units, 2 remote antennas, and batteries and recharger have been delivered.	Inspection	Inspect delivery receipt of items		
8.12	Verify that a Nylon 12 upgrade kit for the SVMF Stratasys FDM 360 3-D printer has been delivered.	Inspection	Inspect delivery receipt of items		
8.13	Verify that the following items have been delivered: one Vero Gray cartridge, one Vero Black cartridge, one Vero White Plus cartridge, one Tango Black Plus Cartridge, two Durus White Cartridges, three Vero Clear Cartridges, one Tango Black Plus FLX980, and six each support material (OBJ-03201) cartridges.	Inspection	Inspect delivery receipt of items		

8.14	Verify that one Keurig K145 coffee brewer, one Bunn 3 warmer pour over coffee brewer with 3 decanters, and one Bunn pour over coffee brewer with one decanter and two cases of paper filters	Inspection	Inspect delivery receipt of items		
8.15	Verify that ten (10) ISS hatch blank panels, 21-250-20-105 have been delivered.	Inspection	Inspect delivery receipt of items and c of c sheet meets rqmts		

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
8.16	Requirement Deleted	Inspection	none		
8.17	Verify that one (1) convection microwave oven has been delivered, Cuisinart CMW-200.	Inspection	Inspect delivery receipt of items		
8.18	Verify that one winder assembly, 10 bobbins, 2 bobbin cases,1 knurled screw, 1 wrench, 2 screwdrivers, and 4.8 mm presser foot components for Adler sewing machine have been delivered.	Inspection	Inspect delivery receipt of items		
8.19	Verify that twenty (20) 4 ft by 8 ft sheets of .22 thick clear polycarbonate have been delivered.	Inspection	Inspect delivery receipt of items.		
8.20	Verify that 200 economy standoffs WM15 with panel spacer PC31 have been delivered.	Inspection	Inspect delivery receipt of items		
8.21	Verify that one (1) vacuum cleaner, Dyson Digital DC59 has been delivered.	Inspection	Inspect delivery receipt of items		
8.22	Verify that five hundred (500) challenge coins with MOD, SVMF Logos have been delivered.	Inspection	Inspect delivery receipt of items		
8.23	Verify that two (2) Hydraflow 55114-10-3000 hoses have been delivered.	Inspection	Inspect delivery receipt of items		
8.24	Verify that one (1) Bescor LED-1000S 1 light AC kit has been delivered.	Inspection	Inspect delivery receipt of items		
8.25	Verify that twenty (20) yards of Outdoor fabric, Sunbrella 60 inch wide, color black, has been delivered.	Inspection	Inspect delivery receipt of items		
8.26	Verify that two **Rev A** ~~Motorola BDA-S2~~ CATV splitter amps, 2 F terminators, one 100 ft roll of RG-6F cable, and one 5 ft RG-6F cable have been delivered.	Inspection	Inspect delivery receipt of items		
8.27	Requirement Deleted.	Inspection	none		
8.28	Verify that one (1) Panasonic microwave P/N NN-SD997S (NN-SD962Shas been delivered.	Inspection	Inspect delivery receipt of items		
8.29	Verify that one (1) heavy duty steel wire shelving, McMaster-Carr P/N 45955T76, has been delivered.	Inspection	Inspect delivery receipt of items		
8.30	Verify that three (3) SMT1500RM2U rack mount sine wave UPS systems have been delivered.	Inspection	Inspect delivery receipt of items		
8.31	Verify that four (4) additional battery packs for the Loose Equipment laptops, Lenovo P/N 92P1132 or equivalent.	Inspection	Inspect delivery receipt of items		
8.32	Verify that two (2) HME WS200 wireless speaker systems with battery packs, BAT850, have been delivered.	Inspection	Inspect delivery receipt of items		
	Verify that a Stratasys FDM 360 system recertification	Inspection	Inspect		

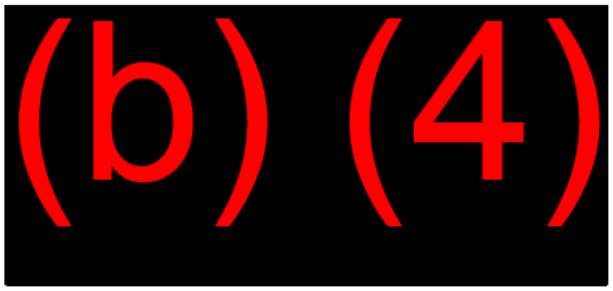
8.33	and 1 yr service contract has been purchased.		delivery receipt of items		
8.34	Rev. A: Verify that ~~three~~ four each of the following have been delivered: Surface Pro ~~2~~ 3 128 GB with MS Office, docking stations, covers, keyboards, HDMI adapters.	Inspection	Inspect delivery receipt of items		
8.35	Verify that two 100 ft Ethernet Cat6 cables, four 50 ft Ethernet Cat6 cables, four 25 ft Ethernet Cat6 cables have been delivered.	Inspection	Inspect delivery receipt of items		
8.36	Verify that one (1) Panasonic DMC-FZ200 camera with 4 each class 10 16 GB SDHC cards, AC adapter, USB high speed SDHC card reader, protective lens filter, mini HDMI cable, and bag have been delivered.	Inspection	Inspect delivery receipt of items		
8.37	Verify that one (1) insulated beverage cooler dispenser 10 gallon jug, McMaster-Carr P/N 5616T14 has been delivered.	Inspection	Inspect delivery receipt of items		
8.38	Verify that one (1) Oscilloscope, Link Instrument P/N MSO-19 has been delivered.	Inspection	Inspect delivery receipt of items		
8.39	Verify that one (1) Oscilloscope, Link Instrument P/N MSO-28 has been delivered.	Inspection	Inspect delivery receipt of items		
8.40	Verify that one (1) Rack mounted dual 6G-SDI monitors, HD waveform monitor, Blackmagic Design HDL, P/N SMTWSCOPEDOU4K.	Inspection	Inspect delivery receipt of items		
8.41	Verify that one (1) NION n6 Audio processor with CobraNET has been delivered.	Inspection	Inspect delivery receipt of items		

Rev. A: Added the following requirements:

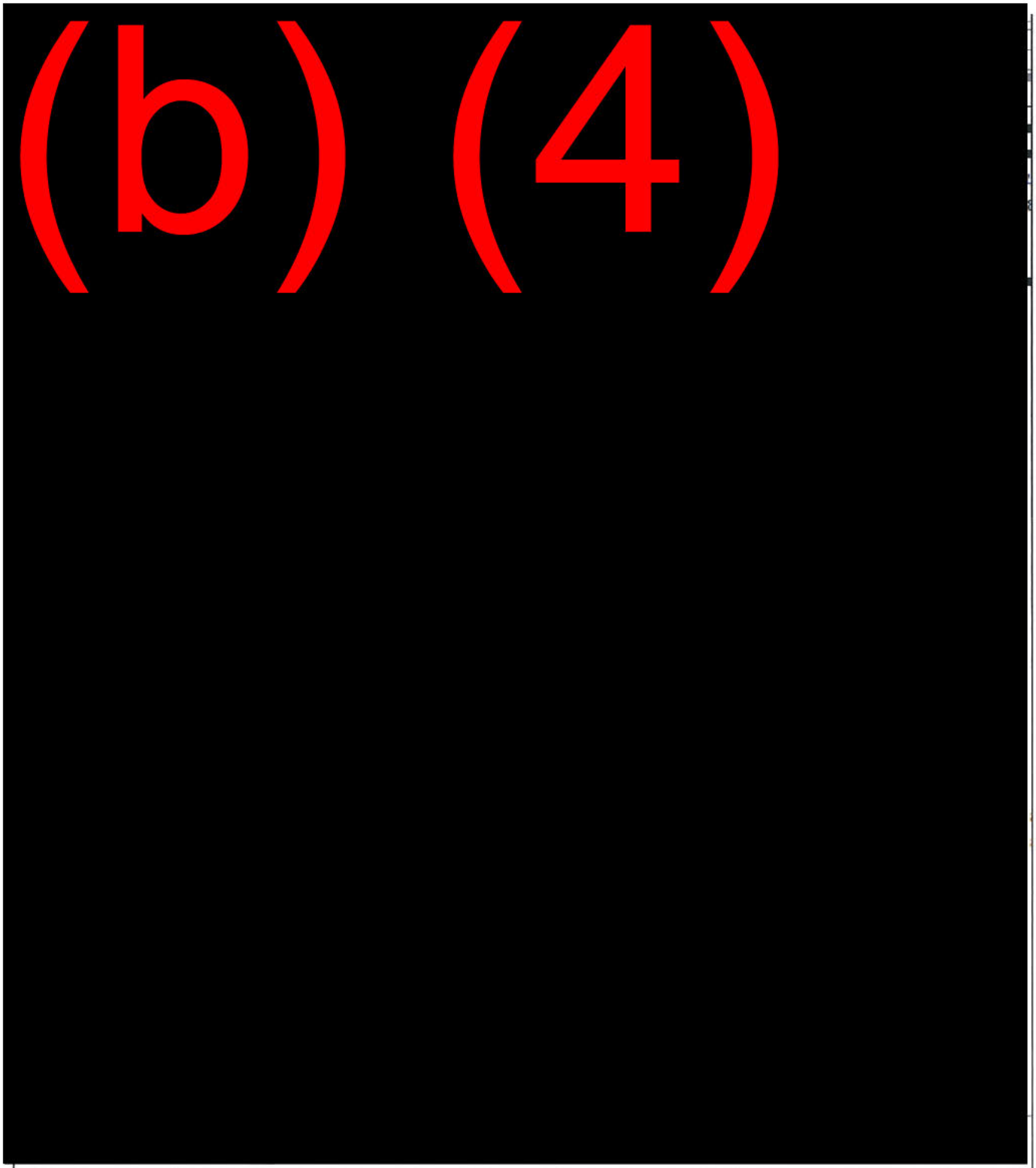
Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
8.42	Verify that the following have been delivered: 2 base cabinets with doors, 36 inches high, 2 cabinets 36 inches high with 5 drawers, 2 cabinets 36 inches high with 7 drawers, 1 cabinet 59 inches high with 12 drawers, 2 butcher block counter tops 14 feet long by 31 inches wide, 4 parts bin cabinets 36 inches high, 16 Pull Out Shelves and 24 drawer divider sets.	Inspection	Inspect delivery receipt of items		
8.43	Verify that one (1) aluminum skin honeycomb ISS hatch panel blank has been delivered.	Inspection	Inspect delivery receipt of items		
8.44	Verify that the following raw materials, to be used to build a Cipher lock door frame for the Orion mockup, Aluminum stock, LEXAN, and fasteners have been delivered.	Inspection	Inspect delivery receipt of items		
8.45	Verify that one (1) HandyScan 700 3-D scanner and Geomagic Design X software have been delivered.	Inspection	Inspect delivery receipt of items		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



(b) (4)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Materials are the major cost driver for this project.

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
[redacted]				
[redacted]				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1004	07/07/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1004

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/10/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1004

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1004

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer L. Krause
Jennifer L. Krause — Contracting Officer — July 7, 2014 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1004 is to incorporate CR 2566 - Modify HTV 4 Exposed Pallet Mockup into HTV 6 Exposed Pallet Configuration. The estimated cost i The estimated award The estimated incen (b) (4) The total value of this Delivery Order is $97,275.00 Work is to be completed by 9/10/2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government	1	JOB	97,275.00	97,275.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total 97,275.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 1004	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)				Page 2 of	
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2566	DX CHANGE REQUEST

CR TITLE: Modify HTV 4 Exposed Pallet Mockup into HTV 6 Exposed Pallet Configuration

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:

☑ STATION ☐ MPCV

☐ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:

☐ SVMF ☑ NBL MOCKUP ☐ NBL OPERATIONS

☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

1. Modify the HTV 4 Exposed Pallet (EP) mockup into the HTV 6 EP configuration (excludes Battery FSE hardware covered under CR-2707). Remove the HTV 4 outfitting and replace with battery carrier structure.

2. Install tie down points on HTV 5 façade.

Note: the CAD file referenced is not the final configureation for the carrier. A picture of the proposed final configuration will be included for reference, but a CAD model will not be available until the ISS Program approves the final configuration. A revision to this CR will be needed once that is approved.

7. RATIONALE:

1. Hardware is required to support NBL EVA Development testing in September 2014,

2. Hardware needed to support training of the EVAs to R&R the external batteries on ISS.

3. HTV 5 façade is similar enough to HTV 6 that just adding the tie down points will suffice for HTV contingency training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Files saved here: \\jsc-mod-nbl1\TRANSFER FOLDER\A-L Transfer\(b) (4) HTV6

PDF (Option 3 Launch Config) attached contains images of proposed final configureation.

Note: The CAD file referenced is not the final configureation for the carrier. The included pictures are of the proposed final configuration. A CAD model will not be available until the ISS Program approves the final configuration. A revision to this CR will be needed once that is received.

Safety Review held on 6/11/14, TRR required.

Item #	Deliverable Description	PRIMARY DATA REFERENCE	REQUIREMENTS/NOTES	QTY	FID. CODE	TECHNICAL CONTACT
1	Build and install Battery FSE Structure 1 (See Figure 1, 2)	HTV 6 – 3D CAD model	1.1 Must accommodate the FSE hardware in CR-2707 for six batteries 1.2 Must accommodate the weight of six Battery ORU mockups and six adapter plates mockups	1	II.D	(b) (4)
2	Build and install Battery FSE Structure 2 (See Figure 1,2) *Note: this structure is not included in the delivered CAD model.*	HTV 6 – 3D CAD model	2.1 Must accommodate the FSE hardware in CR-2707 for three batteries 2.2 Must accommodate three Battery ORU mockups	1	II.D	
3	Retrieve and install CR-2707 FSE Hardware (See Figure 3)	HTV 6 – 3D CAD model	3.1 Must accommodate Battery ORU mockups	9 sets	II.B.	
4	Retrieve/Build and install handrails	HTV 6 – 3D CAD model	4.1 Reuse HTV 4 handrails where possible	31	II.C	
5	Label Handrails	HTV 6 – 3D CAD model	5.1 Will provide map, CAD model not updated (TBD)	31	III.C	
6	Build and install PVGFs (See Figure 1, 2, 3)	HTV 6 – 3D CAD model	6.1 PVGFs must accommodate LEEs	2	II.B	
7	Build and install tie down points on HTV 5 façade. (See figure 1)	HTV 6 – 3D CAD model	7.1 Install the two tie downs onto the HTV 5 façade	2	II.C	
8	Retrieve and install WIFs (See Figure 2)	HTV 6 – 3D CAD model	8.1 Install WIF	1	II.B	

(b) (4)

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/10/2014	5/16/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED		WBS: 2.6.1
Signature: Haas, John (JSC-DX121)		Date: 5/20/2014
12. NASA POC:	**13. PHONE:**	**14. E-MAIL:**
Honeycutt, Howell {Lane} (JSC-DX121)		howell.l.honeycutt@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted] (b) (4)		[redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
$97,300	9/10/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:	**COTR for CRs with Cost Impact Only**
	COTR:
Date:	Date:
CCB CHAIR:	
Date:	

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

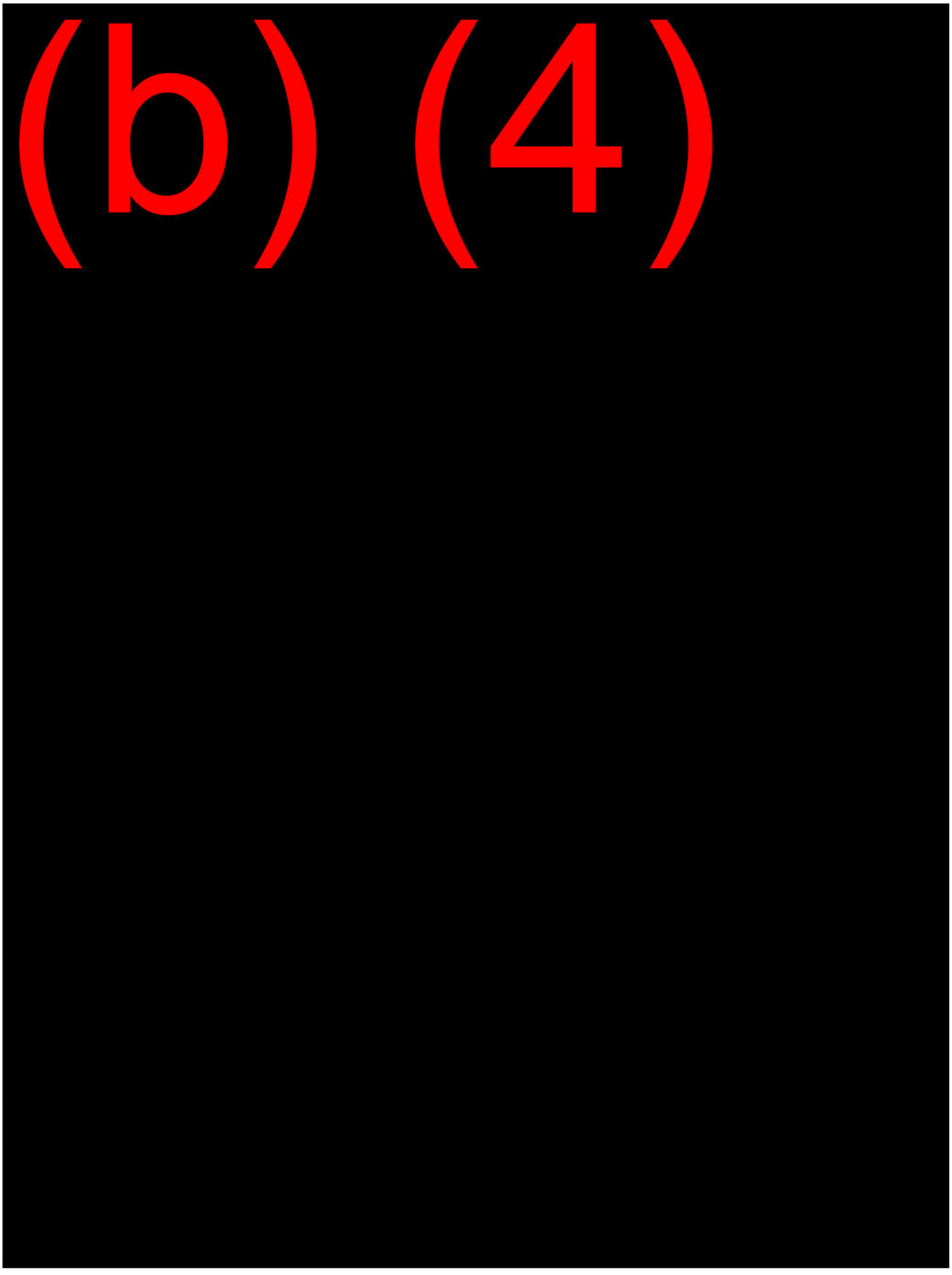
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	REQUIREMENTS/NOTES	QTY	FID. CODE	Verification:
1	Build and install Battery FSE Structure 1 (See Figure 1)	1.1 Must accommodate the FSE hardware in CR-2707 for six batteries 1.2 Must accommodate the weight of six Battery ORU mockups and six adapter plates mockups	1	II.D	
2	Build and install Battery FSE Structure 2 (See Figure 1) *Note: this structure is not included in the delivered CAD model.*	2.1 Must accommodate the FSE hardware in CR-2707 for three batteries 2.2 Must accommodate three Battery ORU mockups	~~1~~	~~II.D~~	
3	Retrieve and install CR-2707 FSE Hardware (See Figure 2)	3.1 Must accommodate Battery ORU mockups	9 sets	II.B.	
4	Retrieve/Build and install handrails	4.1 Reuse HTV 4 handrails where possible	31	II.C	
5	Label Handrails	5.1 Will provide map (TBD)	31	III.C	
6	Build and install PVGFs	6.1 PVGFs must accommodate LEEs	2	II.B	
7	Build and install tie down points on HTV 5 façade. (See figure 1)	7.1 Install the two tie downs onto the HTV 5 façade	2	II.C	
8	Retrieve and install WIFs	8.1 Install WIF	2	II.B	

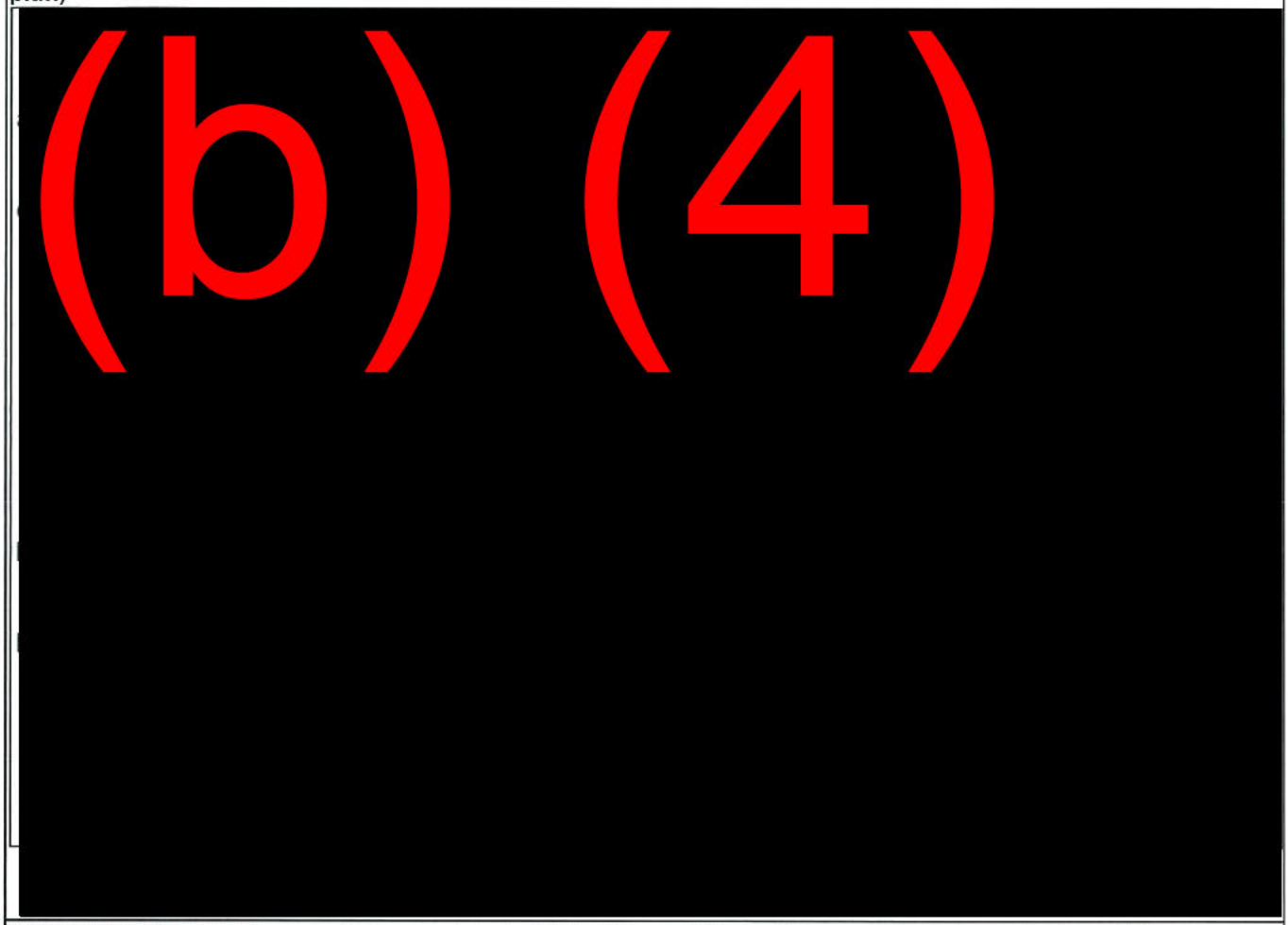
File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1004A	08/28/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1004A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/10/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1004A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1004A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

CYNTHIA MACLEAN — Contracting Officer
08/28/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1004 is to incorporate revision CR 2566A - Modify HTV 4 Exposed Pallet Mockup into HTV 6 Exposed Pallet Configuration. The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $6,225 Work is to be completed by 9/10/2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	6,225.00	6,225.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 6,225.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1004A

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2566A	DX CHANGE REQUEST

CR TITLE: Modify HTV 4 Exposed Pallet Mockup into HTV 6 Exposed Pallet Configuration

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:	5. FUNCTIONAL AREA:
☑ STATION ☐ MPCV	☐ SVMF ☑ NBL MOCKUP ☐ NBL OPERATIONS
☐ OTHER ☑ FUND CODE: 609524	☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

1. Modify the HTV 4 Exposed Pallet (EP) mockup into the HTV 6 EP configuration (excludes Battery FSE hardware covered under CR-2707). Remove the HTV 4 outfitting and replace with battery carrier structure.

2. Install tie down points on HTV 5 façade.

Note: the CAD file referenced is not the final configureation for the carrier. A picture of the proposed final configuration will be included for reference, but a CAD model will not be available until the ISS Program approves the final configuration. A revision to this CR will be needed once that is approved.

Rev. A - Incorporates SCIF-01 for additional material and purchasing suppor(b) (4)

7. RATIONALE:

1. Hardware is required to support NBL EVA Development testing in September 2014,

2. Hardware needed to support training of the EVAs to R&R the external batteries on ISS.

3. HTV 5 façade is similar enough to HTV 6 that just adding the tie down points will suffice for HTV contingency training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Files saved here: \\jsc-mod-nbl1\TRANSFER FOLDER\A-L Transfer\Brandon, Danny\HTV6

PDF (Option 3 Launch Config) attached contains images of proposed final configureation.

Note: The CAD file referenced is not the final configureation for the carrier. The included pictures are of the proposed final configuration. A CAD model will not be available until the ISS Program approves the final configuration. A revision to this CR will be needed once that is received.

Safety Review held on 6/11/14, TRR required.

Item #	Deliverable Description	PRIMARY DATA REFERENCE	REQUIREMENTS/NOTES	QTY	FID. CODE	TECHNICAL CONTACT
1	Build and install Battery FSE Structure 1 (See Figure 1, 2)	HTV 6 – 3D CAD model	1.1 Must accommodate the FSE hardware in CR-2707 for six batteries 1.2 Must accommodate the weight of six Battery ORU mockups and six adapter plates mockups	1	II.D	(b) (4)
2	Build and install Battery FSE Structure 2 (See Figure 1,2) *Note: this structure is not included in the delivered CAD model.*	HTV 6 – 3D CAD model	2.1 Must accommodate the FSE hardware in CR-2707 for three batteries 2.2 Must accommodate three Battery ORU mockups	1	II.D	
3	Retrieve and install CR-2707 FSE Hardware (See Figure 3)	HTV 6 – 3D CAD model	3.1 Must accommodate Battery ORU mockups	9 sets	II.B.	
4	Retrieve/Build and install handrails	HTV 6 – 3D CAD model	4.1 Reuse HTV 4 handrails where possible	31	II.C	
5	Label Handrails	HTV 6 – 3D CAD model	5.1 Will provide map, CAD model not updated (TBD)	31	III.C	
6	Build and install PVGFs (See Figure 1, 2, 3)	HTV 6 – 3D CAD model	6.1 PVGFs must accommodate LEEs	2	II.B	
7	Build and install tie down points on HTV 5 façade. (See figure 1)	HTV 6 – 3D CAD model	7.1 Install the two tie downs onto the HTV 5 façade	2	II.C	
8	Retrieve and install WIFs (See Figure 2)	HTV 6 – 3D CAD model	8.1 Install WIF	1	II.B	

No picture inserted

(b) (4)

No picture inserted

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/10/2014 Rev	5/16/2014

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.1

Signature: Haas, John (JSC-DX121) Date: 8/10/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Pelischek, Timothy E. (JSC-EA361)		timothy.e.pelischek@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**

[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
~~$97,300~~ $103,500 Rev. A	9/10/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: Turcotte, Edgar J. (JSC-DX121) Date: 8/17/2014 CCB CHAIR: Murray, Sarah L. (JSC-DX111) Date: 8/20/2014	**COTR for CRs with Cost Impact Only** COTR: Mcdaniel, Randall S. (JSC-DX111) Date: 8/20/2014

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

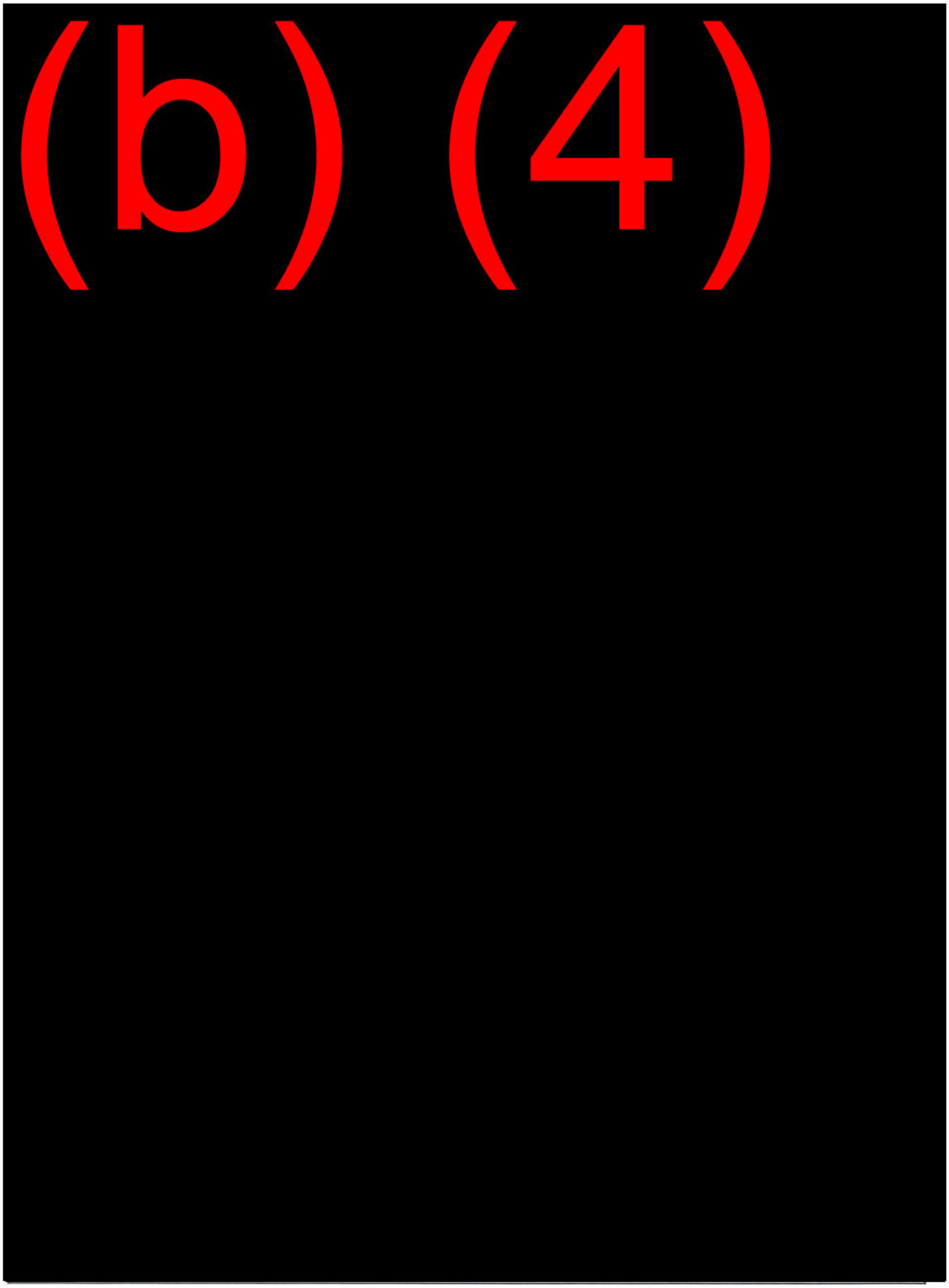
No picture inserted No file attached

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	REQUIREMENTS/NOTES	QTY	FID. CODE	
1	Build and install Battery FSE Structure 1 (See Figure 1)	1.1 Must accommodate the FSE hardware in CR-2707 for six batteries 1.2 Must accommodate the weight of six Battery ORU mockups and six adapter plates mockups	1	II.D	
2	Build and install Battery FSE Structure 2 (See Figure 1) *Note: this structure is not included in the delivered CAD model.*	2.1 Must accommodate the FSE hardware in CR-2707 for three batteries 2.2 Must accommodate three Battery ORU mockups	~~1~~	~~II.D~~	
3	Retrieve and install CR-2707 FSE Hardware (See Figure 2)	3.1 Must accommodate Battery ORU mockups	9 sets	II.B.	
4	Retrieve/Build and install handrails	4.1 Reuse HTV 4 handrails where possible	31	II.C	
5	Label Handrails	5.1 Will provide map (TBD)	31	III.C	
6	Build and install PVGFs	6.1 PVGFs must accommodate LEEs	2	II.B	
7	Build and install tie down points on HTV 5 façade. (See figure 1)	7.1 Install the two tie downs onto the HTV 5 façade	2	II.C	
8	Retrieve and install WIFs	8.1 Install WIF	2	II.B	

No picture inserted No file attached

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

No picture inserted No file attached

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: Met Requirement Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: No file attached	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1005	07/16/04	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1005

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1005

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1005

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 07/16/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1005 is to incorporate CR 525 to replace backup server hardware, renew Backup software support agreement, upgrade to SharePoint 2013 and Project Server 2013. The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $231,720.00 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	231,720.00	231,720.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 231,720.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 1005	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)					Page 2 of
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 525	DX CHANGE REQUEST

CR TITLE: Backup Server Replacement, SharePoint 2013 and Project 2013 upgrade, Backup...

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:

☑ STATION ☐ MPCV

☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:

☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS

☑ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

1. Replace Aberdeen backup server hardware with new Dell PowerEdge server and Dell PowerVault storage devices.
2. Renew Backup Exec 2012 software support agreement
3. Upgrade TOPSSNET from SharePoint Server 2010 to SharePoint Server 2013
4. Upgrade TOPSSNET PWA from Project Server 2010 to Project Server 2013

7. RATIONALE:

1. There is an increasing risk associated with the continued use of the Aberdeen backup server which is approaching 5 years of age. Warranty on this Aberdeen server has already been extended to the **5 year** mark which is set to **expire in June 2014.** We need to replace this old hardware due to higher risk of hardware failures. When we replace this server we will also need to acquire more storage space since backup jobs have increaresed in size
2. Our Backup Exec 2012 software support agreement has expired and needs to be renewed so that we have support for any issues that may occur.
3. We currently do not have an active support agreement for our current SharePoint 2010 production server (TOPSSNET). We need to acquire a valid license and support agreement for SharePoint Server.
    1. Upgrade existing TOPSSNET systems to latest version of SharePoint 2013 Server available.
4. When upgrading to SharePoint Server 2013 we will be required to upgrade PWA to the latest version of Project Server 2013.
    1. Will also require upgrading the desktop version of Project to Project Pro 2013 for all users currently using Project Professional 2010.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No safety review required for procurement and IT CR.

Procure the following materials

1. Procure Hardware to replace Aberdeen backup server and storage space
   1. *Quantity 1: Dell Poweredge R920 Server, High Performance, 4 socket, 4U Rack Server with Windows Server 2008 R2 Enterprise - Server host (very little storage) to replace current Aberdeen backup server.*
   2. *Quantity 4: Dell PowerVault MD3400 (4 x 48TB Direct Attached Storage Arrays (DAS Devices) - These are storage devices is where the backup jobs are stored and will be attached directly to the backup server.* ***Items 1.1 and 1.2 above will be connected together to work as a storage server/backup server for all NSOC servers. This will replace the existing large Aberdeen storage server.***
2. *Procure 2 year extended warranty agreements for all existing Dell hardware*
   1. *Quantity 1: Extended 2 year warranty for Dell Tape Library*
   2. *Quantity 3: Extended 2 year warranty for Dell MD3200 Powervaults*
   3. *Quantity 3: Extended 2 year warranty for Dell PowerEdge R910 Servers*
3. *Procure Backup Exec 2012 software support agreement renewal for 1 year*
   1. *Quantity 1: SYMC Backup Exec 2012 Server Win Per Server I/O Essential 12 MONTHS*
   2. *Quantity 1: SYMC Backup Exec 2012 Agent for Apps and DBs Essential 12 MONTHS*
   3. *Quantity 1: SYMC Backup Exec 2012 Agent for VMWare & Hyper-V Essential 12 MONTHS*
   4. *Quantity 1: SYMC Backup Exec 2012 Agent for Windows Essential 12 MONTHS*
4. *Procure SharePoint Server 2013*
   1. *Quantity 1: Microsoft SharePoint Server 2013 - License & Software Assurance*
   2. *Quantity 1: Microsoft SharePoint Server 2013 Enterprise CAL Media - English - 64-bit*
   3. *Quantity 15: Microsoft Office SharePoint Server Enterprise CAL*
5. *Procure Project Server 2013 & Project Professional 2013*
   1. *Quantity 1: Microsoft Project Server 2013- License & Software Assurance*
   2. *Quantity 1: Microsoft Project Server 2013 Media - English - 64-bit*
   3. *Quantity 15: Microsoft Project Professional - License & software assurance - 1 user*
   4. *Quantity 1: Microsoft Project Professional 2013 w/SP1 - Media - DVD - English - 32/64-bit*

Work to preform

1. *NSOC IT will install and configure the new backup server, storage array, and Backup Exec software.*
2. *Upgrade development SharePoint server (TOPSSNET-DEV) to SharePoint 2013, Project Server 2013, and PowerPivot 2013*
3. *Upgrade production SharePoint server (TOPSSNET) to SharePoint 2013, Project Server 2013, and PowerPivot 2013*
4. *Update all required documentation to reflect addition of new server, SharePoint 2013 upgrade and PWA 2013 upgrade*

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	5/19/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED		WBS: 2.6.2
Signature: Haas, John (JSC-DX121)		Date: 5/20/2014
12. NASA POC:	**13. PHONE:**	**14. E-MAIL:**
Turcotte, Edgar J. (JSC-DX121)		edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
(b) (4)		(b) (4) @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:

$231,800	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: Date: CCB CHAIR: Date:	**COTR for CRs with Cost Impact Only** COTR: Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

Details for Item # 1.1 (Quantity x 1)
PowerEdge R920
Chassis Configuration: 2.5" Chassis with up to 24 Hard Drives
Shipping: PowerEdge R920 Shipping
Processor: 2x Intel® Xeon® E7-4860 v2 Processor 2.6GHz, 30M Cache, 8.0 GT/s QPI, Turbo, 12 Core, 130W
Additional Processor: Upgrade to Four Intel® Xeon® E7-4860 v2 2.6GHz, 30M Cache, 8.0 GT/s QPI, Turbo, 12 Core, 130W
Memory DIMM Type and Speed: 1600 MHz RDIMMS
Memory Configuration Type: Advanced ECC
Memory Capacity: (QTY 64) 4GB RDIMM, 1600 MT/s, Low Volt, Single Rank, x8 Data Width
Operating System: Windows Server 2008 R2 SP1, Enterprise Edition, x64, Includes 10 CALs
OS Media Kits: Windows Server 2008R2 SP1, Enterprise Edition, x64, Media Kit
OS Partitions: Maximum Partition Size Override for Microsoft Windows Factory Installed
RAID Configuration: RAID 1 for H730P (2 HDDs)
RAID Controller: PERC H730P Adapter RAID Controller, 2Gb NV Cache
Hard Drives: (QTY 2) 300GB 15K RPM SAS 6Gbps 2.5in Hot-plug Hard Drive
Embedded Systems Management: iDRAC7 Enterprise
Select Network Adapter: Broadcom 57800 2x10Gb DA/SFP+ + 2x1Gb BT Network Daughter Card
Additional Network Cards: Intel Ethernet I350 QP 1Gb Server Adapter
Power Supply: 2+2 Power Supply, Redundant Configuration, 1100W
Power Cords: (QTY 4) C13 to C14, PDU Style, 12 AMP, 13 Feet (4m), Power Cord
Power Cords: (QTY 4) C13 to C14, PDU Style, 12 AMP, 6.5 Feet (2m), Power Cord
Power Management BIOS Settings: Performance BIOS Setting
Server Accessories: (QTY 2) 3 Meter Twinax Cable With SFP+ Connector
Rack Rails: ReadyRails Sliding Rails With Cable Management Arm
Bezel: Bezel
Internal Optical Drive: DVD+/-RW, SATA, Internal
System Documentation: Electronic System Documentation and OpenManage DVD Kit for R920
Enabled Virtualization: Hyper-V role enabled with pre-installed Enterprise Edition OS on incl Virtual Hard Disk
Canada Ship Options: US No Canada Ship Charge
Hardware Support Services: 5 Year ProSupport and NBD On-site Service
Installation Services: No Installation
Proactive Systems Management: Dell Proactive Systems Management

Details for Item # 1.2 (Quantity x 4)
PowerVault MD3400: PowerVault MD3400, 12G SAS, 2U-12 drive, Dual 8G Cache Controller
Hard Drives: (QTY 12) 4TB 7.2K RPM Self-Encrypting Near-Line SAS 6Gbps 3.5in Hot-plug Hard Drive,FIPS140-2
Server Connectivity: 12GB SAS HBA, Dual Port
Bezel: Bezel Assembly, MD3400
Cables: 12Gb HD-Mini to HD-Mini SAS Cable, 2M
Cables: 12Gb HD-Mini to HD-Mini SAS Cable, 4M
Cables: 12Gb HD-Mini to HD-Mini SAS Cable, 0.5M
Cables: 12Gb HD-Mini to HD-Mini SAS Cable, 6M
Software Data Protection and Performance Features: No data protection software
Rails: ReadyRails II Static Rails for 4-post Racks
Power Supply: Power Supply, AC 600W, Redundant
Power Cords: 5-15P to C13, 10 amp, 6 foot wall plug Power Cord
Power Cords: C13 to C14, PDU-Style, 13 Amps, 2 meter Power Cord N.Am.
Power Cords: C13 to C14, PDU Style, 13 AMP, 2 foot Power Cord N.Am.
Power Cords: C13 to C14, PDU-Style, 13 Amps, 4 meter Power Cord N.Am.
Hardware Support Services: 5 Year ProSupport and NBD On-site Service
Installation Services: ProActive Maintenance Declined
Proactive Maintenance: ProActive Maintenance Declined
Canada Ship Options: US No Canada Ship Charge

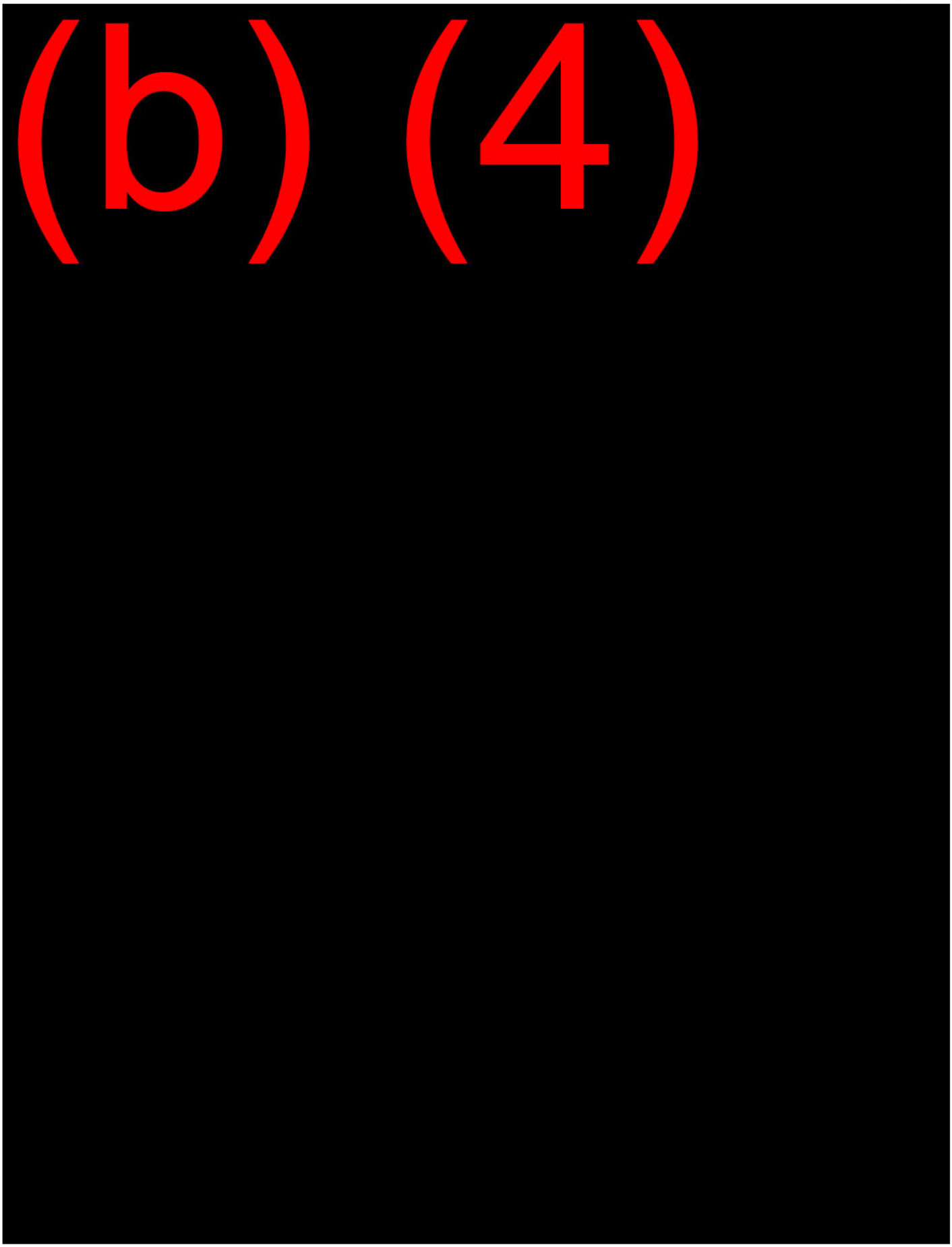
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Conta
1.	Dell PowerEdge R920 Server, High Performance, 4 socket, 4U Rack Server with Windows Server 2008 R2 Enterprise	EA	1	Inspection		(b) (4)
2.	Dell PowerVault MD3400 (4 x 48TB Direct Attached Storage Arrays (DAS Devices)	EA	1	Inspection		
3.	Symantec Certificate for Backup Exec support renewal	EA	1	Inspection		
4.	Microsoft SharePoint Server 2013 Media, 15 SharePoint Server Enterprise CALS	EA	1	Inspection		
5.	Microsoft Project Server 2013 Media, 15 Microsoft Project Professional Licenses	EA	1	Inspection		
6.	Microsoft Project Professional 2013 Media	EA	1	Inspection		
7.	NSOC IT will install and configure the new backup server, storage array, and Backup Exec software.	Job	1	Review		
8.	Upgrade development SharePoint server (TOPSSNET-DEV) to SharePoint 2013, Project Server 2013, and PowerPivot 2013	Job	1	Review		
9.	Upgrade production SharePoint server (TOPSSNET) to SharePoint 2013, Project Server 2013, and PowerPivot 2013	Job	1	Review		
10.	Update all required documentation to reflect addition of new server, SharePoint 2013 upgrade and PWA 2013	Job	1	Review		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

[redacted]

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1006	07/23/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1006

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1006

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1006

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 07/23/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1006 is to procure Replacement Video Data Servers and install Room 2338 Power Upgrade. The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $ 444,889.00 Work is to be completed by9/26/2014 . Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	444,889.00	444,889.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 444,889.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1006

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 529	DX CHANGE REQUEST

CR TITLE: Procure Replacement Video Data Servers and Install Room 2338 Power Upgrade

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☑ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Procure replacement video data servers as described in CR-515 Video Server Upgrade Study to include:

1. Provide 400 T Bytes of redundant storage capacity for both the NBL video recordings (both SD & HD video) and NBL data files.
2. Provide a data rate to allow simultaneous multiple video file recording / real time play out and fast transfer of multiple large files.
3. Provide data / file redundancy to protect against data loss with drive or component failures.
4. Provide redundant controllers and internal data paths.
5. Present the file system as one disk volume.
6. Allow expansion of the data storage capacity.

Procure and install a new facility UPS electrical panel in NBL room 2339 to accommodate the replacement video data servers and proveide additional circuits to address DR 11414 power issues for animation farm AAD and DR 10983 Jupiter Config UPS Inop.

7. RATIONALE:

The NBL video servers are 6 years old and are out of manufacturer's warranty. They are being covered by a year to year extended warranty. All of the circuits in facility UPS distribution panel in Room 2338 are being used. Additional facility UPS circuits are required for the added equipment and to solve the power issues identified in the DRs.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. 2 each servers with at least 400 T bytes of usable storage (to be mirrored in an installation CR)
2. 3 each 10 Gbit /second Network switches with cables (2 to be configured as redundant / sync communication in an installation CR and 1 spare)
3. 42 Breaker space Electrical Panel 208 Y VAC 225 amp
4. 20 amp breakers conduit and wire for up to 30 circuits in Room 2339
5. Installation of items 3 and 4 on the North wall of the server room in NBL room 2338 powered by switchboard 1DLXG existing 200 amp spare breaker
6. Installation of 20 amp circuits required for new and existing equipment on the CR

Safety Review SR 2014-333 (John Haas Chair) completed 7/9/2014 determined TRR not Required.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	6/30/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.2

Signature: Haas, John (JSC-DX121) Date: 7/8/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:

Turcotte, Edgar J. (JSC-DX121)		edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]		@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning

☑ No – completion of this form is adequate for

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
$444,900	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Haas, John (JSC-DX121)

Date: 7/9/2014

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

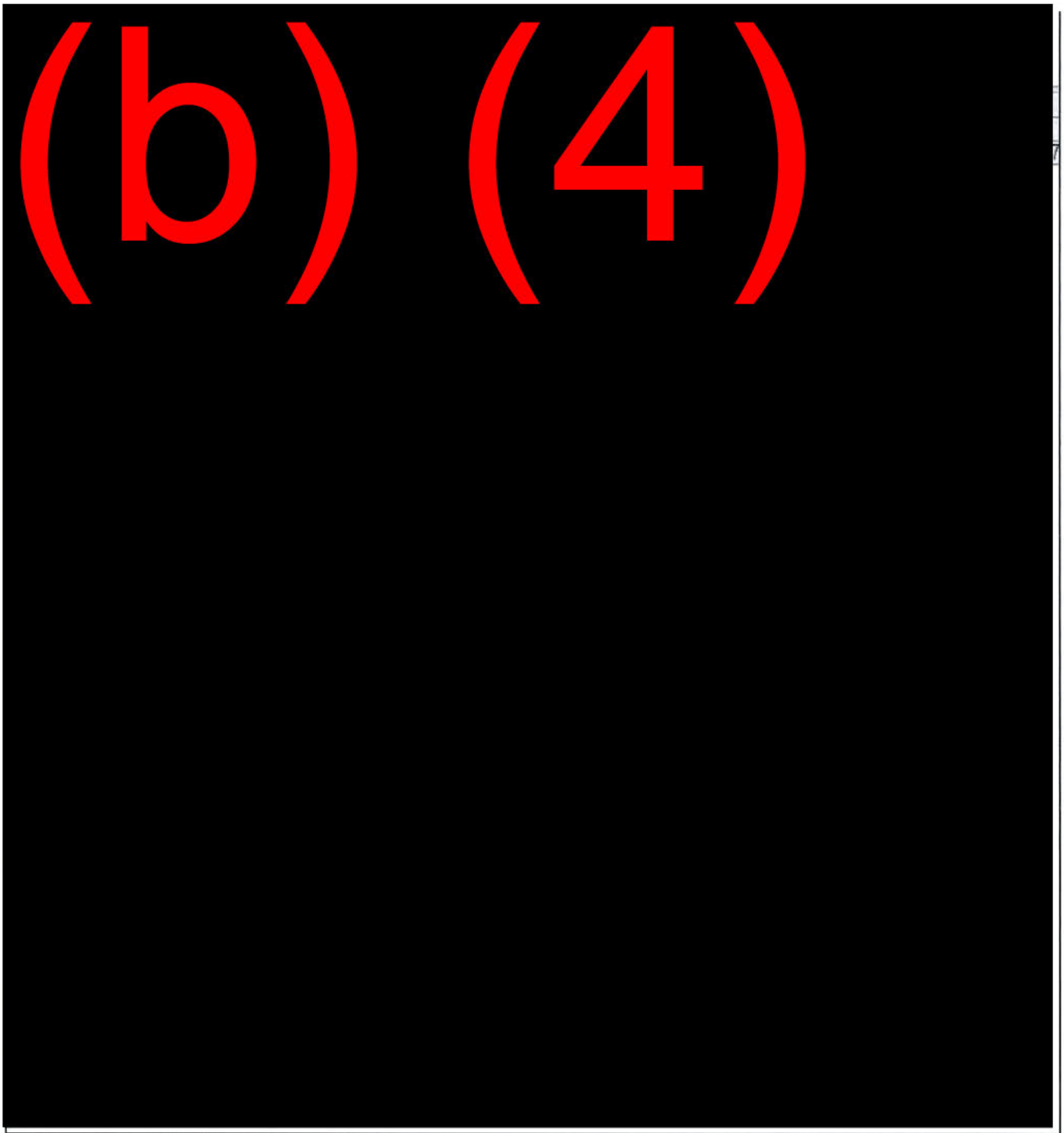
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	2 each servers with at least 400 T bytes of usable storage (to be mirrored in an installation CR)	job	1	Inspection		(b) (4)
2.	3 each 10 Gbit / second Network switches with cables (2 to be configured as redundant / sync communication in an installation CR and 1 spare	job	1	Inspection		
3.	42 Breaker space Electrical Panel 208 Y VAC 225 amp	job	1	Inspection		
4.	20 amp breakers conduit and wire for up to 30 circuits in Room 2339	job	1	Inspection		
5.	Installation of items 3 and 4 on the North wall of the server room in NBL room 2338 powered by switchboard 1DLXG existing 200 amp spare breaker	job	1	Inspection		
6.	Installation of 20 amp circuits required for new and existing equipment on the CR	job	1	Inspection		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Year	Design	Engineering & Program Support	Management	Technicians	Materia
FY14	(b) (4)				

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only	
Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1006A	09/08/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1006A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1006A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1006A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer
09/08/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1006A is to incorporate CR529A, Procure Replacement Video Data Servers and install Room 2338 Power Upgrade. The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $120,481 Work is to be completed by9/26/2014 . Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	120,481.00	120,481.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 120,481.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 1006A	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)	Page 2 of

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 529A	DX CHANGE REQUEST

CR TITLE: Procure Replacement Video Data Servers and Install Room 2338 Power Upgrade

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☑ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Procure replacement video data servers as described in CR-515 Video Server Upgrade Study to include:

1. Provide 400 T Bytes of redundant storage capacity for both the NBL video recordings (both SD & HD video) and NBL data files.
2. Provide a data rate to allow simultaneous multiple video file recording / real time play out and fast transfer of multiple large files.
3. Provide data / file redundancy to protect against data loss with drive or component failures.
4. Provide redundant controllers and internal data paths.
5. Present the file system as one disk volume.
6. Allow expansion of the data storage capacity.
7. **Procure a Connex capability upgrade kit for the EDEN500 3D printer.**

Procure and install a new facility UPS electrical panel in NBL room 2339 to accommodate the replacement video data servers and proveide additional circuits to address DR 11414 power issues for animation farm AAD and DR 10983 Jupiter Config UPS Inop.

Rev. A - Adds procurement of a Connex capability upgrade kit for the EDEN500 3D printer.

7. RATIONALE:

The NBL video servers are 6 years old and are out of manufacturer's warranty. They are being covered by a year to year extended warranty. All of the circuits in facility UPS distribution panel in Room 2338 are being used. Additional facility UPS circuits are required for the added equipment and to solve the power issues identified in the DRs.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. 2 each servers with at least 400 T bytes of usable storage (to be mirrored in an installation CR)
2. 3 each 10 Gbit /second Network switches with cables (2 to be configured as redundant / sync communication in an installation CR and 1 spare)
3. 42 Breaker space Electrical Panel 208 Y VAC 225 amp
4. 20 amp breakers conduit and wire for up to 30 circuits in Room 2339
5. Installation of items 3 and 4 on the North wall of the server room in NBL room 2338 powered by switchboard 1DLXG existing 200 amp spare breaker
6. Installation of 20 amp circuits required for new and existing equipment on the CR
7. **Procure a Connex capability upgrade kit for the EDEN500 3D printer. Note - does not include installation or training, assumed this would be executed in a FY15 project**

Safety Review SR 2014-333 (John Haas Chair) completed 7/9/2014 determined TRR not Required.

No picture inserted No file attached

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	**6/30/2014**

Rev A		
11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED Signature: Haas, John (JSC-DX121)		WBS: 2.6.2 Date: 7/8/2014
12. NASA POC: Turcotte, Edgar J. (JSC-DX121)	**13. PHONE:**	**14. E-MAIL:** edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** [redacted]
18. FORMAL PROJECT PLAN REQUIRED: ☐ Yes – prepare per contractor's procedures and attach planning	☑ No – completion of this form is adequate for	
19. COST IMPACT: ~~$444,900~~ Rev. A - FY14 $565,400	**20. NEGOTIATED DELIVERY DATE:** 9/26/2014	

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: Haas, John (JSC-DX121) Date: 7/9/2014 CCB CHAIR: Date:	**COTR for CRs with Cost Impact Only** COTR: Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

No picture inserted No file attached

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	2 each servers with at least 400 T bytes of usable storage (to be mirrored in an installation CR)	job	1	Inspection		(b) (4)
2.	3 each 10 Gbit /second Network switches with cables (2 to be configured as redundant / sync communication in an installation CR and 1 spare	job	1	Inspection		
3.	42 Breaker space Electrical Panel 208 Y VAC 225 amp	job	1	Inspection		
4.	20 amp breakers conduit and wire for up to 30 circuits in Room 2339	job	1	Inspection		
5.	Installation of items 3 and 4 on the North wall of the server room in NBL room 2338 powered by switchboard 1DLXG existing 200 amp spare breaker	job	1	Inspection		
6.	Installation of 20 amp circuits required for new and existing equipment on the CR	job	1	Inspection		
7.	**Receive Connex capability upgrade kit for the EDEN500 3D printer.**		1	Inspection		

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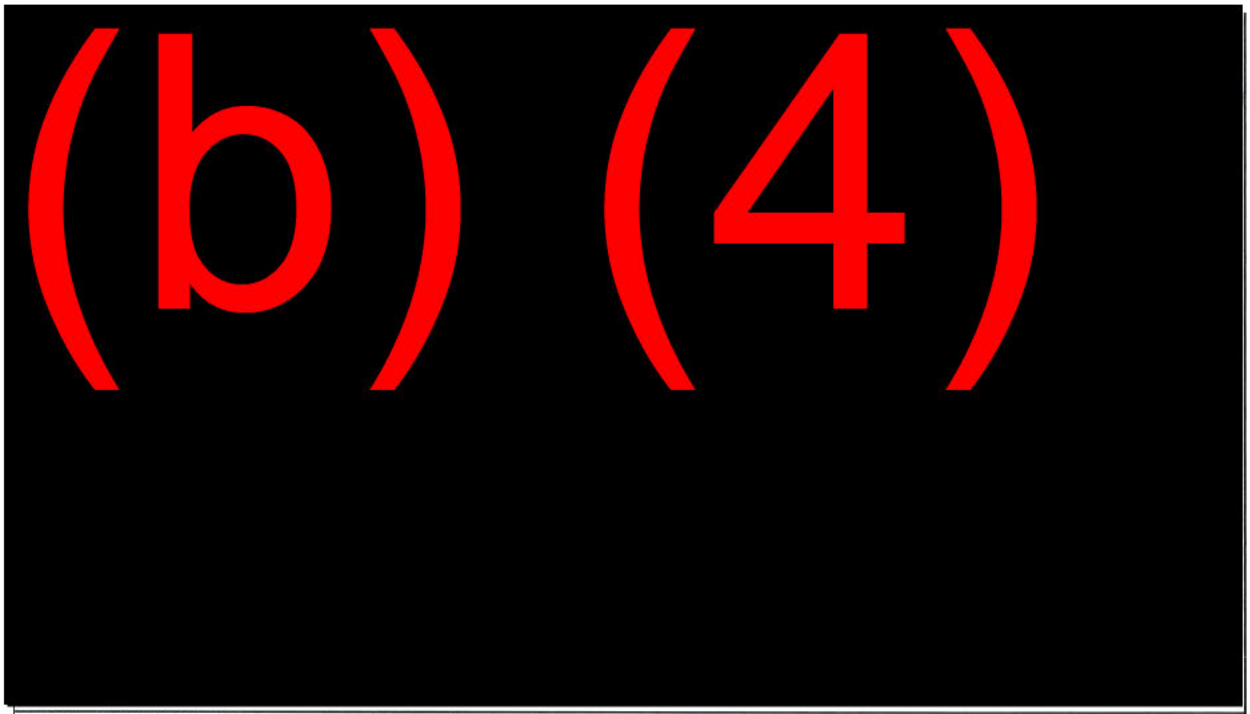
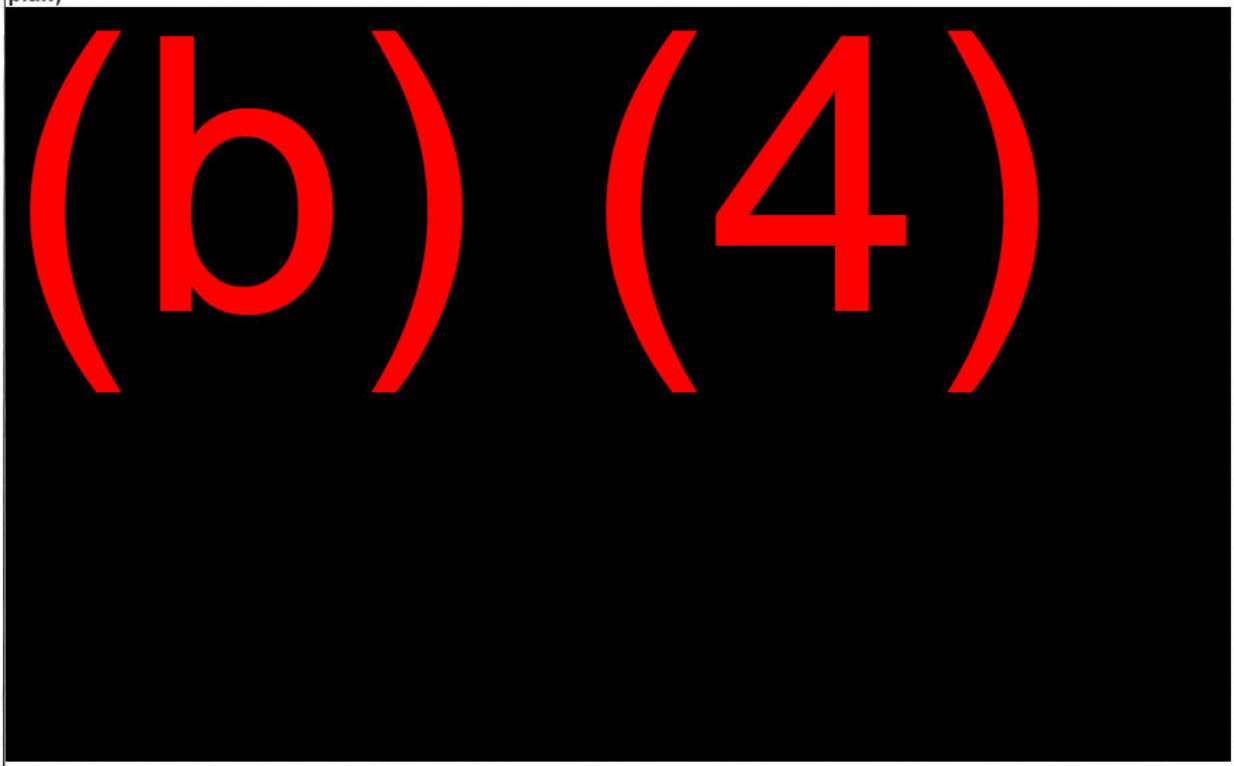
SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Year	Design	Engineering & Program Support	Management	Technicians	Material
~~FY14~~		(b) (4)			
(Rev A) FY14					

No picture inserted No file attached

Design	Engineering and Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: Met Requirement Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: No file attached	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1007	07/23/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1007

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1007

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1007

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 07/23/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1007 is to incorporate CR 2714 SVMF Build to Print Mockups. The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $ 84,790.00 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	84,790.00	84,790.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 84,790.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 1007	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)					Page 2 of
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2714	DX CHANGE REQUEST

CR TITLE: SVMF Build to Print Mockups

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Prado, Ernesto J. (JSC-DX141)	x37914	Global

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Provide new softgoods to replace worn items and supplement quantity on hand to support ISS training. Build to print several other small mockups to supplement current items on hand.

7. RATIONALE:

Increased quantity of stowage bags are necessary for ISS training in correct stowage configuration. Damaged Debris shield needs to be replaced.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Provide one Hi-Fidelity Debris Shield (b) (4) for VOT re-using components from the existing cover.

8.2 Provide four (4) MO1 stowage bags (b) (4) using nylon/cordura fabric.

8.3 Provide four (4) styrofoam peanut packed vacuum sealed bags sized for MO1 bags.

8.4 Provide twenty (20) foam cushions sized to fit the standard single Cargo Transfer Bag (CTB.)

8.5 Provide six (6) functioning Handheld Mic mockups.

8.6 Provide four (4) ISS Inverter Mockups designed as 120 VAC power strips.

8.7 Modify three (3) pana-vise laptop shelves with current sized mounting plate.

SR required for Inverter Mockups per Safety Review 7/11/2014.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	6/2/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Mcintyre, Allison L. (JSC-DX141) Date: 6/9/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Huhn, June A. (JSC-DX141)		june.a.huhn@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$84,800	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: Date: CCB CHAIR: Date:	**COTR for CRs with Cost Impact Only** COTR: Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

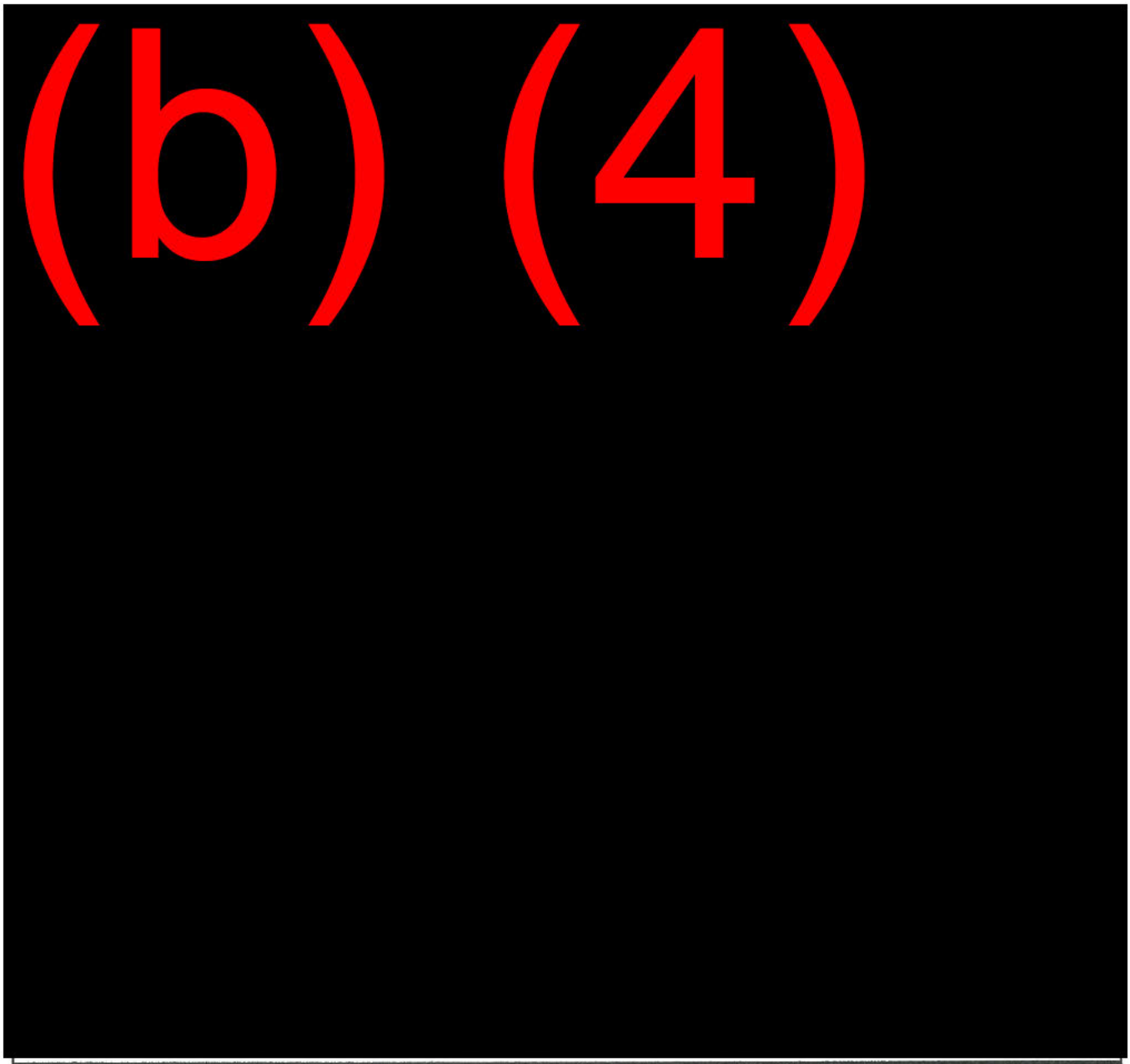
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Deliverable List and Acceptance:

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Inspection	Label requirement satisfied.		
8.1	Verify that one (1) Hi-Fidelity Debris Shield mockup (b) (4) reusing components from existing cover, for the VOT has been delivered.	Inspection	Inspect Debris Shield by fit check in the VOT hatch opening.		
8.2	Verify that four (4) MO1 stowage bags (b) (4) using [redacted] have been delivered. 32.2 x 35.3 x 21 inches (+/- 2 inch)	Inspection	Inspect MO1 bags for overall size and quantity delivered.		
8.3	Verify that four (4) styrofoam peanut packed vacuum sealed bags sized for MO1 bags have been delivered.	Inspection	Inspect vacuum sealed bags.		
8.4	Verify that twenty (20) foam cushions sized to fit the standard single Cargo Transfer Bag (CTB.) 9 x 16 x 19 inches. (+/-0.5 inch)	Inspection	Inspect foam cushions for size and quantity.		
8.5	Verify that six (6) functioning Handheld Microphone mockups have been provided.	Inspection	Inspect HHM for voice operation and quantity delivered.		
8.6	Verify that four (4) ISS Inverter Mockups designed as 120 VAC power strips have been delivered.	Inspection	Inspect Inverter mockups for 120 VAC by measuring voltage at each outlet (+/- 10 volts) and verify total quantity delivered.		
8.7	Verify that three (3) pana-vise laptop shelves have been modified with current sized mounting plate (12 by 12 inches, +/- 0.5 inch)	Inspection	Inspect pana-vise laptop shelves for size and quantity.		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

[redacted] | [redacted] | [redacted] | [redacted] | [redacted]

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1008	07/23/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1008

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1008

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1008

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 07/23/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1008 is to replace the existing FUR submittal process and workflow routing in Sharepoint. The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $ 35,435.00 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	35,435.00	35,435.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 35,435.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 1008	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)					Page 2 of
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2724	DX CHANGE REQUEST

CR TITLE: Electronic FUR Submittal Process

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Prado, Ernesto J. (JSC-DX141)	281-483-4902	

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 871056

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Replace the existing FUR approval process with a submittal form and workflow routing in Sharepoint. Include a link to this submittal process from the SVMF web site.

7. RATIONALE:

Users will have direct access to input, modify and view their most recent FURs. Mockup Managers will receive automatic notification for review and approval once new FURs are submitted. A central location will house all submitted FURs for reference, archiving and correct versioning.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See attached file for initial Ops Concept.

- PDR and CDR Required
- No Safety Review or TRR required
- Documentation and web sites shall be updated to reflect the SharePoint Implementation

(b) (4)

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	6/11/2014

Rev

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Mcintyre, Allison L. (JSC-DX141) Date: 6/15/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Prado, Ernesto J. (JSC-DX141)		ernesto.j.prado@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
(b) (4)		@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$35,500 FY14	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only
COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Description	Method	Expected Result	Verified
na	PDR	Inspection	Minutes show review was conducted	
na	CDR	Inspection	Minutes show review was conducted	
na	Web site	Demonstration	Website exists, which allows FURs to be uploaded, and initiates a automated process to number, displays status of FURs, and send notification email of each new request	
na	Documentation	Inspection	Documentation has been produced	

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Major driver is IT labor, listed in design category on tabl below.

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1009	07/24/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1009

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1009

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1009

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 07/24/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1009 is to incorporate CR 527 to provide the design and hardware to modify one JIB crane to be a personnel lifting devide to be used in the NBL facility. The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $ 149,804.00 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	149,804.00	149,804.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 149,804.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 1009	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)				Page 2 of	
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 527	DX CHANGE REQUEST

CR TITLE: Hydraulic Jib Crane Design and Hardware

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Haas, John (JSC-DX121)	25925	Global

4. PROGRAM/PROJECT:

☐ STATION ☐ MPCV

☑ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:

☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS

☐ NBL SYSTEMS ☑ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Provide the Design and Hardware to modify one NBL JIB crane to be a personnel lifting device to be used in the NBL facility.

7. RATIONALE:

The existing jib cranes have abrupt control during operation and do not currently meet the requirements to support HUET operations. Modifying a Jib crane to a hydraulic personnel lifting device will meet both the HUET and NBL requirements.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Design and develop a NBL Jib personnel lifting device using a hydraulic system for the lifting mechanism to meet the following requirements to be presented and approved via PDR and CDR.

   - Interpret and apply ANSI/SIA A92.5 and ANSI/SIA A92.2 to the alteration of the NBL Jib Crane design to accommodate a 5000 pound capacity using new hydraulic and structural components.
   - Adjust the inputs used in the MathCAD model developed in CR-NBL-497 to validate requirement 1 above.
   - Modify the Jib Crane design to replace the pneumatic rotation components and controls to accommodate hydraulic actuation for smoother operation and to avoid a hydraulic/pneumatic hybrid system; all in compliance with the standards cited above in requirement 1.
   - The lifting system shall have the ability to be removed or relocated if needed via NBL overhead crane.
   - The lifting system shall have the following speeds:
     - Up - zero to 23 feet/min. (Current Jib speed 18 ft/min, Petrofac requested 25% increase)
     - Down - zero to 50 feet/min. (Current Jib speed 18 ft/min, Petrofac requested increase to 50 ft/min)
   - The lifting system shall have a range of motion and assembled height that permit using the existing Donning Stand rigging and allowing use on the HUET trainers. This requirement shall also allow for operation with the pool water level 1' below standard level.
   - The lifting cylinder centerline shall be parallel to and 165" from the centerline of the jib column.
   - The lifting system shall have a swivel attach point.
   - The lifting system operation shall be controlled by a control panel located adjacent to the lift system and providing a view of the lift operation. The use of wireless or pendant remote control system may be considered.
   - Provisions to attach redundant safety strap will be provided. Design should allow retraction or ability to maintain control of the safety strap to prevent entanglement with personnel or hardware.
   - Provide an Engineering Design Basis (EDB) which fully documents the technical specifications of the Jib Personnel Lifting approach to be reviewed and approved at the PDR.

2. Provide all Hardware to be used to modify the Jib crane to meet requirement 1.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:

9/26/2014	6/10/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.2

Signature: Haas, John (JSC-DX121) Date: 6/11/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Williamson, Paul (JSC-DX121)		paul.williamson-1@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
(b) (4)		@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning

☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$150,000	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Preliminary Design package to support PDR	EA	1	Review		
2.	Final Design package to support CDR	EA	1	Review		
3.	New Jib Crane Hardware	EA	1	Review		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Material pricing based on Vendor Response to SOW No. NBL-COMM-ST-075 for Phase 1, Phase 2 and Material quote.

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

ACCEPTANCE

Deliverable: Met Requirement Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1010	07/29/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1010

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1010

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1010

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer
07/29/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1010 is to incorporate CR 2722 to provide additional FY14 mockup projects: 1. to provide a Fill Indicator to the ARFTA Recycle Tank, 2. to replace Lightweight Rack, 3. for Smoke Machine expansion. The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $30,719.00 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	30,719.00	30,719.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 30,719.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1010

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2711	DX CHANGE REQUEST

CR TITLE: SVMF FY14 Facility Support Purchases

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4) [redacted]		[redacted]

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Purchase various items for use in the SVMF including 3D printer consumables, communications equipment, Lexan stock, and storage lockers. Reference detailed list in Section 8.

7. RATIONALE:

These items will provide spares and supplies to help operate the facility through 2020.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Procure 12 additional stanchions similar to Lavi 50-3100A models purchased by CR2536 in FY12

8.2 Procure 5 additional sign frames similar to Lavi 50-1141F models purchased by CR2536 in FY12

8.3 Procure 2 ITunes gift cards with $100 on each (to allow Ops-Lan iPads to be configured more like flight)

8.4 Procure 3 sheets of 1/2" thick Abrasion resistant clear polycarbonate 4'x8'

continued on page 2

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	5/8/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Mcintyre, Allison L. (JSC-DX141) Date: 5/7/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Newman, Ronny L. (JSC-DX141)		ronny.l.newman@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$179,000	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:	**COTR for CRs with Cost Impact Only** COTR:

Mcintyre, Allison L. (JSC-DX141) Date: 6/1/2014 CCB CHAIR: Date:	 Date:
Closed by:	**Date:**
REQUIREMENTS/REFERENCES (cont.):	

8.5 Procure 1 sheet of 1" thick clear polycarbonate 4'x8'

8.6 Procure 13 each wall lockers (McMaster 45965T16) (to replace damaged lockers)

8.7 Procure 3 sheets of 3/4" thick polycarbonate 4'x8'

8.8 Order via ACES 7 laptops and one server replacement for THOR

8.9 Order via ACES 2 each 3TB USB 3.0 external harddrives (for SVMF system backups / System images)

8.10 Procure 10 additional HME BP210 wireless belt units with headsets

8.11 Procure replacement wireless lapel mic system in an unlicensed frequency band, coordinated thru JSC frequency management, with at least 6 belt units, remote antenna capability, and compatible batteries and recharger

8.12 Procure Nylon12 upgrade kit for the SVMF FDM 3d printer

8.13 Procure 1 each: Vero Grey, Vero Black and one Vero WhitePlus photopolymer, 1 each TangoBlackplus (OBJ-03231)photopolymer, 2 each DurusWhite photopolymer, 3 each VeroClear (OBJ-03272), 1 each TangoBlackPlus FLX980 (FLX980) and 6 each support material cartridges (OBJ-03201) for SVMF polyjet 3d printer

8.14 Procure coffee machines for SVMF (1 each K145 or equiv, 1 each VP17-3 with 3 decanters or equiv, 1 each Vp17-1 with 1 decanter or equiv, 2 cases of paper filters 20115 or equiv.)

8.15 Procure 10 additional ISS hatch blank panels

8.16 **DELETED**

8.17 Procure 1 ea convection microwave Cuisinart CMW-200 or equivalent

8.18 Procure 1 winder assembly, 10 bobbins, 2 bobbin cases, 1 knurled screw, 1 wrench, 2 screw drivers, and 4.8 mm presser foot components for Adler sewing machine.

8.19 Procure 20 sheets .22 to .25 inch thick polycarbonate 4 x 8 sheets for catwalk displays.

8.20 Procure 200 economy standoffs WM15 with panel spacer PC31 or equivalent for catwalk displays.

8.21 Procure one Vacuum cleaner, Dyson Digital DC59 Model 64961-01 or equivalent.

8.22 Procure 500 challenge coins with MOD and SVMF logos

8.23 Procure 2 Hydraflow 55114-10-3000 hoses for Airlock

8.24 Procure one Bescor LED-1000S 1 Light AC Kit or equivalent

8.25 Procure 20 yds Outdoor Fabric-Sunbrella 60" Black or equivalent

8.26 Procure 2 each Motorola BDA-S2 CATV spliter amps, 2 each F terminators, 1 each 100FT RG-6 F cable, and 1 each 5 ft RG-6 F-cable

8.27 **DELETED**

8.28 Procure 1 ea microwave panasonic NN-SD962S or equivalent -Derived requirement (NN-SD997S)

8.29 Procure 1 each Heavy Duty Coated Steel Wire Shelving for Shop Supplies (McMaster 45955T76)

8.30 Procure 3 each SMT1500RM2U or equivalent rack mount sine wave UPS systems

8.31 Procure 4 additional battery packs for the Loose Equipment laptops Lenovo 92P1132 or equivalent.

8.32 Procure 2 wireless speaker systems for remote listening.

8.33 Procure FDM 360mc system recertification and 1 yr service contract from manufacturer (or equivalent)

8.34 Procure 3 each Surface Pro 2/128GB with MS-Office, docking stations,covers, keyboards, and HDMI adapters

8.35 Procure Cat6 ethernet cables: 2 each 100ft, 4 each 50 ft, 4 each 25ft

8.36 Procure Panasonic DMC-FZ200 camera, with 4 ea class 10 16GB SDHC cards, AC adapter, USB high speed SDHC card reader, protective lens filter, mini hdmi cable, and bag/case

The following items are derived requirements for CR2711 after block 11 approval and have been priced by NSOC as part of the CR.

8.37 Procue one Insulated Beverage Cooler Dispenser 10 Gallon Jug, McMaster-Carr P/N 5616T14.

8.38 Procure one Oscilloscope Logic Analyzer Pattern Generator, Link Instrument P/N MSO-19 for crew training.

8.39 Procure one Oscilloscope Logic Analyzer Spectrum Analyzer, Link Instrument P/N MSO-28

8.40 Procure one Rack Mounted Dual 6G-SDI Monitors, HD Waveform Monitor, Blackmagic Design HDL, P/N HDL-SMTWSCOPEDUO4K

8.41 Procure one NION n6 Audio Processor with CobraNet.

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Deliverable List and Acceptance:

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Inspection	Label requirement satisfied.		
8.1	Verify that twelve (12) additional stanchions similar to Lavi 50-3100A have been delivered.	Inspection	Inspect delivery receipt of items.		
8.2	Verify that five (5) additional sign frames similar to 50-1141S have been delivered	Inspection	Inspect delivery receipt of items		
8.3	Verify that two (2) iTunes gift cards with $100 on each have been delivered.	Inspection	Inspect delivery receipt of items		
8.4	Verify that three (3) 4 ft by 8 ft sheets of ½ inch thick abrasion resistant clear polycarbonate have been delivered.	Inspection	Inspect delivery receipt of items		
8.5	Verify that one (1) 4 ft by 8 ft sheet of 1 inch thick clear polycarbonate has been delivered.	Inspection	Inspect delivery receipt of items		
8.6	Verify that 13 wall lockers, McMaster-Carr P/N 45965T16 have been delivered.	Inspection	Inspect delivery receipt of items		
8.7	Verify that three (3) 4 ft by 8 ft sheets of ¾ inch thick clear polycarbonate been delivered.	Inspection	Inspect delivery receipt of items		
8.8	Verify that ACES has on order 7 laptops and one server replacement for THOR.	Inspection	Inspect request for ACES Support to order seven (7) laptops and one (1) server.		
8.9	Verify that ACES has on order two (2) each 3TB USB 3.0 external hard drives for SVMF system have been delivered.	Inspection	Inspect request for ACES Support to order 2 each 3TB USB 3.0 external hard drives.		
8.10	Verify that 10 HME BP210 wireless belt units with headsets have been delivered.	Inspection	Inspect delivery receipt of items		
8.11	Verify that a replacement wireless lapel mic system with at least 6 belt units, 2 remote antennas, and batteries and recharger have been delivered.	Inspection	Inspect delivery receipt of items		
8.12	Verify that a Nylon 12 upgrade kit for the SVMF Stratasys FDM 360 3-D printer has been delivered.	Inspection	Inspect delivery receipt of items		
8.13	Verify that the following items have been delivered: one Vero Gray cartridge, one Vero Black cartridge, one Vero White Plus cartridge, one Tango Black Plus Cartridge, two Durus White Cartridges, three Vero Clear Cartridges, one Tango Black Plus FLX980, and six each support material (OBJ-03201) cartridges.	Inspection	Inspect delivery receipt of items		

8.14	Verify that one Keurig K145 coffee brewer, one Bunn 3 warmer pour over coffee brewer with 3 decanters, and one Bunn pour over coffee brewer with one decanter and two cases of paper filters	Inspection	Inspect delivery receipt of items		
8.15	Verify that ten (10) ISS hatch blank panels, 21-250-20-105 have been delivered.	Inspection	Inspect delivery receipt of items and c of c sheet meets rqmts		

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
8.16	Requirement Deleted	Inspection	none		
8.17	Verify that one (1) convection microwave oven has been delivered, Cuisinart CMW-200.	Inspection	Inspect delivery receipt of items		
8.18	Verify that one winder assembly, 10 bobbins, 2 bobbin cases,1 knurled screw, 1 wrench, 2 screwdrivers, and 4.8 mm presser foot components for Adler sewing machine have been delivered.	Inspection	Inspect delivery receipt of items		
8.19	Verify that twenty (20) 4 ft by 8 ft sheets of .22 thick clear polycarbonate have been delivered.	Inspection	Inspect delivery receipt of items.		
8.20	Verify that 200 economy standoffs WM15 with panel spacer PC31 have been delivered.	Inspection	Inspect delivery receipt of items		
8.21	Verify that one (1) vacuum cleaner, Dyson Digital DC59 has been delivered.	Inspection	Inspect delivery receipt of items		
8.22	Verify that five hundred (500) challenge coins with MOD, SVMF Logos have been delivered.	Inspection	Inspect delivery receipt of items		
8.23	Verify that two (2) Hydraflow 55114-10-3000 hoses have been delivered.	Inspection	Inspect delivery receipt of items		
8.24	Verify that one (1) Bescor LED-1000S 1 light AC kit has been delivered.	Inspection	Inspect delivery receipt of items		
8.25	Verify that twenty (20) yards of Outdoor fabric, Sunbrella 60 inch wide, color black, has been delivered.	Inspection	Inspect delivery receipt of items		
8.26	Verify that two Motorola BDA-S2 CATV splitter amps, 2 F terminators, one 100 ft roll of RG-6F cable, and one 5 ft RG-6F cable have been delivered.	Inspection	Inspect delivery receipt of items		
8.27	Requirement Deleted.	Inspection	none		
8.28	Verify that one (1) Panasonic microwave P/N NN-SD997S (NN-SD962Shas been delivered.	Inspection	Inspect delivery receipt of items		
8.29	Verify that one (1) heavy duty steel wire shelving, McMaster-Carr P/N 45955T76, has been delivered.	Inspection	Inspect delivery receipt of items		
8.30	Verify that three (3) SMT1500RM2U rack mount sine wave UPS systems have been delivered.	Inspection	Inspect delivery receipt of items		
8.31	Verify that four (4) additional battery packs for the Loose Equipment laptops, Lenovo P/N 92P1132 or equivalent.	Inspection	Inspect delivery receipt of items		
8.32	Verify that two (2) HME WS200 wireless speaker systems with battery packs, BAT850, have been delivered.	Inspection	Inspect delivery receipt of items		
8.33	Verify that a Stratasys FDM 360 system recertification and 1 yr service contract has been purchased.	Inspection	Inspect delivery receipt of items		
	Verify that three each of the following have been	Inspection	Inspect		

8.34	delivered: Surface Pro 2 128 GB with MS Office, docking stations, covers, keyboards, HDMI adapters.		delivery receipt of items		
8.35	Verify that two 100 ft Ethernet Cat6 cables, four 50 ft Ethernet Cat6 cables, four 25 ft Ethernet Cat6 cables have been delivered.	Inspection	Inspect delivery receipt of items		
8.36	Verify that one (1) Panasonic DMC-FZ200 camera with 4 each class 10 16 GB SDHC cards, AC adapter, USB high speed SDHC card reader, protective lens filter, mini HDMI cable, and bag have been delivered.	Inspection	Inspect delivery receipt of items		
8.37	Verify that one (1) insulated beverage cooler dispenser 10 gallon jug, McMaster-Carr P/N 5616T14 has been delivered.	Inspection	Inspect delivery receipt of items		
8.38	Verify that one (1) Oscilloscope, Link Instrument P/N MSO-19 has been delivered.	Inspection	Inspect delivery receipt of items		
8.39	Verify that one (1) Oscilloscope, Link Instrument P/N MSO-28 has been delivered.	Inspection	Inspect delivery receipt of items		
8.40	Verify that one (1) Rack mounted dual 6G-SDI monitors, HD waveform monitor, Blackmagic Design HDL, P/N SMTWSCOPEDOU4K.	Inspection	Inspect delivery receipt of items		
8.41	Verify that one (1) NION n6 Audio processor with CobraNET has been delivered.	Inspection	Inspect delivery receipt of items		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1011	08/04/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1011

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1011

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number NNJ10HD35C DO 1011

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

Cynthia W Maclean
Contracting Officer

08/04/14
Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 111 is to incorporate CR2672A, EVA Projects for the SVMF: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $41,852. Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	41,852.00	41,852.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 41,852.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative Date

Order No.
NNJ10HD35C DO 1011

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2672A	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

1. REQUESTOR: J. Foss	2. PHONE: 3-4851	3. E-MAIL: global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV 3.6.1
☐ OTHER ☒ FUND CODE: ~~401769~~ **Rev A** 609524N

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
1. To provide a permanent stand for the ATA/NTA in the High-fidelity EVA Training Area (HETA) for crew training
2. To provide a stand for the Battery and Receptacle for the HETA.
3. To update the current Airlock Hatch trainer
4. To Provide a Utility Outlet Panel (UOP) Connector (D38999/20FD97S)
5. To provide an Airlock Panel
6. To provide Easels for Airlock and HETA training areas.
7. Update SVMF EMU Donning Stand

Revision A incorporates approved SCIF 1 changes totaling (b) (4) and & SCIF 2 changes totalling (b) (4)

7. RATIONALE:
To provide EVA training hardware in the SVMF for crew training, and update current training hardware

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
1. To provide a permanent stand for the ATA/NTA in the High-fidelity EVA Training Area (HETA) for crew training, Need date of 31 Dec 2013
   a) Provide COTS table(s) to support each tank.
   b) The tanks need to be 30 inches off the floor.
   c) Update the HETA drawings to show the locations of the NTA/ATA.
   Continued on pg 2

9. NEED DATE: (support date in block 7 rationale) 26 Sep 2014	10. CR SUBMISSION DATE 25 Oct 2013

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: __(ICE (b) (4)
Date: 10/27/13

12. NASA POC: J. Foss	13. PHONE: 3-4851	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$38,300~~ **Rev. A: $80,200**	20. NEGOTIATED DELIVERY DATE: ~~3/31/~~14 **Rev. A: 9/26/2014**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

CR TITLE: EVA Projects for the SVMF

REQUIREMENTS/REFERENCES (cont.):

2. To provide a stand for the Battery and Receptacle for the HETA. Need date of 31 Dec 2013
Modify HI FI Battery and IEA Mounting plate (Boeing provided) to interface with POGO for increment crew training.
   a) Add swivel lift fixture near the battery CG IIC fidelity
   b) Build a short table stand with rollers for Battery Mounting plate (Battery and transportation plate will be placed on one of the short rolling tables in the HETA) IIC fidelity
   c) Build a Battery swivel stand with locking castors (for long term stowage and relocation) IIC fidelity
   d) 2 warning/safety labels for the stand. Fidelity code IIID

3. To update the current Airlock Hatch trainer. Need date of 15 Jan 2014

   a) Add ISS style depress valve and remove obsolete valve and cover opening with blank aluminum panel. IIID
   b) Add Grounding wire on IV side (with tape) IIB
   c) Add Grounding wire between Support Struts(2 wires) IIB
   d) Update Label IV Valve (open / Closed only) (Black Label, white words as photos illustrates) IIID
   e) Update Label EV Valve (open / Closed only) (Black Label, white words as photos illustrates) IIID
   f) Add (Verify or Correct) Black Triangle on IV & EV side of the hatch. Black Triangle is missing on the EV side and appears to have an additional sticker on the IV IIID
   g) Correct EV Labels (2 Black Triangle and Open hatch label) IIID
   h) Move label to correct IIID
   i) Re-Install handrail to the EV side of the Hatch IIB
   j) Cover hatch windows with blank aluminum plate IIID
   k) Evaluate hatch hinge alignment
   l) Relocate the Airlock Thermal Cover to the SVMF from NBL and install

4. To Provide a Utility Outlet Panel (UOP) cable. Need date of 31 Dec 2013
   - The addition of a new UOP cable, outfitted with a generic UOP connector jack, would allow powering other ISS training equip. designed for 120 vdc, in locations without a UOP. IIB fidelity

5. To provide Airlock Panel Nomenclature Decals for ATU-4, ATU-5, ATU-6, and Avionics Rack placard (683-51948-61).

6. Provide 4 Easels for new training posters by the Airlock and HETA. Need date of 31 Dec 2013

7. Modify the blue EMU Donning Stand by adding spacers to the four mounting locations to bring forward the PLSS mockup (approximately 6 inches) to clear the donning stand side bars. Need date, NSOC best effort.

8. Safety Review completed 10/31/13
   a) TRR required
   b) Updated HA Review
   c) Tip-Over Analysis for Tank Stands

Rev. A: Requirements incorporates approved SCIF01 and SCIF02 tasks.

9. Remove Hatch Cover from NBL frame.
10. Design support structure for hatch cover.
11. Fabricate support structure for hatch cover installed on EVA Hatch Trainer.
12. Add spacers to wheels to allow trainer to rotate with hatch cover attached, hatch down configuration.
13. Add Velcro to hatch cover and mating surfaces.
14. Install support structure on EVA Hatch Trainer.
15. Install hatch cover with hinge side down in the hatch up configuration.
16. Add labels to Ammonia Tank Assembly (ATA) bolts using adhesive backed decals.
17. Label Nitrogen Tank Assembly (NTA) bolts using adhesive backed decals.
18. Blacken NZGL Labels.
19. Rotate NTA to where it is resting on its top surface with the EVA bolts facing up for a flight like appearance next to the ATA.
20. Re-label Battery H Bolts, H1 and H2 in the correct locations, H2 is closer to the "doghouse."

CR NO.: 2672A	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

REQUIREMENTS/REFERENCES (cont.):

21. Re-label DDCU H Bolts H1 and H2 in the correct locations, H2 is closer to the "doghouse."
22. Repair broken cable on status indicator and machine components so that the status indicator works.
23. Make new DDCU ORU label.
24. Provide internally mounted gas springs to offload weight of the Cargo Transport Container (CTC) box lid to 90 degrees (plus/minus 10 degrees) open position.
25. Support additional SR/TRR for CTC box operation.
26. Use existing insert locations for mounting gas springs and brackets. (To allow the CTC to be returned to flight-like condition.)
27. Install gas springs with pip pins that can be removed from the top brackets and allow the box lid to open completely to the stops.

CR NO.: 2672A	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Inspection	Finished product is safe for contact.		
	Verify there are no unidentified pinch points.	Inspection	Finished product is safe for use.		
	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Inspection	Label requirement satisfied.		
1ai	One stand for the ATA	Inspection	One stand for the ATA		
1aii	Two stands for the NTA	Inspection	Two stands for the NTA		
1b	Tanks are 30" off the floor	Inspection	Tanks are about 30 inches off floor (+/-2 inch tolerance)		
1c	Update SVMF Facility Drawings with HETA updated area	Inspection	Design Order completed		
2a	Installed Swivel Lift Fixture to POGO		Swivel Lift Fixture install on POGO		
2b	Provide table stand with rollers for Battery Mounting plate	Inspection	Table Stand with rollers for Battery Mounting Plate		
2c	Build a Battery swivel stand with locking castors	Inspection	Battery swivel stand with locking castors		
2d	Provide NASA Decals/Hazard Signs for Battery Stand	Inspection	Decals/Hazard Signs installed		
3a	Install ISS style depress valve mockup and remove obsolete valve and cover opening with blank aluminum plate.	Inspection	ISS style depress valve mockup installed and obsolete valve removed and opening covered with aluminum plate.		
3.b & c	Install 4 ground wires on Airlock Latch	Inspection	4 ground wires on External Latch		
3 d & e	Update IV & EV Valve Decals	Inspection	IV & EV Valve Decals		
3f,g,h	Add Black Triangle on IV & EV side of the hatch	Inspection	Black Triangle on IV & EV side of the hatch		
3i	Install handrail to the EV side of the Hatch	Inspection	Handrail installed to the EV side of the Hatch		
3j	Cover hatch windows with blank aluminum plate.	Inspection	Hatch window covered with aluminum plate.		
3k	Evaluate Airlock Thermal Cover hatch hinge alignment	Demonstration	Thermal cover hinge operates.		
4	Provide a Utility Outlet Panel (UOP) Connector on Panel	Demonstration	UOP connector installed, demonstrate connecting cable to connector.		
5	Provide an Airlock Panel Nomenclature Decals for ATU-4, ATU-5, ATU-6, and Avionics Rack placard.	Inspection of Airlock Panel	Decals installed on panel.		
6.	Provide 4 Easels	Inspection	4 new Easels in the HETA area		
7	Modify the blue EMU Donning Stand by adding spacers to the four mounting locations to bring forward the PLSS mockup (approximately 6 inches)	Inspection	Modified EMU stand provides 6" forward offset for PLSS		
8a.	Mockup Training Readiness Review (TRR)	Inspection	TRR signed and completed		
8b.	Review of Hazard Analysis	Inspection	Design Order completed		
8c.	Review of Tip-Over Analysis for Tank Stands	Inspection	Design Order completed		
	REV A additions below		**REV A additions below**		
9	Remove hatch cover from NBL frame.	Inspection	Cover is installed on EVA Hatch Trainer		

10	Design Support structure for hatch cover	Inspection	Design Order completed.		
11	Fabricate support structure for hatch cover installed on EVA hatch trainer.	Inspection	Work Order completed.		
12	Add spacers to wheels to allow trainer to rotate with hatch cover attached, hatch down configuration	Inspection/ demonstration	Spacers installed and EVA trainer rolls on casters with hatch cover attached.		
13	Add Velcro to hatch cover and mating surfaces	Inspection	Velcro installed.		
14	Install support structure on EVA Hatch trainer.	Inspection	Support structure installed.		
15	Install hatch cover with hinge side down in the hatch up configuration.	Inspection	Hatch cover installed correctly.		
16	Add labels to Ammonia Tank Assembly (ATA) bolts using adhesive backed decals.	Inspection	Decals installed.		
17	Label Nitrogen Tank Assembly (NTA) bolts using adhesive backed decals.	Inspection	Decals installed.		
18	Blacken NZGL labels on ATA.	Inspection	NZGL labels darkened, J1, J2, J3.		
18	Rotate NTA to where it is resting on its top surface with the EVA bolts up for a flight like appearance next to the ATA.	Inspection	NTA positioned with EVA bolts up.		
20	Re-label battery H bolts, H1 and H2 in the correct locations, H2 is closer to the "doghouse".	Inspection	Decals installed correctly.		
21	Re-label DDCU H bolts, H1 and H2 in the correct locations, H2 is closer to the "doghouse".	Inspection	Decals installed correctly.		
22	Repair broken cable on status indicator and machine components so that the status indicator works.	Inspection/ Demonstration	Rotating bolt moves status indicator.		
23	Make New DDCU ORU Label	Inspection	Decal installed.		
24	Provide internally mounted gas springs to offload weight of the Cargo Transport Container (CTC) box lid to 90 degrees (plus/minus 10 degrees) open position.	Inspection / Demonstration	Gas Springs help lift CTC box lid.		
25	Support additional SR/TRR for CTC box operation.	Inspection	SR/TRR conducted.		
26	Use existing insert locations for mounting gas springs and brackets. (To allow the CTC to be returned to flight-like condition.)	Inspection / Demonstration	Brackets mounted using existing holes.		
27	Install gas springs with pip pins that can be removed from the top brackets and allow the box lid to open completely to the stops.	Inspection / Demonstration	CTC box lid opens to stops.		

CR NO.: 2672A	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Task Number	Task Name	Early Start	DecembJanuaryFebruaMarch 1April 1 May 1 June 1 July 1 August SeptemOc

(b) (4)

CR NO.: 2672A	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
~~FY14~~		(b) (4)			
Rev. A: FY14					

CR NO.: 2672A	DX CHANGE REQUEST
CR TITLE: EVA Projects for the SVMF	

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1012	08/05/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1012

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/24/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1012

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1012

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1012 is to incorporate CR-2690 to build a Japanese Experiment Module Airlock Slide Table and to build an i-SEEP payload to interface with the slide table. The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $40,785.00. Work is to be completed by 9/24/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	40,785.00	40,785.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 40,785.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Order No.
NNJ10HD35C DO 1012

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2690	DX CHANGE REQUEST

CR TITLE: Build Japanese Experiment Module (JEM) Airlock Slide Table

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☑ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Build a JEM Airlock slide table and add it to the JEM Airlock mockup. Build an i-SEEP payload to interface with the slide table.

7. RATIONALE:

The JEM Airlock slide table is being used to deploy an increasing number of experiments and ORUs. Most pieces of hardware require a unique EVA temporary restraint method to protect for the table not being able to fully capture it. A mockup is required to evaluate the feasibility of complex temporary restraint concepts. These temporary restraint plans typically consist of multiple tethers that hold the hardware to the table long enough for the table to retract successfully.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Photos and CAD models can be found at: \\jsc-mod-nbl1\TRANSFER FOLDER\A-L Transfer(b) (4) JEM-A_L-Table\CAD

See attachment for details

Safety review held on 7/23. TRR required with no actions assigned.

(b) (4)

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/10/2014	6/4/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Turcotte, Edgar J. (JSC-DX121) Date: 7/29/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Turcotte, Edgar J. (JSC-DX121)		edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
(b) (4)		@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$40,800	9/24/2014

AUTHORIZATION TO PROCEED

COTR for CRs with Cost Impact Only
COTR:

OFFICE/BRANCH CHIEF:

Turcotte, Edgar J. (JSC-DX121)

Date: 7/31/2014

CCB CHAIR:

Date:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	REQUIREMENTS/NOTES	QTY	FID CODE	TECHNICAL CONTACT
1	I-SEEP Payload	\\jsc-mod-nbf1\TRANSFER FOLDER\A_L Transfer (b) (4) (b) (4) EM-A_L-Table\CAD	• JAXA tool fixture with functional EVA interfaces (2 movable levers) • Square micro-fixture capable if installing a square scoop on it (to use as a tie-down point) • Volumetric PIU • 394mm x 600mm x 900mm volumetric payload attached to i-SEEP	1	IIC	(b) (4)
2	Table		• Must be capable of securing payload mockups using the active/passive mechanism • Shall be able to be reconfigured between fully deployed and fully retracted (or removed) in 5 min (via diver support) • PIP pins may be used to lock table at the fully deployed or fully retracted position. • Table is not required to extend/retract, but this feature is nice to have if it does not significantly increase the cost. • Must have MLI around top and bottom edge of table • Outboard most section of the table shall be diver removable, so this section of the table can be used to support 1G tie-down evaluations.	1	IIC	
3.	Passive mechanism		• Include accurate cutouts to accommodate EVA tethers • Must be capable of securing payload mockups • Include all MLI and associated lanyards	1	IIB	
4.	Active capture mechanism		• functional manual release interface with label • Should have full range of travel as flight unit • Must be capable of securing payload mockups • Include all MLI and associated lanyards •	1	IIB	
5.	Cyclopes tether points		• Attach to active capture mechanism with screws • Should be functional and capable of taking equipment tether loads	2	IIB	

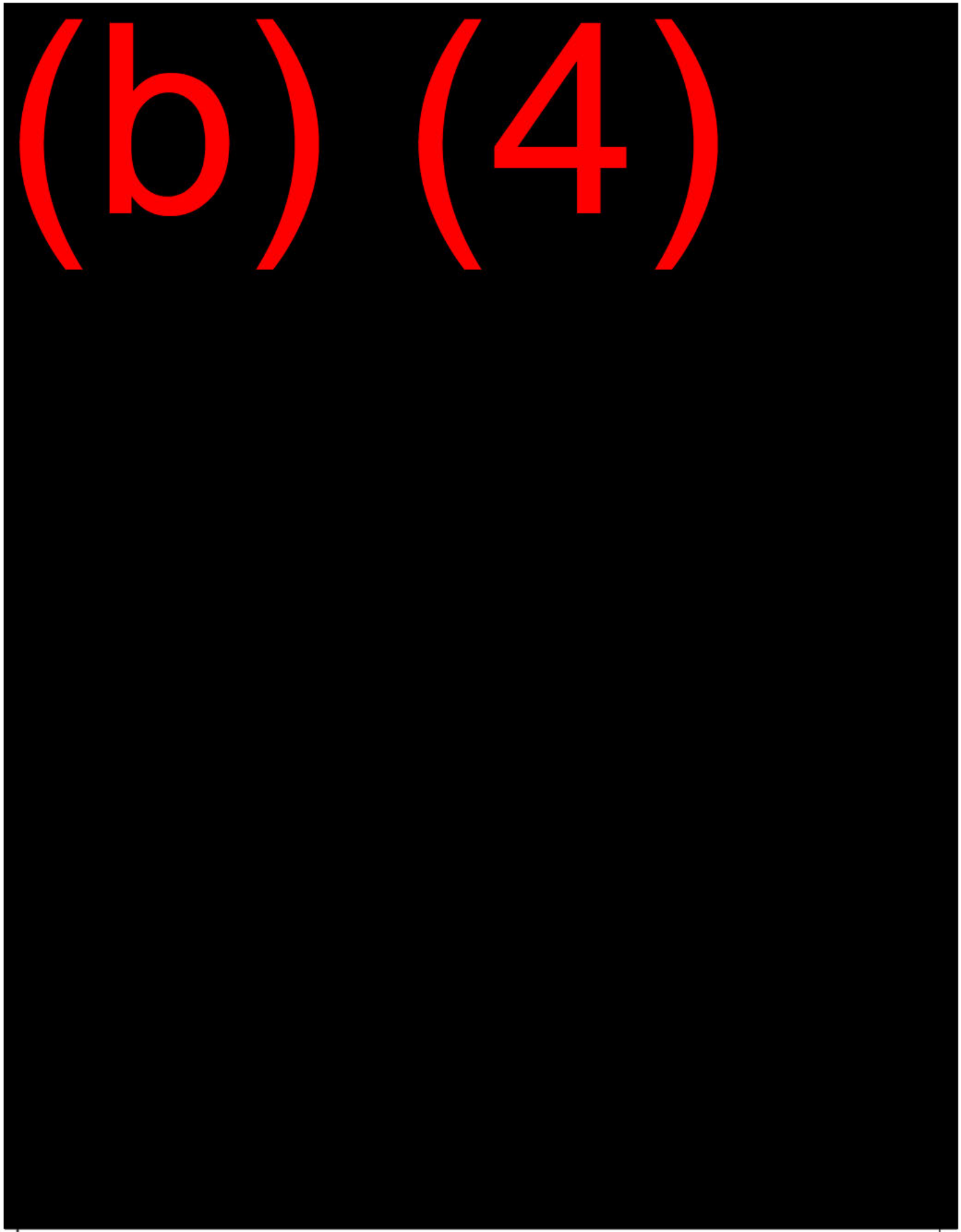
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	REQUIREMENTS/NOTES	QTY	FID. CODE	Verification
1	i-SEEP Payload	• JAXA tool fixture with functional EVA interfaces (2 movable levers) • Square micro-fixture capable if installing a square scoop on it (to use as a tie-down point) • Volumetric PIU • 394mm x 600mm x 900mm volumetric payload attached to i-SEEP	1	IIC	
2	Table	• Must be capable of securing payload mockups using the active/passive mechanism • Shall be able to be reconfigured between fully deployed and fully retracted (or removed) in 5 min (via diver support) • PIP pins may be used to lock table at the fully deployed or fully retracted position. • Table is not required to extend/retract, but this feature is nice to have if it does not significantly increase the cost. • Must have MLI around top and bottom edge of table • Outboard most section of the table shall be diver removable, so this section of the table can be used to support 1G tie-down evaluations.	1	IIC	
3.	Passive mechanism	• Include accurate cutouts to accommodate EVA tethers • Must be capable of securing payload mockups • Include all MLI and associated lanyards	1	IIB	
4.	Active capture mechanism	• functional manual release interface with label • Should have full range of travel as flight unit • Must be capable of securing payload mockups • Include all MLI and associated lanyards •	1	IIB	
5.	Cyclopes tether points	• Attach to active capture mechanism with screws • Should be functional and capable of taking equipment tether loads	2	IIB	

(b) (4)

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4) [redacted]				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1013	08/07/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1013

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1013

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1013

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer
08/14/07 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1013 is to incorporate CR-531to procure two VideoRay PRO-4 with Manipulator and ROV repair kit. The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $125,572.00 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	125,572.00	125,572.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 125,572.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1013

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 531	DX CHANGE REQUEST

CR TITLE: CR_NBL_531_VideoRay_PRO4_Procurement

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
[redacted]	[redacted]	[redacted]

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☑ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Procure two (2) VideoRay PRO-4 with Manipulator and ROV repair kit

7. RATIONALE:
Current VideoRay system is insufficient for sustaining the duration of required operations.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Procurement only CR with VideoRay Pro 4 already on NADE List (NADE-0031) / No Safety Review ot TRR Required:

Pro 4 Standard BASE Configuration (NTSC Video) Quantity = 2

Lateral Thruster Module (Pro 4) Quantity = 2

330ft Neutral tether = 1

Pro 4 Manipulator with standard mounts = 2

Pro 4 Repair kit = 1

Click here to insert a picture Click here to attach a file

Insert item

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	7/22/2014

Rev -

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.2
Signature: Turcotte, Edgar J. (JSC-DX121) Date: 7/28/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Turcotte, Edgar J. (JSC-DX121)		edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$125,600	9/26/2014

AUTHORIZATION TO PROCEED

COTR for CRs with Cost Impact Only
COTR:

OFFICE/BRANCH CHIEF: Date: CCB CHAIR: Date:	Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

Click here to insert a picture Click here to attach a file

Insert item

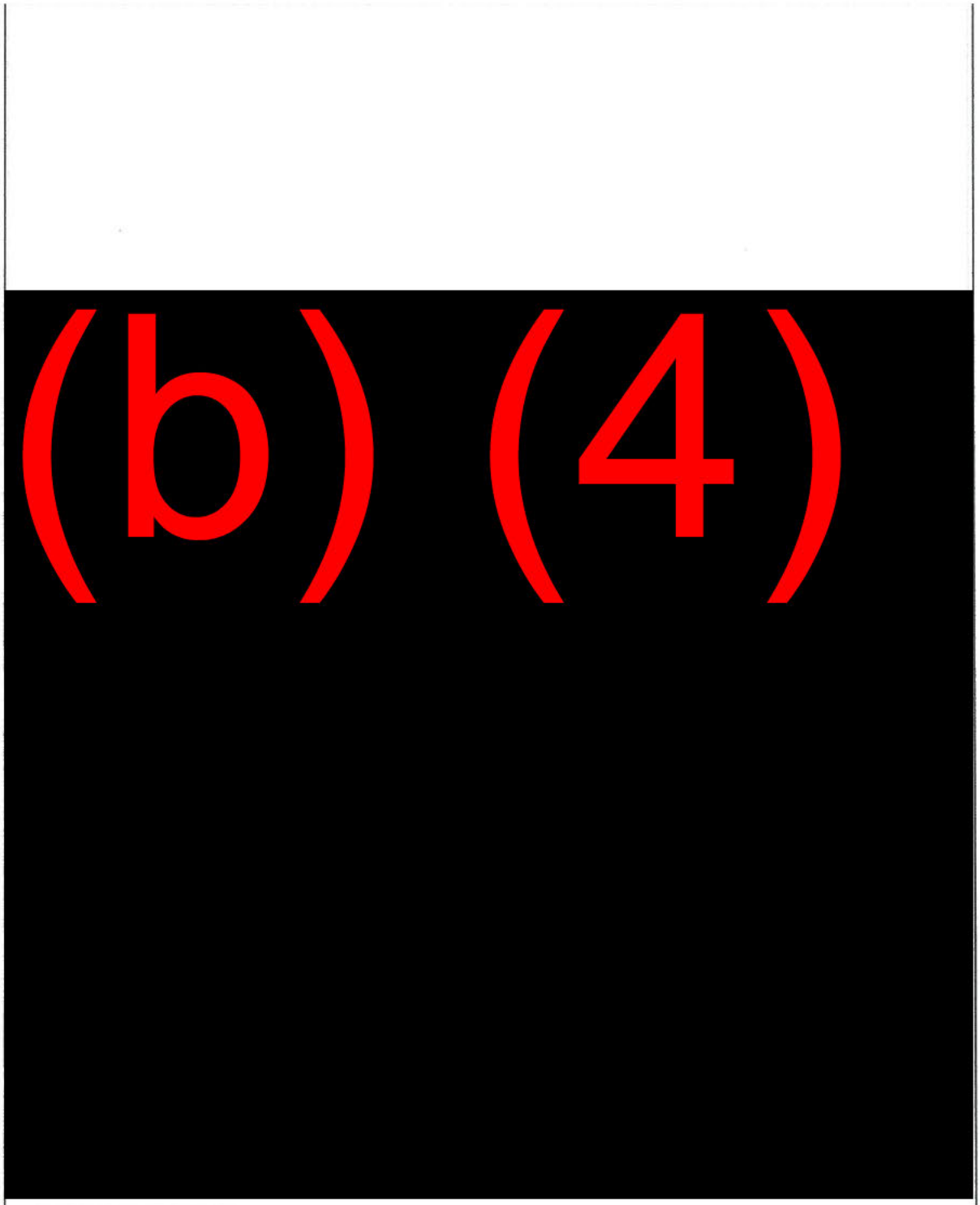
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Pro 4 Standard BASE Configuration (NTSC Video)	EA	2	Inspection		(b) (4)
2.	Lateral Thruster Module	EA	2	Inspection		
3.	330 ft (100m) Neutral Umbilical	EA	1	Inspection		
4.	Manipulator Pro 4 with standard mounts	EA	2	Inspection		
5.	PRO 4 ROV Repair Kit	EA	1	Inspection		

Click here to attach a file

Insert item

SCHEDULE MILESTONES: (complete or reference separate project plan)



Click here to attach a file

Insert item

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

[redacted]

Click here to insert a picture Click here to attach a file

Insert item

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

Click here to insert a picture Click here to attach a file

Insert item

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Insert item

Design	Engineering and Program Support	Management	Technicians	Material
[redacted]				

Insert item

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: Click here to attach a file Insert item	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1014	08/08/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1014

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1014

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1014

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 08/08/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1015 is to incorporate CR-528 to install a 5 Ton air conditioning system to assist in cooling and de-humidify the BGS compressor room. The estimated cost is (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $ 43,943 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	43,943.00	43,943.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 43,943.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1014

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 528	DX CHANGE REQUEST

CR TITLE: BGS Compressor Room VAC

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
[redacted]	[redacted]	[redacted]

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☑ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Install a 5 Ton air conditioning system to assist in cooling and de-humidify the BGS compressor room.

7. RATIONALE:
Air conditioning the BGS compressor room will decrease the temperature and humidity which will help reduce the amount of moisture that will be extracted by the compressors therefore decreasing the required maintenance and upkeep on the BGS Compressors and associated equipment.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No TRR is required per SR2014-334 (7/16/2014) and that this is a turnkey procurement of electrical installation by a JSC qualified Electrical and HVAC Service Company on existing facility electrical dedicated circuits for such.

1)Procure and install a 5 Ton air conditioning unit in building 920B per SOW.

No picture inserted No file attached

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014 Rev	6/11/2014

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.2
Signature: Turcotte, Edgar J. (JSC-DX121) Date: 6/12/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Turcotte, Edgar J. (JSC-DX121)		edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$44,000	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: Date:	**COTR for CRs with Cost Impact Only** COTR: Date:

CCB CHAIR: Date:	

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

No picture inserted No file attached

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verificaion	Verified	Technical Contact
1.	Verify installation of 5 Ton 13 SEER air conditioning unit installed in 920B/BGS compressor room per SOW	Ea	1	Inspection		(b) (4)
2.	Verify function of new air conditioning unit	Ea	1	Inspection		

No file attached

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

No file attached

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

No picture inserted No file attached

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

No picture inserted No file attached

Design	Engineering and Program Support	Management	Technicians	Material
[redacted]				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: No file attached	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1015	08/21/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1015

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
December 30, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1015

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1015

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer
08/21/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1015 is incorporate CR2693, Build PMM Mockup: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $174,373 Work is to be completed by December 30, 2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	174,373.00	174,373.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 174,373.00

14. Quantities In "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1015

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2693	DX CHANGE REQUEST

CR TITLE: Build Permanent Multipurpose Module (PMM) Mockup

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:	5. FUNCTIONAL AREA:
☑ STATION ☐ MPCV ☐ OTHER ☑ FUND CODE: 609524	☐ SVMF ☑ NBL MOCKUP ☐ NBL OPERATIONS ☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
It has been proposed by the ISS Program that the PMM will be relocated to Node 3 forward as part of a large ISS reconfiguration to create two docking ports and two berthing ports on the US Segment. A new volumetric PMM mockup with Common Berthing Mechanism (CBM) attachment capabilities is required to correctly model the ISS post the PMM relocation in 2015.

7. RATIONALE:
In early to mid 2015, the PMM is being relocated to Node 3 forward. Currently, the NBL only has a low fidelity PMM endcone that is not able to interface with a CBM. A new, volumetric PMM is needed to accurately model the new on-orbit configuration. The mockup is required for EVA Development Team testing in November.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See Requirements Chart below

CDR &TRR required per safety Review held on 08/06/2014

No picture inserted No file attached

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
11/7/2014 Rev	7/23/2014

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Haas, John (JSC-DX121) Date: 7/23/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Pelischek, Timothy E. (JSC-EA361)		timothy.e.pelischek@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
FY14 $92,800; FY15 $81,600 Total $174,400	12/30/2014

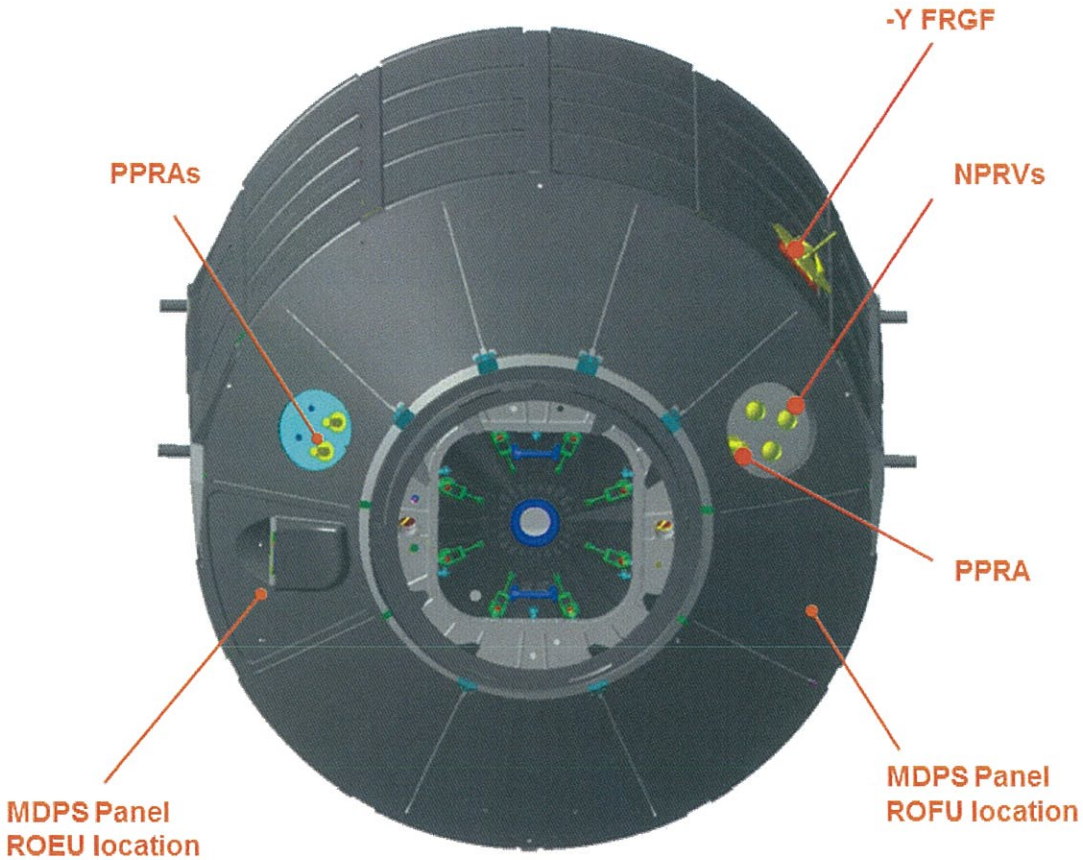
AUTHORIZATION TO PROCEED

	COTR for CRs with Cost Impact Only
OFFICE/BRANCH CHIEF: Turcotte, Edgar J. (JSC-DX121) Date: 8/14/2014 CCB CHAIR: Date:	COTR: Date:

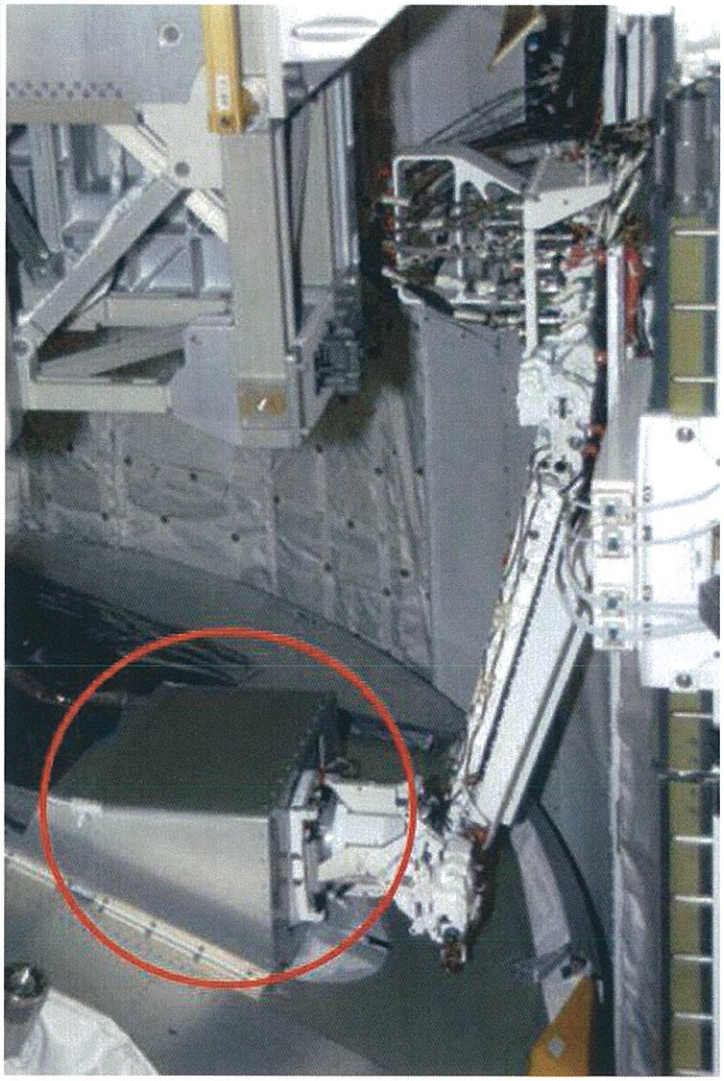
Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):
See Dropbox/: S:\Dropbox\DX PMM CR_Brandon (for ease in locating referenced drawings. They are too large to attach here.

#	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	PMM (Volumetric)	VMDB Dwg ID (b) (4) PMM (b) (4) Overview of PMM.png 031P072_DCN000.pdf	Boeing Model Data Base VMDB	1	III-C	(b) (4)
1a	Keel Trunions This drawing shows the location for installation on the PMM;	(b) (4) (Keel locations) (b) (4) (Keel drawing) (b) (4) C_PMM_Trunion Drawing.pdf	VMDB	5	III-C	
1b	PMM Keel Target Pin		VMDB	1	III-C	
1c	Grapple Fixtures (FRGFs) (b) (4)	(b) (4)	VMDB	2	III-C	
1d	Scuff plate (type A) (b) (4)		VMDB	2	III-C	
1e	Scuff plate (type B) (b) (4)		VMDB	2	III-C	
1f	PMM ROEU receptacle (zenith endcone) Representative housing LO FI. See picture	ROEU receptacle on PMM.jpg	VMDB	1	III-C	
1g	PPRAs and NPRVs (LO FI Cylinders protruding through the endcone). 2 sets, (one with MLI, One recessed)	Overview of PMM.png PPRVs and NPRVs flight photo.jpg	VMDB	2 sets	III-D	
1h	PMM "NBL Active" CBM attachment to NBL "Passive" CBM at Node 3	Reference other mockups that attach via PMM CBM	NBL	1	III-D	
2	Fitcheck Node 3 Fwd Endcone			1	N/A	



031P070_DCN000_PMM Dimensions.pdf
55.5 KB



030P027_C_PMM Trunion Drawing.pdf
157.6 KB

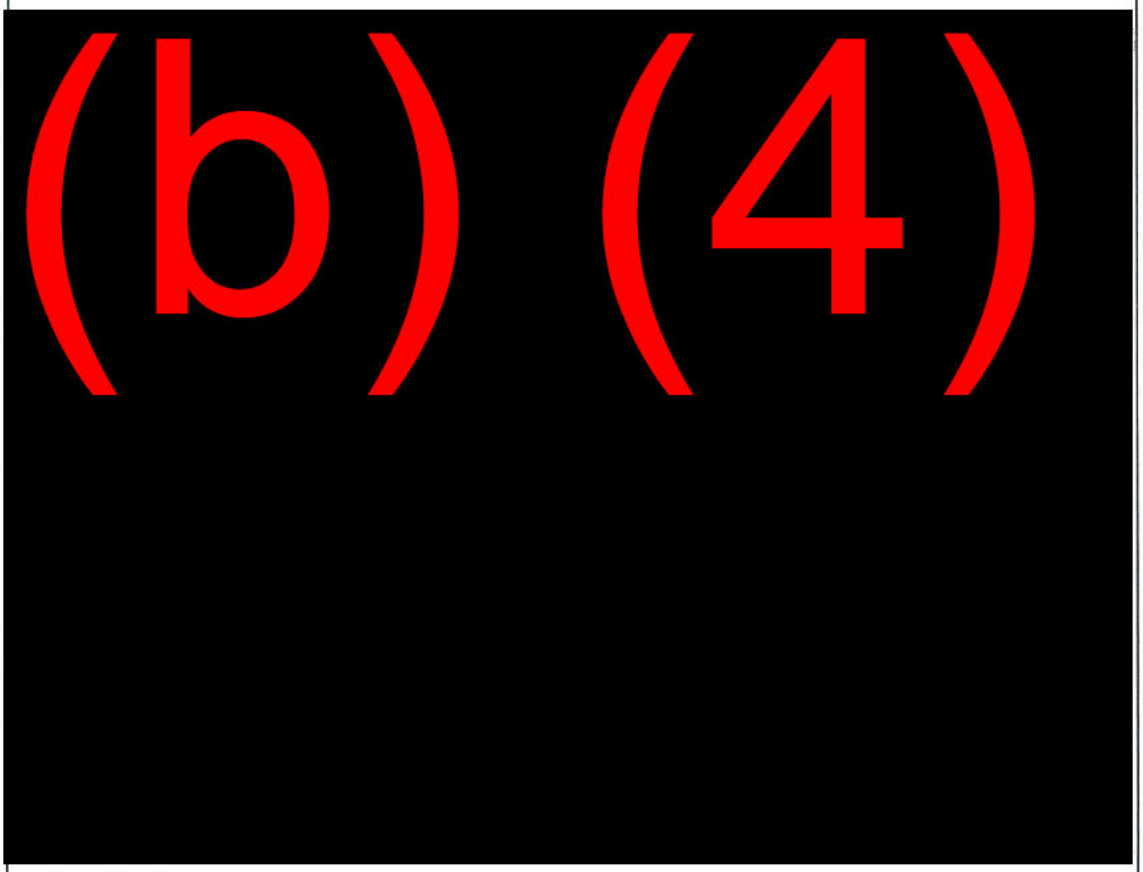
No file attached

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Description	QTY	FID. CODE	Verification
1	PMM (Volumetric)	1	III-C	
1a	Keel Trunions	5	III-C	
1b	PMM Keel Target Pin	1	III-C	
1c	Grapple Fixtures (FRGFs (b) (4) (b) (4)	2	III-C	
1d	Grapple Fixture Scuff plate (type A) 1141P301-401	2	III-C	
1e	Grapple Fixture Scuff plate (type B) (b) (4)	2	III-C	
1f	PMM ROEU (zenith endcone)	1	III-C	
1g	PPRAs and NPRVs	2 sets	III-D	
1h	PMM "NBL Active" CBM attachment to NBL "Passive" CBM at Node 3	1	III-D	
2	Fitcheck Node 3 Fwd Endcone	1	N/A	

No picture inserted No file attached

SCHEDULE MILESTONES: (complete or reference separate project plan)



No file attached

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY14 (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

FY15 (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

No picture inserted No file attached

Design	Engineering and Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

☐ No file attached

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1015A	12/01/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1015A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 31, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1015A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1015A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott Stephens
SCOTT STEPHENS Digitally signed by SCOTT STEPHENS DN: c=US, o=U.S. Government, ou=NASA, ou=PIV, cn=SCOTT STEPHENS 0.9.2342.19200300.100.1.1=sascott Date: 2014.12.01 16:48:53 -06'00'
Contracting Officer — 12/01/2014 Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1015A is to change the delivery date from December 30, 2014 to March 31, 2015. Work is to be completed by March 31, 2015 The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB			

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2693	DX CHANGE REQUEST

CR TITLE: Build Permanent Multipurpose Module (PMM) Mockup

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:	5. FUNCTIONAL AREA:
☑ STATION ☐ MPCV	☐ SVMF ☑ NBL MOCKUP ☐ NBL OPERATIONS
☐ OTHER ☑ FUND CODE: 609524	☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
It has been proposed by the ISS Program that the PMM will be relocated to Node 3 forward as part of a large ISS reconfiguration to create two docking ports and two berthing ports on the US Segment. A new volumetric PMM mockup with Common Berthing Mechanism (CBM) attachment capabilities is required to correctly model the ISS post the PMM relocation in 2015.

7. RATIONALE:
In early to mid 2015, the PMM is being relocated to Node 3 forward. Currently, the NBL only has a low fidelity PMM endcone that is not able to interface with a CBM. A new, volumetric PMM is needed to accurately model the new on-orbit configuration. The mockup is required for EVA Development Team testing in November.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See Requirements Chart below

CDR &TRR required per safety Review held on 08/06/2014

No picture inserted No file attached

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
11/7/2014 Rev	7/23/2014

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Haas, John (JSC-DX121) Date: 7/23/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Pelischek, Timothy E. (JSC-EA361)		timothy.e.pelischek@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
FY14 $92,800; FY15 $81,600 Total $174,400	12/30/2014

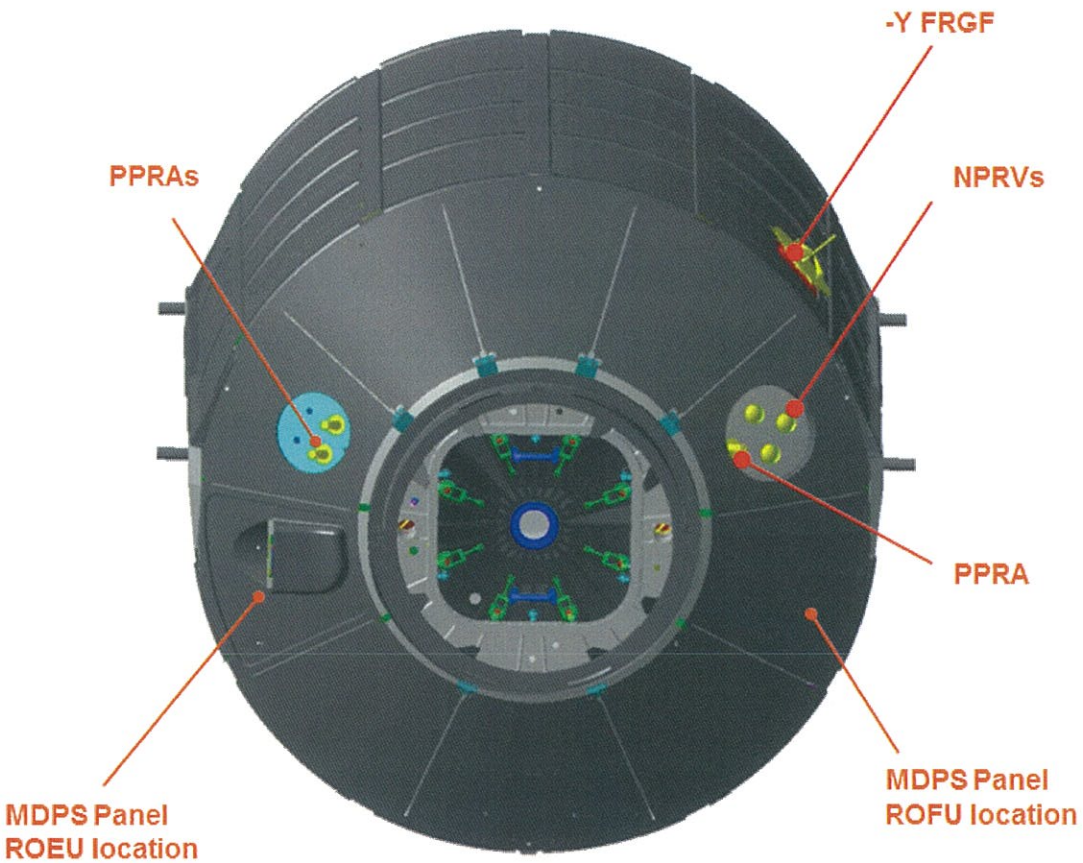
AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: Turcotte, Edgar J. (JSC-DX121) Date: 8/14/2014 CCB CHAIR: Date:	**COTR for CRs with Cost Impact Only** COTR: Date:

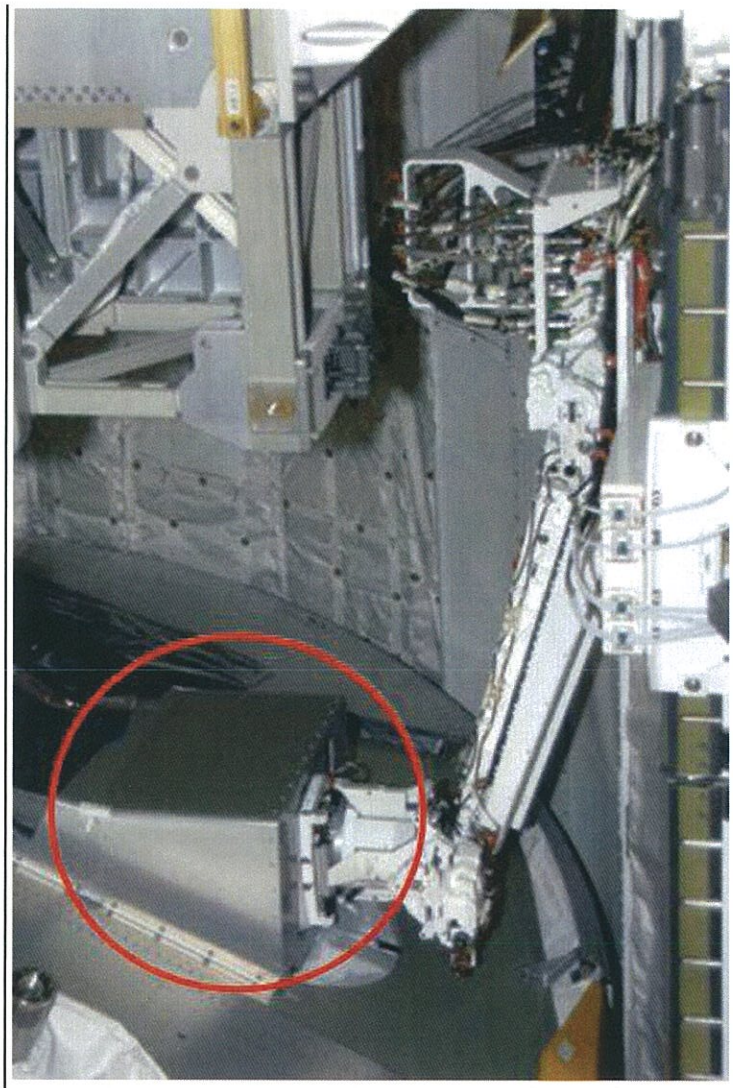
Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):
See Dropbox/: S:\Dropbox\DX PMM CR_Brandon (for ease in locating referenced drawings. They are too large to attach here.

#	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	PMM (Volumetric)	VMDB Dwg (b) (4) PMM (b) (4) Overview of PMM.png 031P072_DCN000.pdf	Boeing Model Data Base VMDB	1	III-C	(b) (4)
1a	Keel Trunions This drawing shows the location for installation on the PMM;	(b) (4) (Keel locations) (b) (4) (Keel drawing) (b) (4) C_PMM_Trunion Drawing.pdf	VMDB	5	III-C	
1b	PMM Keel Target Pin	(b) (4)	VMDB	1	III-C	
1c	Grapple Fixtures (FRGFs) (10019P000-401)		VMDB	2	III-C	
1d	Scuff plate (type A) 1141P301-401		VMDB	2	III-C	
1e	Scuff plate (type B) 1141P301-402		VMDB	2	III-C	
1f	PMM ROEU receptacle (zenith endcone) Representative housing LO FI. See picture	ROEU receptacle on PMM.jpg	VMDB	1	III-C	
1g	PPRAs and NPRVs (LO FI Cylinders protruding through the endcone). 2 sets, (one with MLI, One recessed)	Overview of PMM.png PPRVs and NPRVs flight photo.jpg	VMDB	2 sets	III-D	
1h	PMM "NBL Active" CBM attachment to NBL "Passive" CBM at Node 3	Reference other mockups that attach via PMM CBM	NBL	1	III-D	
2	Fitcheck Node 3 Fwd Endcone			1	N/A	



031P070_DCN000_PMM Dimensions.pdf
55.5 KB



030P027_C_PMM Trunion Drawing.pdf
157.6 KB

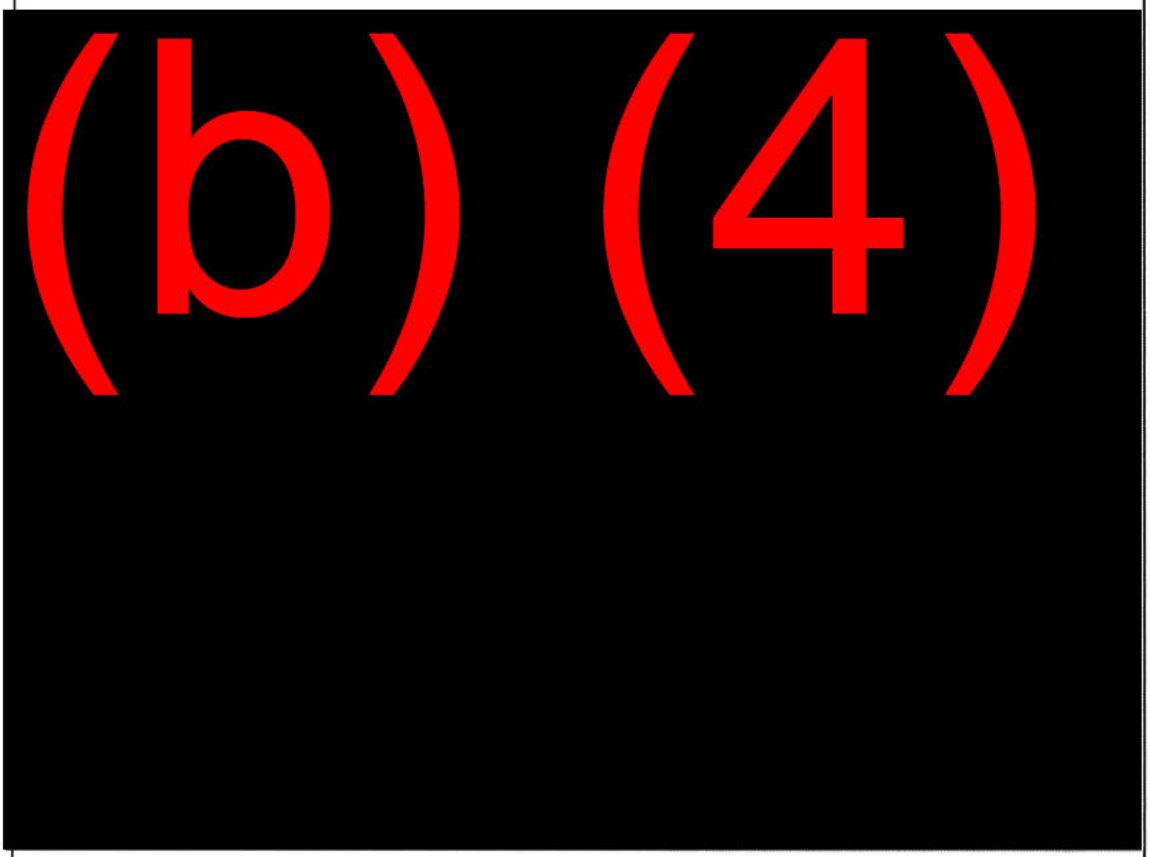
No file attached

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Description	QTY	FID. CODE	Verification
1	PMM (Volumetric)	1	III-C	
1a	Keel Trunions	5	III-C	
1b	PMM Keel Target Pin	1	III-C	
1c	Grapple Fixtures (FRGFs) (10019P000-401)	2	III-C	
1d	Grapple Fixture Scuff plate (type A) 1141P301-401	2	III-C	
1e	Grapple Fixture Scuff plate (type B) 1141P301-402	2	III-C	
1f	PMM ROEU (zenith endcone)	1	III-C	
1g	PPRAs and NPRVs	2 sets	III-D	
1h	PMM "NBL Active" CBM attachment to NBL "Passive" CBM at Node 3	1	III-D	
2	Fitcheck Node 3 Fwd Endcone	1	N/A	

No picture inserted No file attached

SCHEDULE MILESTONES: (complete or reference separate project plan)



No file attached

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY14 (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

FY15 (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

No picture inserted No file attached

Design	Engineering and Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

No file attached

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1015B	04/03/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1015B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
April 3, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1015B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1015B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 04/03/15 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1015B is to provide additional funds to support CR2693A, Build PMM Mockup: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $29,594. Work is to be completed by April 3, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	29,594.00	29,594.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 29,594.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2693 A	DX CHANGE REQUEST

CR TITLE: Build Permanent Multipurpose Module (PMM) Mockup

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

It has been proposed by the ISS Program that the PMM will be relocated to Node 3 forward as part of a large ISS reconfiguration to create two docking ports and two berthing ports on the US Segment. A new volumetric PMM mockup with Common Berthing Mechanism (CBM) attachment capabilities is required to correctly model the ISS post the PMM relocation in 2015.

RevA - Due date moved to 3/31/15 per TDC-01, no cost impact.

- Addition resources were required to remove/re-install/modify PMM mockup due to initial configuration requiring a 180 degree rotation. (b) (4) FY15 impact per TDC-02.

- Activated Risk 1 per TDC-02: Additional effort required for manufacturing than initially estimated. (Final Design changed to meet stress requirements)

- Activated Risk 3 per TDC-02: Additional Design and Engineering support was required; Additional stress analysis and design changes were required to meet NBL Safety Factor Requirements.

7. RATIONALE:

In early to mid 2015, the PMM is being relocated to Node 3 forward. Currently, the NBL only has a low fidelity PMM endcone that is not able to interface with a CBM. A new, volumetric PMM is needed to accurately model the new on-orbit configuration. The mockup is required for EVA Development Team testing in November.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See Requirements Chart below

CDR &TRR required per safety Review held on 08/06/2014

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
11/7/2014	7/23/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Turcotte, Edgar J. (JSC-CX121) Date: 3/22/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Haas, John (JSC-CX121)		john.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	Global	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
FY14 $92,800; FY15 $81,600 Total $174,400 REV A FY14 $92,800; FY15 $111,200 Total $204,000	3/31/2015

AUTHORIZATION TO PROCEED

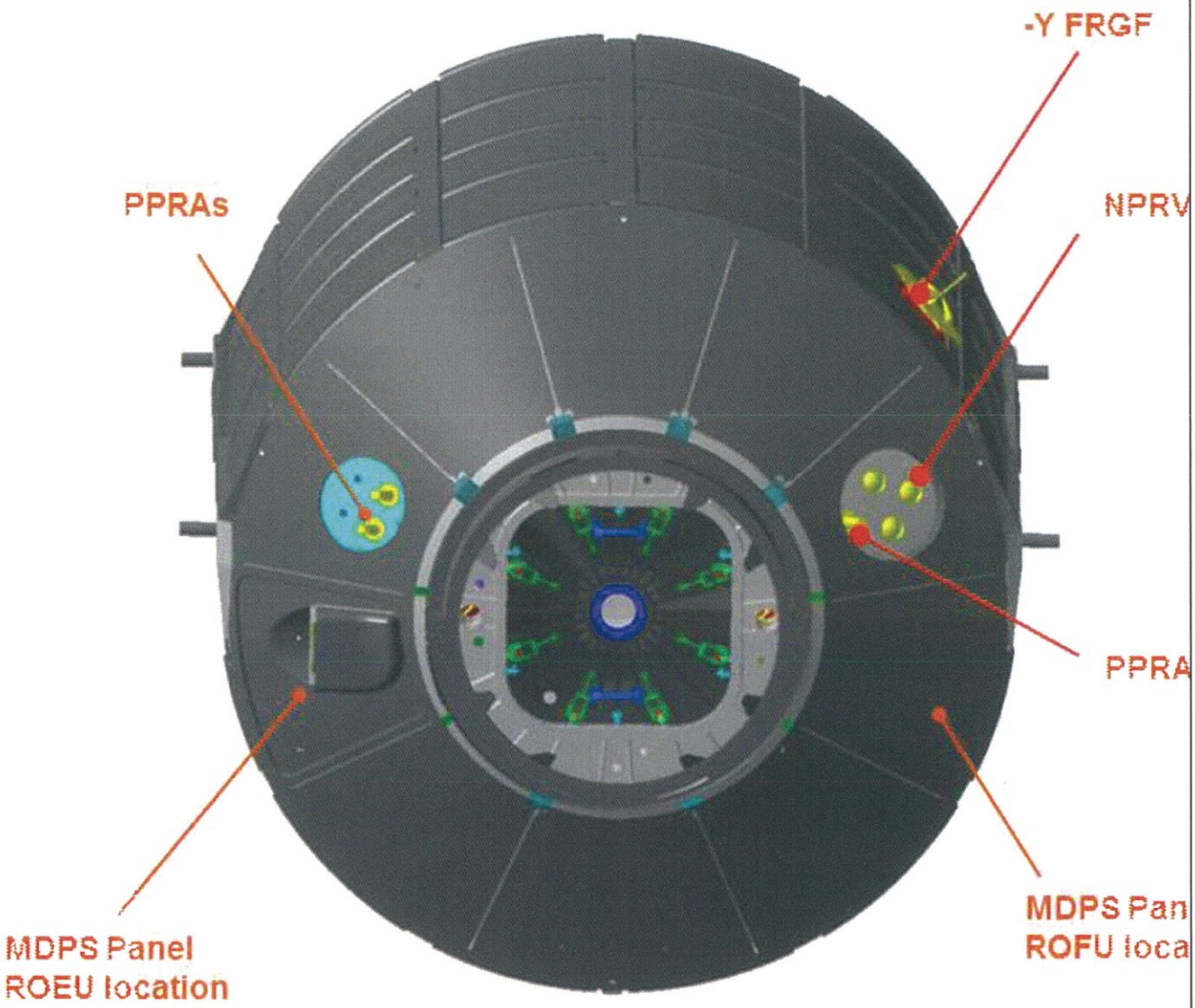
OFFICE/BRANCH CHIEF: Turcotte, Edgar J. (JSC-CX121) Date: 3/23/2015 CCB CHAIR: Murray, Sarah L. (JSC-CX111) Date: 3/23/2015	**COTR for CRs with Cost Impact Only** COTR: Mcdaniel, Randall S. (JSC-CX111) Date: 3/23/2015

Closed by: **Date:**

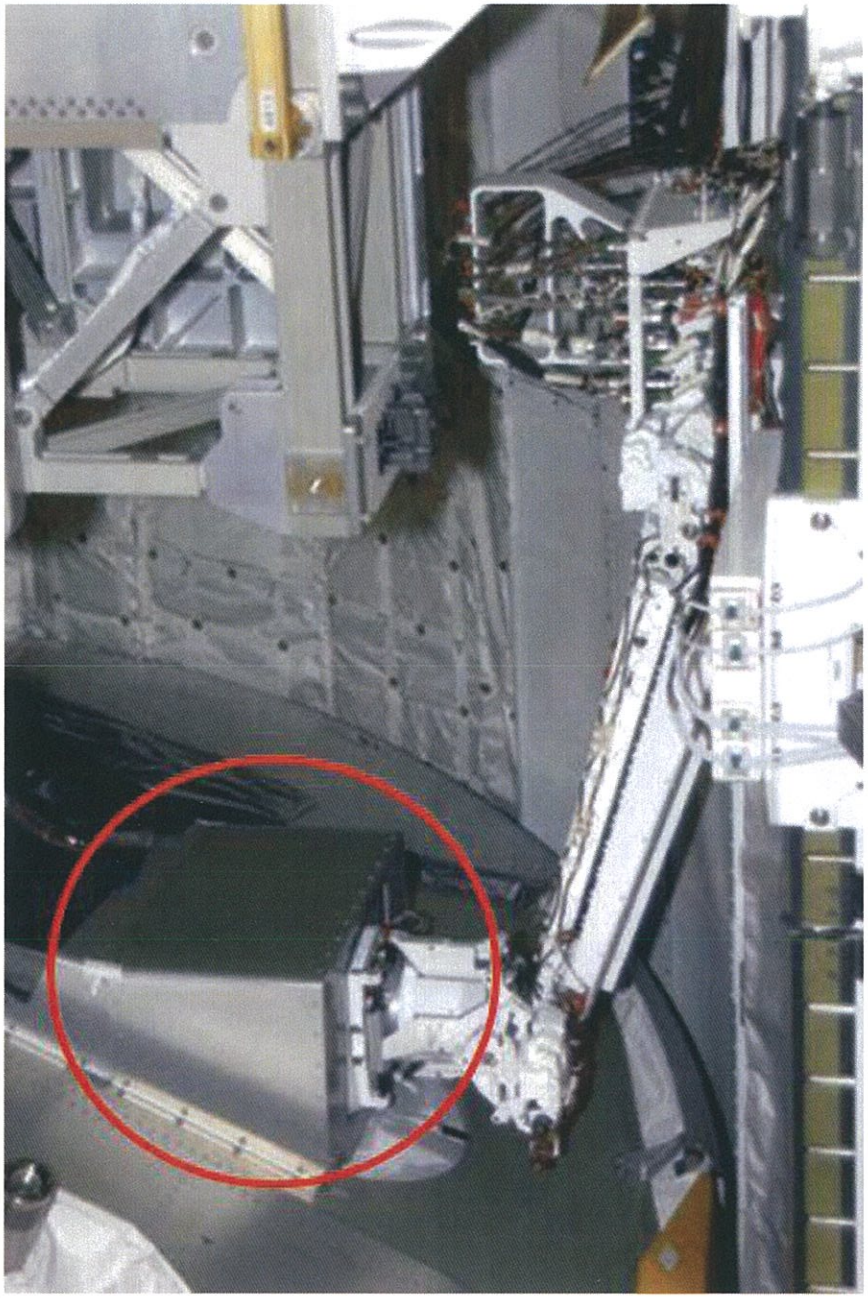
REQUIREMENTS/REFERENCES (cont.):

See Dropbox/: S:\Dropbox\DX PMM CR_Brandon (for ease in locating referenced drawings. They are too large to attach here.

#	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	PMM (Volumetric)	VMDB Dwg ID (b) (4) PMM (b) (4) Overview of PMM.png (b) (4) CN000.pdf	Boeing Model Data Base VMDB	1	III-C	(b) (4)
1a	Keel Trunions This drawing shows the location for installation on the PMM;	(b) (4) (Keel locations) (b) (4) (Keel drawing) (b) (4) PMM_Trunion Drawing.pdf	VMDB	5	III-C	
1b	PMM Keel Target Pin	(b) (4)	VMDB	1	III-C	
1c	Grapple Fixtures (FRGFs) (10019P000-401)		VMDB	2	III-C	
1d	Scuff plate (type A) 1141P301-401		VMDB	2	III-C	
1e	Scuff plate (type B) 1141P301-402		VMDB	2	III-C	
1f	PMM ROEU receptacle (zenith endcone) Representative housing LO FI. See picture	ROEU receptacle on PMM.jpg	VMDB	1	III-C	
1g	PPRAs and NPRVs (LO FI Cylinders protruding through the endcone). 2 sets, (one with MLI, One recessed)	Overview of PMM.png PPRVs and NPRVs flight photo.jpg	VMDB	2 sets	III-D	
1h	PMM "NBL Active" CBM attachment to NBL "Passive" CBM at Node 3	Reference other mockups that attach via PMM CBM	NBL	1	III-D	
2	Fitcheck Node 3 Fwd Endcone			1	N/A	(b) (4)



031P070_DCN000_PMM Dimensions.pdf
Adobe Acrobat Document
55.4 KB



030P027_C_PMM Trunion Drawing.pdf
Adobe Acrobat Document
157 KB

File Attachment

File Attachment

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

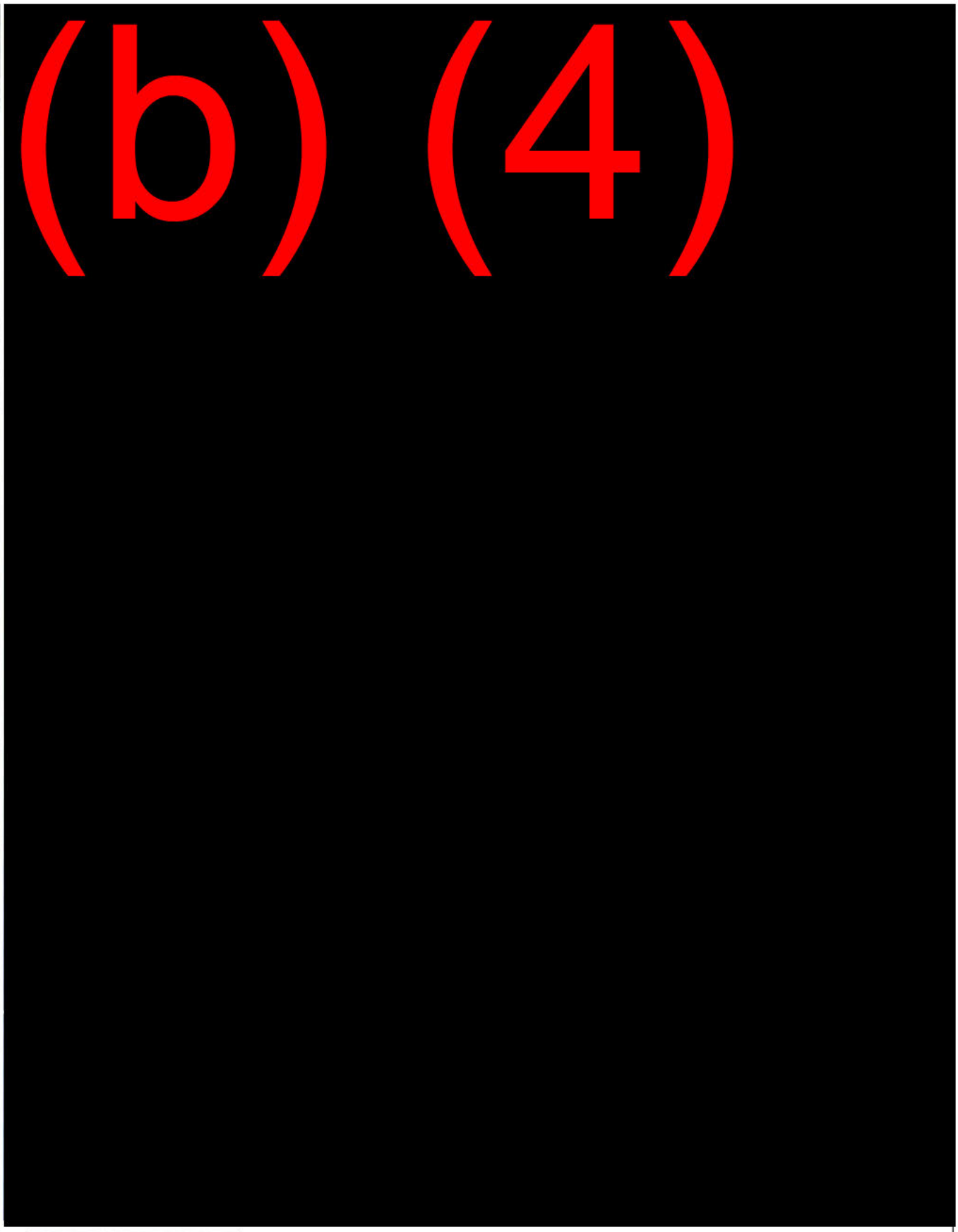
#	Deliverable Description	QTY	FID. CODE	Verification
1	PMM (Volumetric)	1	III-C	
1a	Keel Trunions	5	III-C	
1b	PMM Keel TargetPin	1	III-C	
1c	Grapple Fixtures (FRGFs) (10019P000-401)	2	III-C	
1d	Grapple Fixture Scuff plate (type A) 1141P301-401	2	III-C	
1e	Grapple Fixture Scuff plate (type B) 1141P301-402	2	III-C	
1f	PMM ROEU (zenith endcone)	1	III-C	
1g	PPRAs and NPRVs	2 sets	III-D	
1h	PMM "NBL Active" CBM attachment to NBL "Passive" CBM at Node 3	1	III-D	
2	Fitcheck Node 3 Fwd Endcone	1	N/A	

#	Deliverable Description	QTY	FID. CODE	Verification
1	PMM (Volumetric)	1	III-C	(b) (4)
1a	Keel Trunions	5	III-C	
1b	PMM Keel Target Pin	1	III-C	
1c	Grapple Fixtures (FRGFs) (10019P000-401)	2	III-C	
1d	Grapple Fixture Scuff plate (type A) 1141P301-401	2	III-C	
1e	Grapple Fixture Scuff plate (type B) 1141P301-402	2	III-C	
1f	PMM ROEU (zenith endcone)	1	III-C	
1g	PPRAs and NPRVs	2 sets	III-D	
1h	PMM "NBL Active" CBM attachment to NBL "Passive" CBM at Node 3	1	III-D	
2	Fitcheck Node 3 Fwd Endcone	1	N/A	

File Attachment

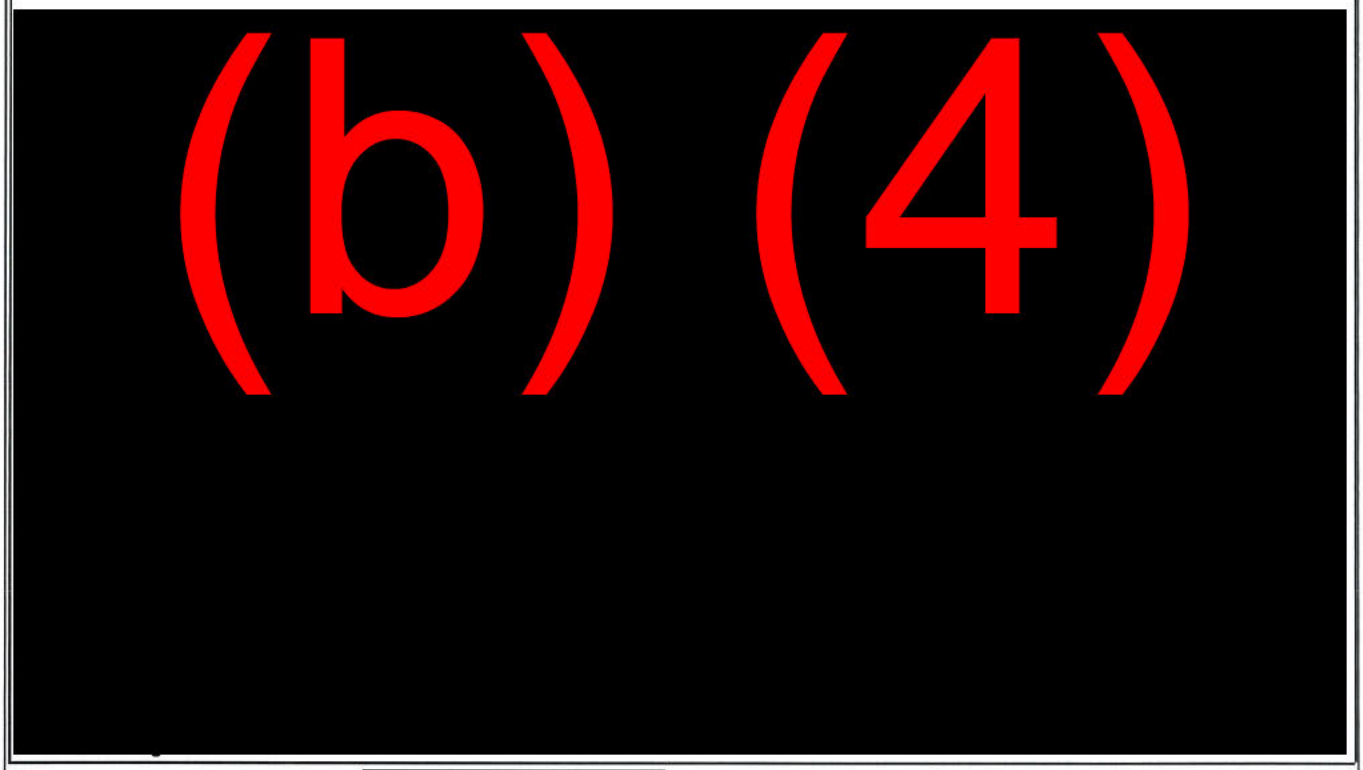
File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



File Attachment

plan)



File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

· FY14: (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

~~FY15~~ (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

FY15: (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

File Attachment

	Engineering and			

Design	Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1016	08/25/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1016

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 19, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1016

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1016

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

CYNTHIA MACLEAN — Contracting Officer
08/25/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1016 is to incorporate CR2578A, Build New Stanchion Mount ORU Cover Trainer: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $37,021 Work is to be completed by November 19, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	37,021.00	37,021.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 37,021.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1016

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2578A	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)		@nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (609524)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

1. Build a high fidelity (1-G only) training mockup of the modified Stanchion Mount ORU Cover primary panel, now an assembly comprised of two pieces (Fwd/Cover A and Aft/Cover B). Use Front plate (b) (4), Stanchion assembly (b) (4), Stanchion handle (b) (4) (b) (4), Slider release (b) (4), Slide lock assembly (b) (4), Bumpers (b) (4), and Tether loop assembly (b) (4) from the existing class III stanchion cover mockup. Add snap fasteners to the Front plate in a quantity of 6 ea. Snaps can be COTS items.
2. Modify the existing low fidelity Stanchion on Stanchion Mount ORU Cover to accommodate the low fidelity Main Bus Switching Unit (MBSU) mockup without pulling the cover paddle. Currently, the cover paddle has to be pulled out in order to install the cover onto the MBSU.
3. Build high fidelity (1-G only) Thermal Garments:
   1. 3-Panel Thermal Garment (two parts)
   2. 2-Panel Thermal Garment (two parts)
   3. Build IIB fidelity connector cover (b) (4) in a quantity of 1 ea.
   4. Add snap fasteners to mid ORU cove (b) (4) and to Secondary ORU cover (b) (4) (b) (4)

REV A: Incorporates SCIF's 1 & 2 and extends work into FY15.
SCIF 1 - (b) (4) to modify the secondary stanchion to accommodate the lo-fi MBSU.
SCIF 2 - (b) (4) Adds sliders with locking capabilities, extend due date to 8/7/14.

7. RATIONALE:
The original Stanchion Mount ORU Cover does not accommodate the MBSU mockup. A modified primary panel was designed and built. It is scheduled to launch to ISS on Space-X3. A high fidelity training unit is necessary to train crewmembers for the on-orbit hardware.

CR NO.: 2578A	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Reference:

- http://topssnet.ndc.nasa.gov/topssnet2/predive-test/wiki/index.php?title=Stanchion_Mount_ORU_Cover
- ASSEMBLY AND OPERATIONS SUPPORT PLAN - EVA ORU COVER KIT MODIFICATION (EDMS)
- REQUIREMENTS/VERIFICATION FOR MODIFIED STANCHION MOUNT CLASS ORU PROTECTIVE COVER (EDMS)

Primary Panel (new)

- Panel Assy, FWD, Primary - ORU Cover (b) (4)
  - Operations Nomenclature - EVA ORU Cover - A
  - Located on the forward portion of the cover that covers blind mate connectors
- Panel Assy, AFT, Primary - ORU Cover (b) (4)
  - Operations Nomenclature - EVA ORU Cover - B
  - Located on the aft portion of the cover with the stanchion

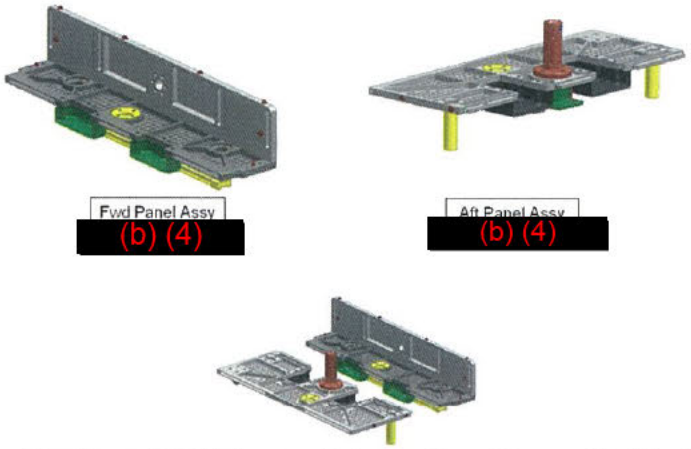


Figure 1: Stanchion Mount ORU Cover – Primary Panel Assembly (Fwd & Aft panels)

Build high fidelity (IIB) (1-G only) Thermal Garments:

1. 3-Panel Thermal Garment (Two Parts, Assy (b) (4)
2. 2-Panel Thermal Garment (Two Parts, Assy
3. Build IIB fidelity connector cover (b) (4) in a quantity of 1 ea.
4. Add snap fasteners to mid ORU cover (b) (4) and to Secondary ORU cover (b) (4) (b) (4)

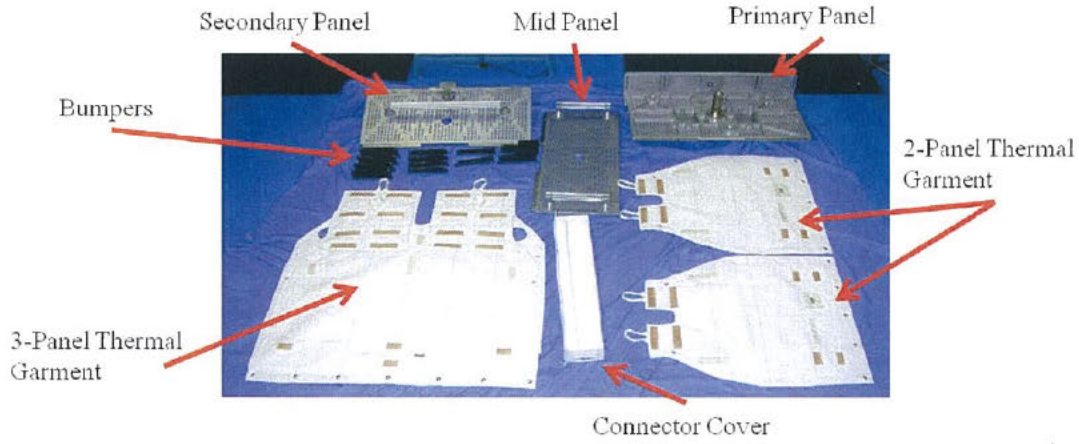


Figure 2: Stanchion Mount ORU Cover Components

CR NO.: 2578A	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
September 20, 2013	**May 31, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Ed Turcotte Date:6/12/13 in ICE

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed J. Turcotte	281.483.5730	edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** [redacted]

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$76,500 (FY13 - $29,300; FY14 – $47,200)~~ **Rev A $113,700** (FY13-$29,300, FY14-$56,700, FY15-$27,700)	~~12/4/2013~~ **Rev A:** 11/19/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2578A	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	High Fidelity Stanchion Mount ORU Cover	http://topssnet.ndc.nasa.gov/topssnet2/predive-test/wiki/index.php?title=Stanchion_Mount_ORU_Cover ASSEMBLY AND OPERATIONS SUPPORT PLAN - EVA ORU COVER KIT MODIFICATION (EDMS) REQUIREMENTS/VERIFICATION FOR MODIFIED STANCHION MOUNT CLASS ORU PROTECTIVE COVER (EDMS)	DX3 – WIKI EDMS EDMS	1	II.B	(b) (4)
1a	Panel Assy, FWD, Primary - ORU Cover (Ops Nom - EVA ORU Cover - A) Note: Located on the forward portion of the cover that covers blind mate connectors	(b) (4)	VMDB	1	II.B	
1b	Panel Assy, AFT, Primary - ORU Cover Located on the aft portion of the cover with the stanchion		VMDB	1	II.B	
2	Verify/add functionality of the low fidelity cover to interface the MBSU mockup is necessary for crew training in the NBL and for EVA procedure development. NBL part numbers (b) (4) (b) (4)		Attached	1	III.B	
3	Build high fidelity (1-G only) Thermal Garments					
3a	3-Panel Thermal Garment	(b) (4)	VMDB	1	II.B	
3b	2-Panel Thermal Garment		VMDB	1	II.B	
	REV A Additions					
4.	Modify the secondary stanchion on the existing lo-fi stanchion mount ORU Cover to accommodate the lo-fi MBSU Mockup without pulling the cover paddle on the secondary stanchion.		VMDB	1	II.B	
5.	Add sliders with locking capabilities to Primary and Secondary Stanchions on lo-fi Stanchion Mount ORU Cover Trainers.		VMDB	1	II.B	

CR NO.: 2578A	DX CHANGE REQUEST

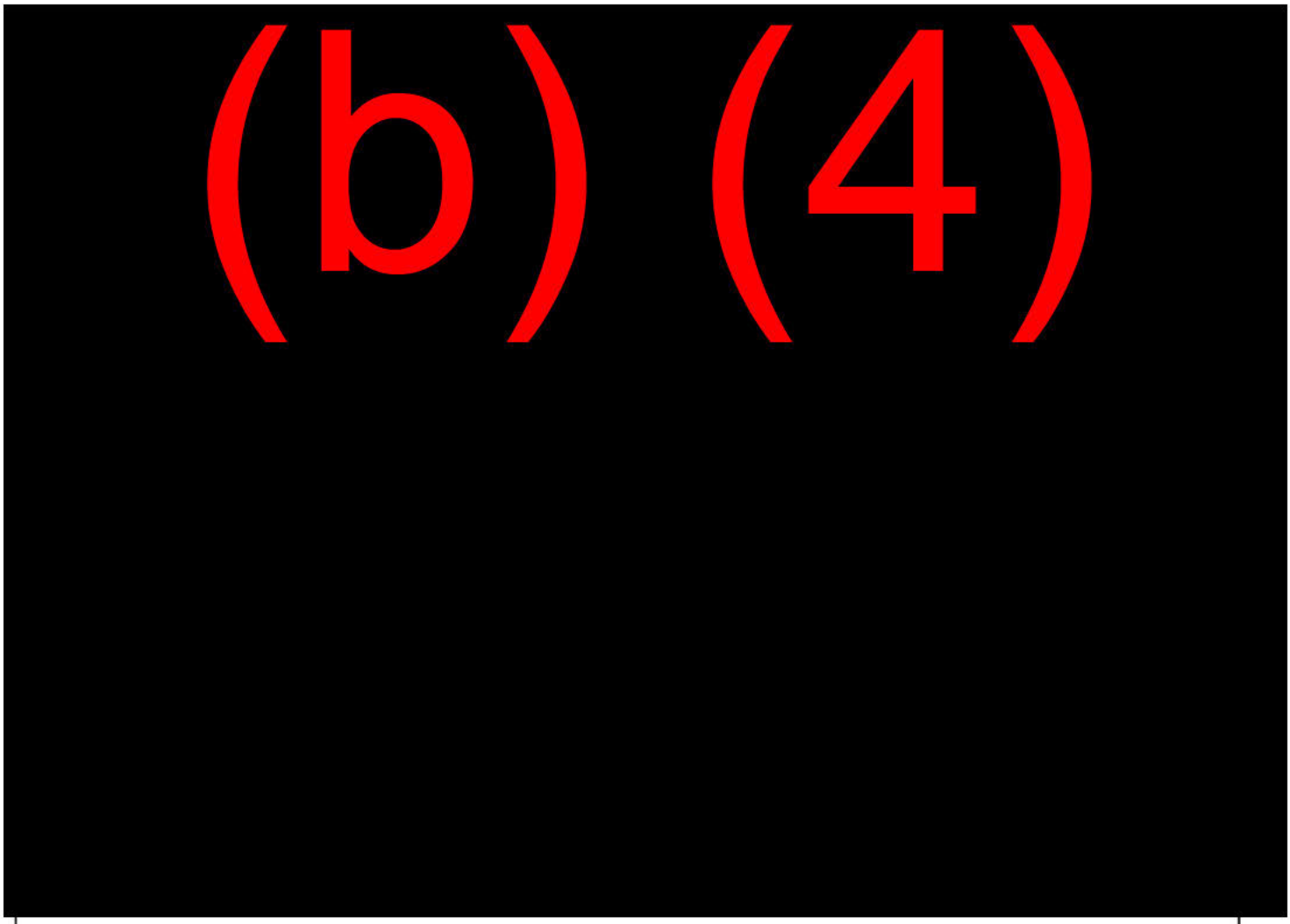
CR TITLE: Build New Stanchion Mount ORU Cover Trainer

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

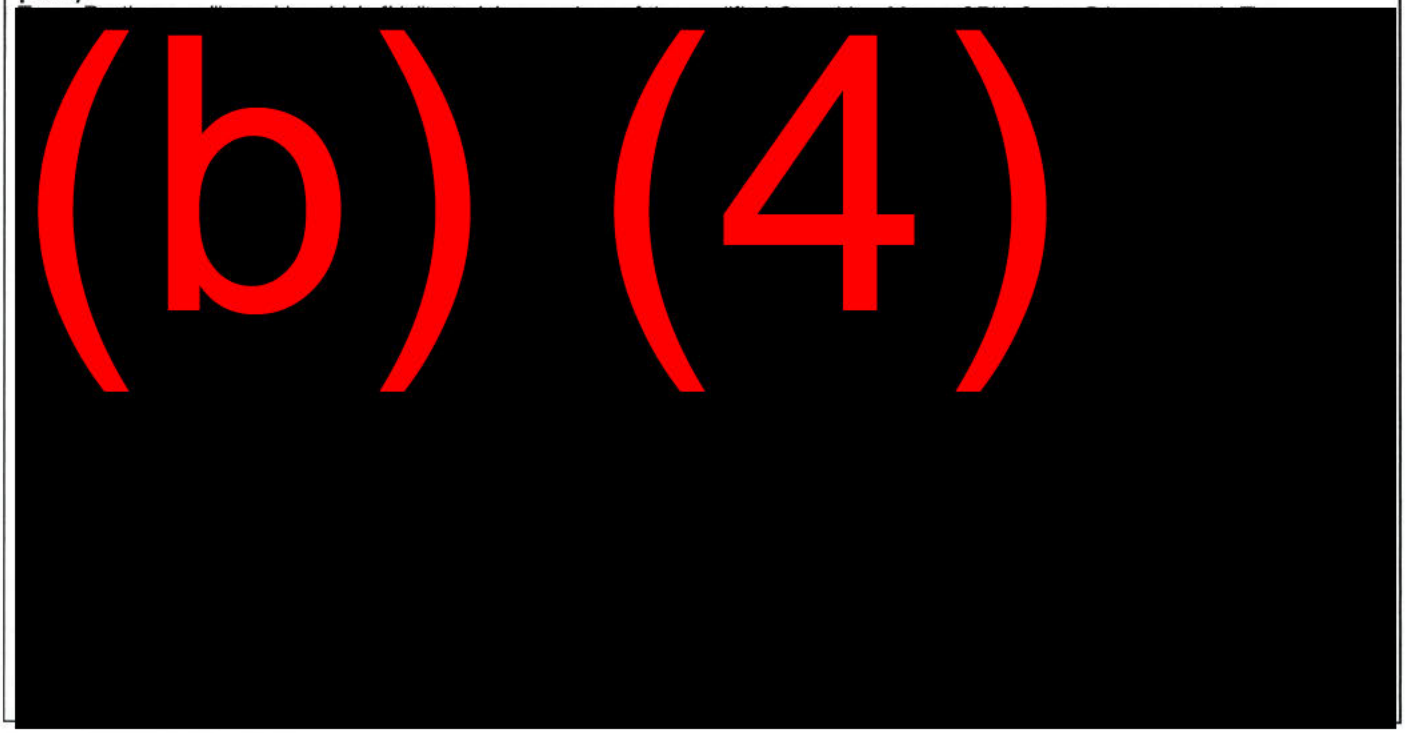
Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Build a high fidelity (1-G only) training mockup of the modified Stanchion Mount ORU Cover primary panel, now an assembly comprised of two pieces (Fwd/Cover A and Aft/Cover B). Use Front plate (b) (4) Stanchion assembly (b) (4) Stanchion handl (b) (4) Slider release (b) (4) , Slide lock assembl (b) (4) Bumper (b) (4) , and Tether loop assembly (b) (4)) from the existing class III stanchion cover mockup. Add snap fasteners to the Front plate in a quantity of 6 ea. Snaps can be COTS items.		Inspection	A high fidelity (1-G only) training mockup of the modified Stanchion Mount ORU Cover primary panel, an assembly comprised of two pieces (Fwd/Cover A and Aft/Cover B). The following items were used from the existing class III mockup - Front plate (b) (4) Stanchion assembly (b) (4) (b) (4) Stanchion handle (b) (4) Slider release (b) (4) Slide lock assembly (b) (4) (b) (4) , Bumpers (b) (4) (b) (4) and Tether loop assembly (b) (4) COTS snap fasteners were added to the Front plate in a quantity of 6 ea.		
2	Modify the existing low fidelity Stanchion on Stanchion Mount ORU Cover to accommodate the low fidelity Main Bus Switching Unit (MBSU) mockup without pulling the cover paddle. Currently, the cover paddle has to be pulled out in order to install the cover onto the MBSU.		Inspection	The existing low fidelity Stanchion on Stanchion Mount ORU Cover was modified to accommodate the low fidelity Main Bus Switching Unit (MBSU) mockup without pulling the cover paddle.		
3	Build high fidelity (1-G only) Thermal Garments: 3-Panel Thermal Garment (two parts) 2-Panel Thermal Garment (two parts) Build IIB fidelity connector cover (b) (4) (b) (4) in a quantity of 1 ea. Add snap fasteners to mid ORU cove (b) (4) (b) (4) , and to Secondary ORU cover (b) (4)		Inspection	High fidelity (1-G only) Thermal Garments: 3-Panel Thermal Garment (two parts) 2-Panel Thermal Garment (two parts) IIB fidelity connector covers (b) (4) (b) (4) in a quantity of 1 ea. Snap fasteners were added to mid ORU cover (b) (4)) and to Secondary ORU cover (P/N (b) (4)		
4	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact		
5	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
6	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection			

CR NO.: 2578A	DX CHANGE REQUEST
CR TITLE: Build New Stanchion Mount ORU Cover Trainer	
SCHEDULE MILESTONES: (complete or reference separate project plan)	

(b) (4)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Project Support	Management	Technicians	Material
FY13		(b) (4)			
~~FY14~~					
FY14 REV A					
FY15 REV A					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1017	09/29/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1017

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1017

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1017

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

Cynthia W Maclean
Contracting Officer — 09/29/14 Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1017 is incorporate CR2725, FY15 Landing and Recovery Support The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $359,312 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government	1	JOB	359,312.00	359,312.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 359,312.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 1017

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2725	DX CHANGE REQUEST

CR TITLE: FY15 Orion Landing & Recovery Support

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4) [redacted]	[redacted]	[redacted]@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☑ MPCV
☐ OTHER ☐ FUND CODE: 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☑ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Provide support to the MPCV Program, and specifically the Orion Landing and Recovery efforts. This CR will fund FY15 labor for an NBL Flight Lead and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support for multiple mockup fabrication/modification requests and other ancillary equipment items associated with Navy Recovery Team efforts.

7. RATIONALE:

The NBL is to be used in multiple training evolutions for Navy swimmers supporting the MPCV Program. Preparatory in-water evaluations are planned throughout the year and Flight Lead support both in-house and on-station are required for testing and procedural verification.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Provide material procurement, fabrication support, and time and travel as required for support of landing and recovery efforts and as directed by Requestor. Direction will be coordinated through the NASA POC to ensure alignment of tasking from Ground Systems Development and Operations (GSDO) Program.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	9/16/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.3
Signature: Turcotte, Edgar J. (JSC-DX121) Date: 9/18/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Honeycutt, Howell {Lane} (JSC-DX121)	832-247-4732	howell.l.honeycutt@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$359,400	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

COTR for CRs with Cost Impact Only
COTR:

Date:

Date:

CCB CHAIR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

	Description	~ date	Technical Contact
1	PORT seal / pressure test	Oct 2014	(b) (4)
2	Upright Contingency Ops @ NBL	Oct 2014	
3	URT5 Commercial Ship @ San Diego	Oct 2014	
4	EFT-1 Support @ San Diego	Nov/Dec 2014	
5	Post EFT-1 Lessons Learned @ KSC	Jan 2015	
6	Recovery Support Equipment Development @ Denver	Feb 2015	
7	Rescue Courseware Development @ NBL	Mar 2015	
8	Recovery Exercise Orientation @ NBL	June 2015	
9	Recovery Exercise @ San Diego	Jun/July 2015	
10	Technical Interchange Meeting @ KSC	July 2015	

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

This CR provides labor and material to support Landing and Recovery efforts as directed by CR requestor.

A requirements verification matrix will be used to track requirements and denote verification / acceptance.

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY15 total - $359,400.

[redacted]

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

[redacted]

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1017A	01/20/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1017A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1017A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1017A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens
Contracting Officer — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1017A is to incorporate CR2725A FY15 Landing and Recovery Support: The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $124,816 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	124,816.00	124,816.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 124,816.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY SCOTT STEPHENS
Authorized U.S. Government Representative — Date: 01/20/2015

CR NO.: 2725A	DX CHANGE REQUEST

CR TITLE: FY15 Orion Landing & Recovery Support

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Honeycutt, Howell {Lane} (JSC-CX121)	x48174	howell.l.honeycutt@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☑ MPCV
☐ OTHER ☐ FUND CODE 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☑ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program, and specifically the Orion Landing and Recovery efforts. This CR will fund FY15 labor for an NBL Flight Lead and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support for multiple mockup fabrication/modification requests and other ancillary equipment items associated with Navy Recovery Team efforts.

(Rev A) - Consists of procurements for EFT-1 recovery, travel reallocations, and labor associated with the increased procurements and contingency uprighting operations.

7. RATIONALE:
The NBL is to be used in multiple training evolutions for Navy swimmers supporting the MPCV Program. Preparatory in-water evaluations are planned throughout the year and Flight Lead support both in-house and on-station are required for testing and procedural verification.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Provide material procurement, fabrication support, and time and travel as required for support of landing and recovery efforts and as directed by Requestor. Direction will be coordinated through the NASA POC to ensure alignment of tasking from Ground Systems Development and Operations (GSDO) Program.

No picture inserted No file attached

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015 Rev A	9/16/2014

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.3
Signature: Turcotte, Edgar J. (JSC-DX121) Date: 9/18/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Honeycutt, Howell {Lane} (JSC-DX121)	832-247-4732	howell.l.honeycutt@nasa.gov

[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$359,400~~ (Rev A) FY15 $484,500	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:	COTR for CRs with Cost Impact Only COTR:

Turcotte, Edgar J. (JSC-DX121) Date: 9/28/2014 CCB CHAIR: Murray, Sarah L. (JSC-DX111) Date: 9/30/2014	Sinclair, Susan K. (JSC-DX121) Date: 9/30/2014

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

	Description	~ date	Technical Contact
1	PORT seal / pressure test	Oct 2014	(b) (4)
2	Upright Contingency Ops @ NBL	Oct 2014	
3	(RevA) ~~URT5 Commercial Ship @ San Diego~~ Weld support on USNS Salvor	~~Oct~~ Nov 2014	
4	EFT-1 Support @ San Diego	Nov/Dec 2014	
5	Post EFT-1 Lessons Learned @ KSC	Jan 2015	
6	Recovery Support Equipment Development @ Denver	Feb 2015	
7	Rescue Courseware Development @ NBL	Mar 2015	
8	Recovery Exercise Orientation @ NBL	June 2015	
9	Recovery Exercise @ San Diego	Jun/July 2015	
10	Technical Interchange Meeting @ KSC	July 2015	
11	(RevA) Collar Stress Testing @ JSC - bldg 13	OCT 2014	

No picture inserted No file attached

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

This CR provides labor and material to support Landing and Recovery efforts as directed by CR requestor.

A requirements verification matrix will be used to track requirements and denote verification / acceptance.

No picture inserted No file attached

SCHEDULE MILESTONES: (complete or reference separate project plan)

No picture inserted

(b) (4)

No picture inserted

No picture inserted

No file attached

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

No picture inserted No file attached

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)
FY15 total - ~~$359,400~~ (Rev A) $484,500

(b) (4)

No picture inserted No file attached

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: No file attached	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1018	11/06/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1018

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 18, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1018

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1018

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott Stephens

SCOTT STEPHENS — Digitally signed by SCOTT STEPHENS DN: c=US, o=U.S. Government, ou=NASA, ou=PIV, cn=SCOTT STEPHENS, 0.9.2342.19200300.100.1.1=scott Date: 2014.11.07 14:51:24 -06'00'

Contracting Officer — 11/07/2014 Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1018 is to incorporate CR2738, Orion Mockup Upgrades FY15: The estimated cost is (b) (4) The estimated award f The estimated incenti The total value of this Delivery Order is $54,654 Work is to be completed by September 18, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	54,654.00	54,654.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 54,654.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2738	DX CHANGE REQUEST

CR TITLE: Orion Mockup Upgrades FY15

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	Global

4. PROGRAM/PROJECT:

☐ STATION ☑ MPCV

☐ OTHER ☐ FUND CODE: 747797

5. FUNCTIONAL AREA:

☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS

☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Provide Building 9 Orion mockup and control area upgrades.

7. RATIONALE:

Orion mockups and control area need update to reflect changing flight designs for human-in-the- loop development evaluations and upgraded outfitting to support mockup conversion for future use as a crew trainer.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Provide material procurement, engineering and fabrication resources required to support the Orion Cockpit Working Group (CWG) for the following activities:

1. Processing of one CR revision.

2. Fabrication and installation of a functional cypher-lock door assembly at the entrance to the Medium Fidelity Mockup (MFM) access platform stairs as shown in drawing 24-100-10-0051, using materials purchased under CR-2711.

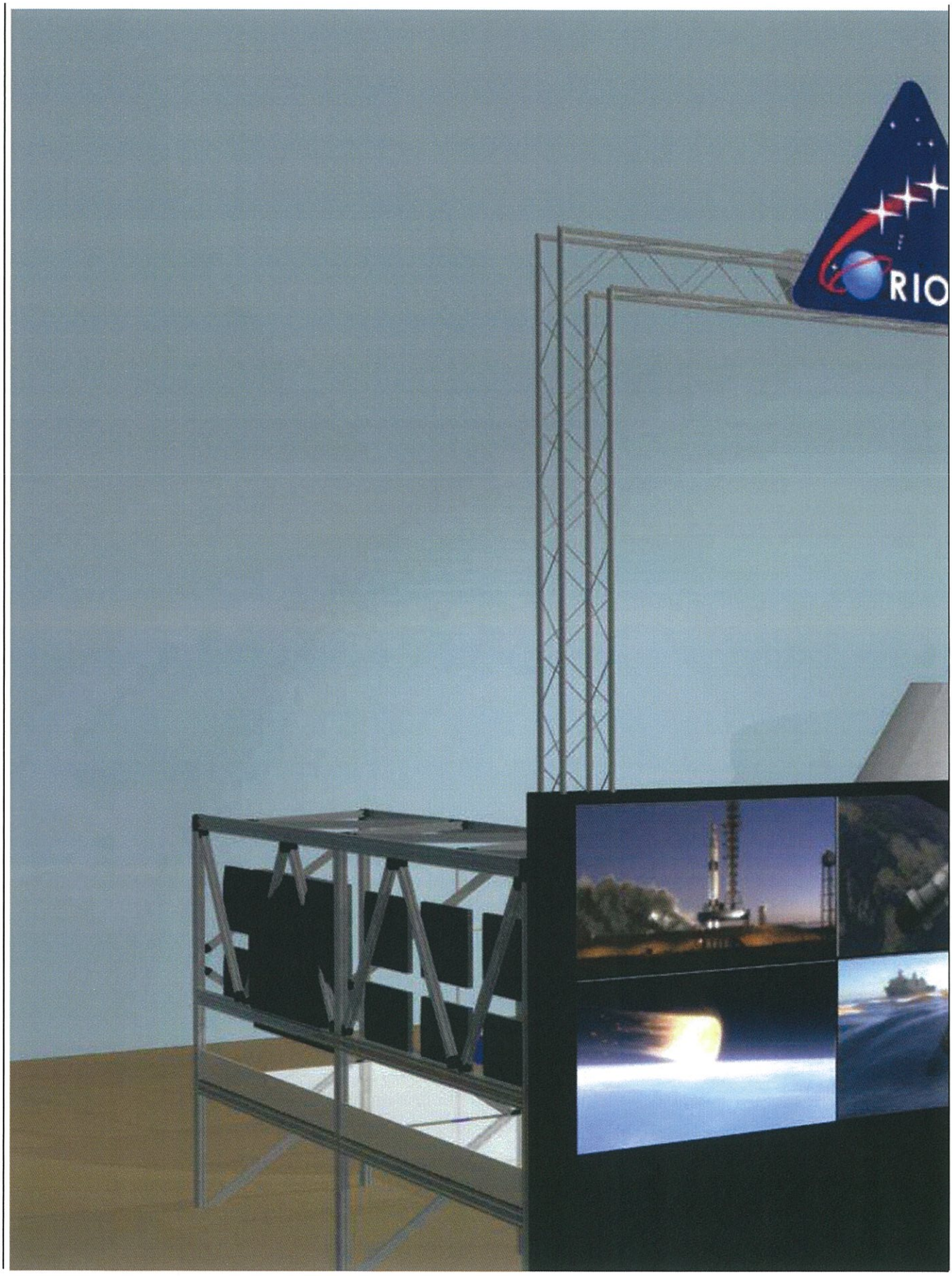
~~3. Design, fabrication and installation of aluminum SAW/PAW/ECLS panels to reflect the current LM design (such as mocked up in the Low Fidelity Mockup). CWG will provide CAD geometry to specify panel dimensions and locations. Panel sub-structure can be non flight-like, but panel fasteners should appear in flight locations and be of type specified by CWG.~~ (removed before approval)

4. Design, fabrication and installation of a single combined lighting system control module to replace the existing dual module control system. CWG will provide details regarding size, shape, placement and controls.

5. Provide design and drawings to ~~for Reroute of the lighting system wiring to locations between the inner and outer mold lines (I/OML), and~~ relocate light assemblies to latest flight locations~~. Routing behind the panels can be non flight-like. Wiring should penetrate the IML close to the light connections to minimize visibility.~~ Existing lights and power supply will be utilized. Existing light locations will be verified against model and lights will be relocated to new locations, as applicable. (edited before approval)

6. Assembly and installation of a digital display and console. Design and materials, excluding fasteners, are to be supplied by CWG. Includes removal and excess of existing BFCR operations console and relocation and mounting of existing console outfitting (two quad power outlets, data lines, video and recording cables and equipment, DVICE console, telephone, etc.). Includes installation of 4 HD cameras inside MFM routed to 4 mounted HD display monitors. HD system shall be integrated with existing area audio, video and recording capabilities (utilize new HD switches). Includes rerouting of RPL cables to console. HD camera/monitor locations and new RPL location will be specified by CWG. Conceptual design image is attached.

Note: Safety Review Conducted 10/9/14 Specified a GDR will be conducted for the lighting system redesign, and a Mockup TRR will be required


RIO

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/18/2015	9/29/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1

Signature: Mcintyre, Allison L. (JSC-DX141) Date: 10/6/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Huhn, June A. (JSC-DX141)		june.a.huhn@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	x46209	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$54,700	9/18/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

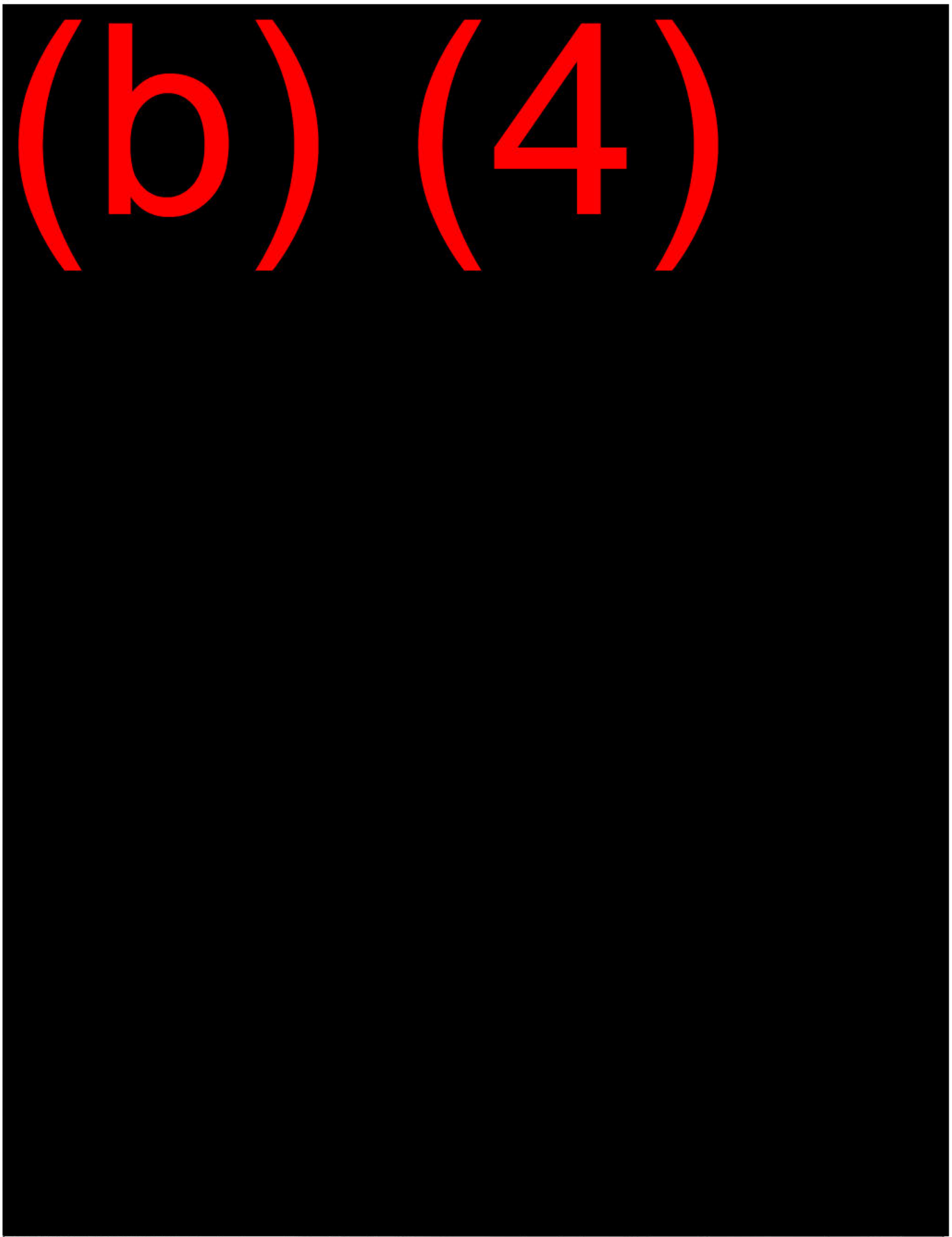
Step	Description	Expected Results	RQMT	Comment
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.		
4	Verify that one CR revision has been completed	CR has been revised.	8.1	
5	Verify installation of a functional cypher-lock door assembly at the entrance to the Medium Fidelity Mockup (MFM) access platform stairs as shown in drawing (b) (4) (b) (4)	A functional cypher-lock door assembly has been installed at the entrance to the Medium Fidelity Mockup (MFM) access platform stairs	8.2	
6	~~Verify installation of aluminum SAW/PAW/ECLS panels per panel dimensions and locations in CAD model provided by CWG. Panel sub-structure can be non flight-like.~~	~~Aluminum SAW/PAW/ECLS panels have been installed in the MFM per panel dimensions and locations in CAD model provided by CWG.~~	8.3a	(removed before approval 10/28/14)
7	~~Verify that panel fasteners appear in flight locations and are of a type specified by CWG.~~	~~Panel fasteners appear in flight locations and are of a type specified by CWG.~~	8.3b	(removed before approval 10/28/14)
8	Verify that a single combined lighting system control module has been installed to replace the existing dual module control system per CWG provided information on size, shape, placement and controls.	A single combined lighting system control module has been installed to replace the existing dual module control system per CWG provided information on size, shape, placement and controls.	8.4	
9	~~Verify that the lighting system wiring has been rerouted to locations between the inner and outer mold lines (I/OML).~~	~~The lighting system wiring has been rerouted to locations between the inner and outer mold lines~~	~~8.5a~~	(removed before approval 10/28/14)
10	~~Verify that the wiring penetrates the IML in a location close to the light connections to minimize visibility.~~	~~The lighting system wiring penetrates the IML in a location close to the light connections which minimizes visibility.~~	~~8.5b~~	(removed before approval 10/28/14)
11	Verify that the existing lights and power supply have been utilized in the design.	The existing lights and power supply have been utilized in the design.	8.5c	
12	Verify that lights have been be relocated to reflect the configuration in the CWG provided model, as applicable	The lights have been be relocated to reflect the configuration in the CWG provided model	8.5d	

13	Verify that the existing BFCR operations console has been removed and excessed.	The existing BFCR operations console has been removed and excessed	8.6a	
14	Verify that the existing console outfitting (two quad power outlets, data lines, video and recording cables and equipment, DVICE console, telephone, etc.) has been relocated to support the new console and display.	The existing console outfitting (two quad power outlets, data lines, video and recording cables and equipment, DVICE console, telephone, etc.) has been relocated to support the new console and display.	8.6b	
15	Verify installation of 4 HD cameras inside MFM (per CWG provided locations) androuted to 4 mounted HD display monitors	Four HD cameras have been installed inside the MFM (per CWG provided locations) and routed to four mounted HD display monitors	8.6c	

16	Verify that the HD system has been integrated with the existing area audio, video and recording capabilities	The HD system has been integrated with theexisting area audio, video and recording capabilities	8.6d	
17	Verify that the HD system integration utilizes new HD switches.	The HD system integration utilizes new HD switches.	8.6e	
18	Verify that RPL cables have been rerouted to the console.	RPL cables have been rerouted to the console	8.6f	
19	Verify by inspection of GDR minutes that a Lighting system Design Review was conducted	GDR minutes show Peer and CWG participation	SR	
20	Verify by Inspection that a Mockup TRR was conducted	A signed form DX-FRM-004 shows mockup TRR was conducted	SR	

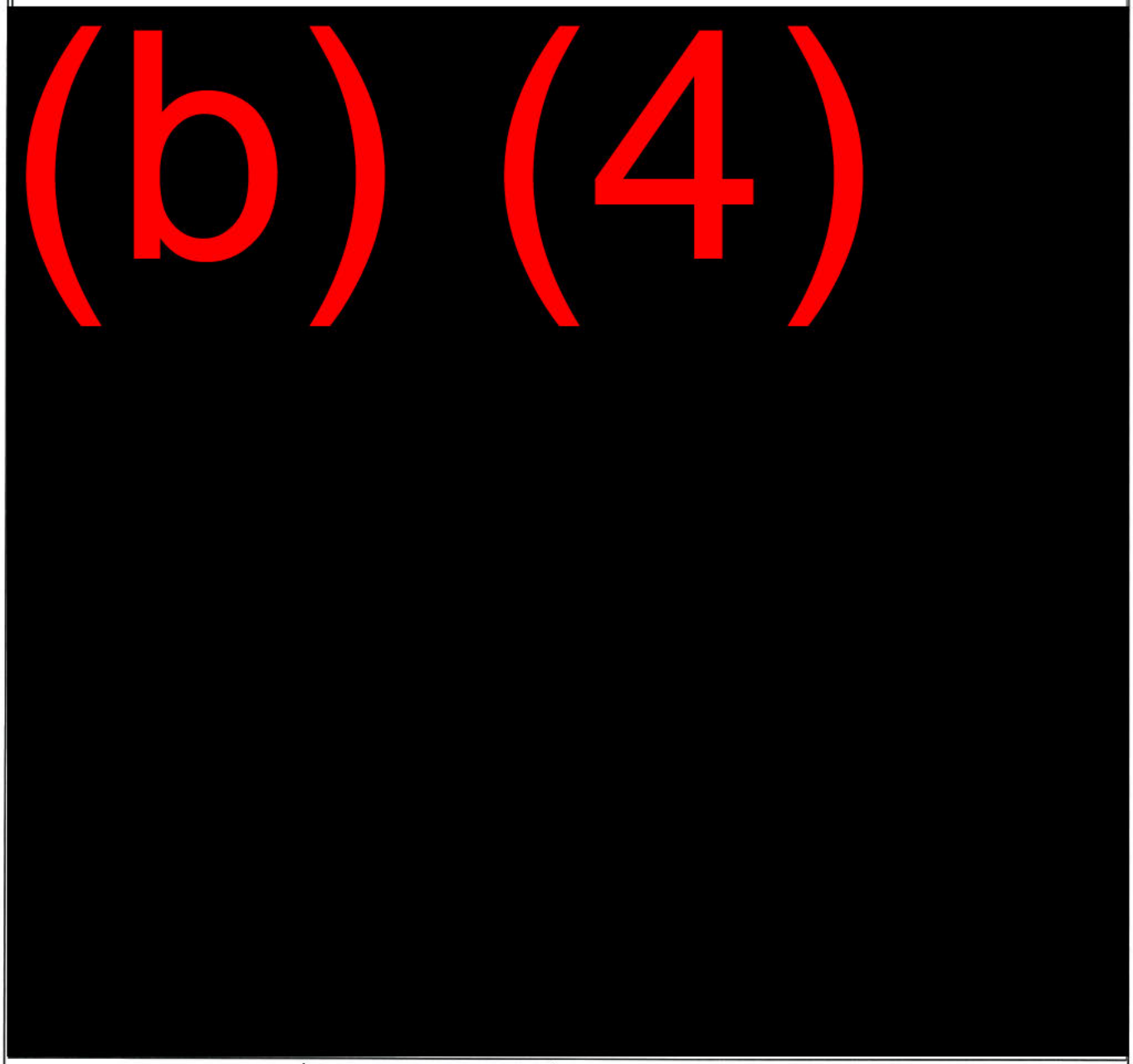
File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project

plan)



File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

The two primary cost drivers are Project Management Support (including planned revision) and Engineering

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
[redacted]				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:

Date:	Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1019	01/20/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1019

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 13, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1019

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1019

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens
Contracting Officer — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1020 is to incorporate CR2673B, CDRA Standalone Trainer: The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $3,725 Work is to be completed by March 13, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	3,725.00	3,725.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART PPC

13. Total 3,725.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY SCOTT STEPHENS
Authorized U.S. Government Representative — 01/20/2015 Date

CR NO.: 2673B	DX CHANGE REQUEST

CR TITLE: Build CDRA Standalone Trainer

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4) [redacted]	(b) (4) [redacted]	(b) (4) [redacted]@nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524 Rev A

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

To develop and construct a Medium/High Fidelity CDRA mockup. Rack trainer to be used to provide Crew/Flight Controller training as well as procedure development/verification, engineering assessments, and real-time operations support. This change will also consolidate the current Hi-Fi TCCS, and Med-Fi MCA with the proposed Med/Hi-Fi CDRA giving 360 degree access to all the crew access panel openings on the ARS rack.

Rev A adds SCIF 01 (b) (4) [redacted], SCIF2A (b) (4) [redacted], and adds travel for supporting TIM in FY14

Rev B add Risk 4 impacts and Opportunity-1 reductions, and changes due date to 3/13/15

7. RATIONALE:

The current CDRA mockup is inadequate to conduct any crew training, procedure development, Flight Controller training or engineering assessments. High fidelity CDRA is best showcased to conduct these events in a rack with other high-fidelity hardware. Putting the ARS Rack with this high-fidelity hardware on the floor, as opposed to in a module, gives the trainers and students better access to see and actuate hardware as required from all sides.

8. REQUIREMENTS AND REFERENCES: **(continue on Page 2)**

This project will be done in three(3) phases, estimation will be completed for each phase with a separate pricing for each phase. Estimation for all three phases will be completed and delivered at one time.

Phase 1 Design and manufacturing
Design the CDRA mockup and components using flight drawings and solid models(Boeing provided)
Manufacture and assemble the CDRA and its components
This will provide a CDRA table top trainer if no additional funds become available in FY 14
Purchase all materials
Duration approximately 20 weeks

Phase 2 RSR Rack conversion to an ARS Rack
Design and manufacture center posts
Mount Rack on Stand and manufacture interfaces
Remove all RSR components
Cut access holes in shell
Duration: Approximately 15 weeks

Phase 3 Outfitting, integration and delivery
Remove ARS components fro Node 3 ARS rack, replace with photo facades
Integrate ARS components in new ARS rack
Design and install Air system for ASVs to Sorbent bed
Hazard analysis, Mockup TRR, and ATP
Duration Approximately 15 weeks

Detailed requirements matrix is attached
Provide CDRA/ARS rack mockup per MDRD requirements.

Safety Review was conducted, and a TRR will be required.

Additionally a new directive was given to combine all three phases into a single estimate.

Rev A 8.7 Added requirement for one engineer to support TIM at Honeywell in California for acquiring information on assembly sequence.

(b) (4)

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/30/2014	1/13/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Jacobs, Rebecca J. (JSC-DA221)[TIETRONIX SOFTWARE INC] Date: 1/5/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Foss, John W. (JSC-CX141)	global	john.w.foss@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
(b) (4)	(b) (4)	(b) (4) @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach ☑ No – completion of this form is adequate for

planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$451,200; ($296,500 FY14/ $154,700 FY15)~~ ~~**Rev A** $476,900; ($340,600 FY14 / $136,400 FY15)~~ **Rev B** $489,400; ($340,500 FY14 / $148,900 FY15)	3/13/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

(b) (4)

Date: 1/5/2015

CCB CHAIR:

(b) (4)

Date: 1/5/2015

COTR for CRs with Cost Impact Only

COTR:

(b) (4)

Date: 1/5/2015

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rev A Requirements Verification Matrix is attached below

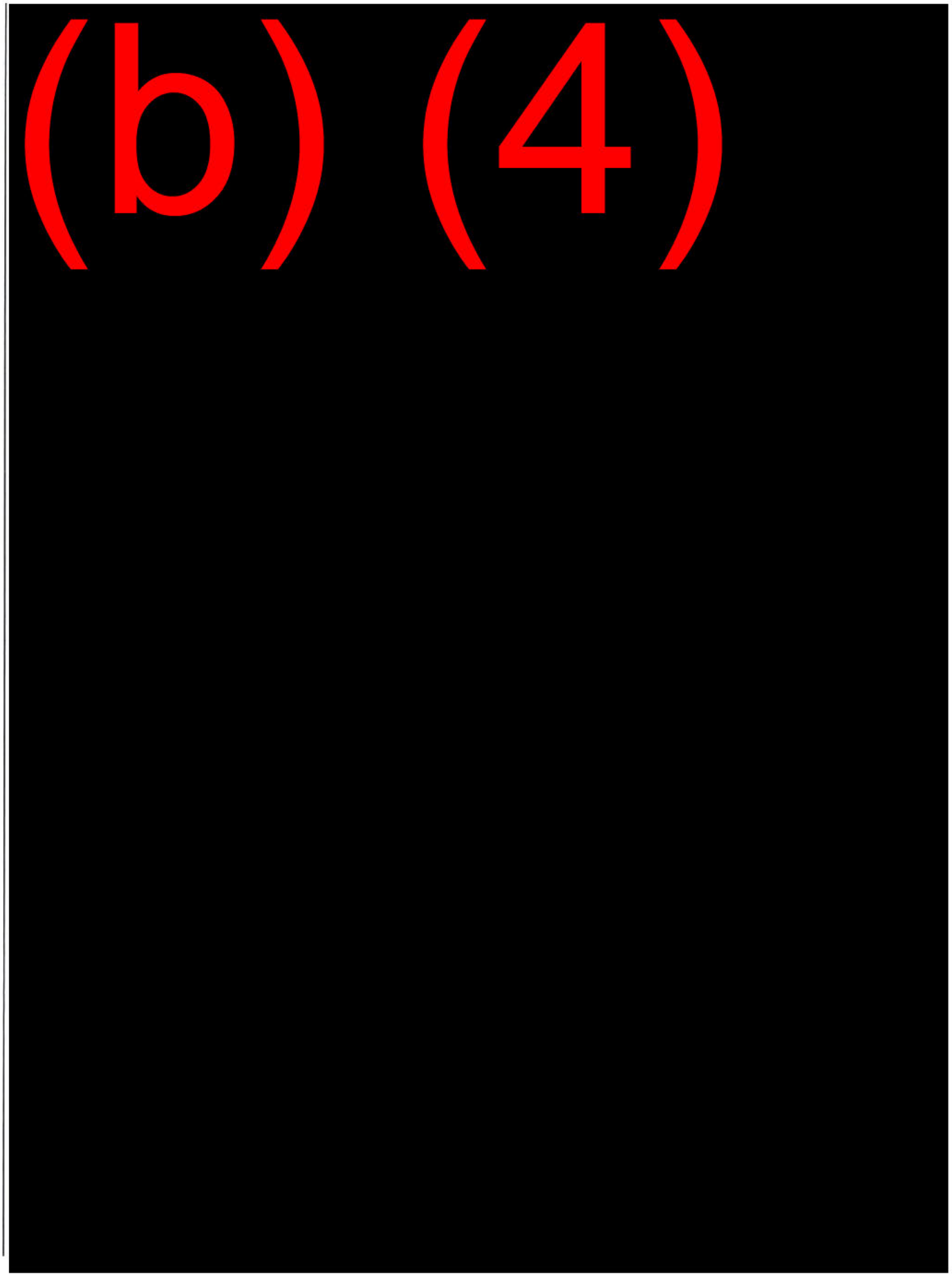
(b) (4)

File Attachment

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

Rev B schedule


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility asset for maintenance in out years): (complete as

reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Project Support	Management	Technician	Material	T
~~FY14~~						
FY14 Rev A						$
~~FY15~~						
~~FY15 Rev A~~						
FY15 Rev B						

(b) (4)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1019 Rev A	03/12/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1019 Rev A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
April 15, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1019 Rev A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1019 Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1019 Rev A is to incorporate CR2673C, CDRA Standalone Trainer: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $19,567 Work is to be completed by April 15, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	19,567.00	19,567.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total 19,567.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY SCOTT STEPHENS Digitally signed by SCOTT STEPHENS DN: c=US, o=U.S. Government, ou=NASA, ou=PIV, cn=SCOTT STEPHENS, 0.9.2342.19200300.100.1.1=xxxxxxx Date: 2015.03.12 17:02:09 -05'00'
Authorized U.S. Government Representative

03/12/2015
Date

CR NO.: 2673C	DX CHANGE REQUEST

CR TITLE: Build CDRA Standalone Trainer

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	(b) (4) @nasa.gov

4. PROGRAM/PROJECT:

☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524 Rev A

5. FUNCTIONAL AREA:

☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

To develop and construct a Medium/High Fidelity CDRA mockup. Rack trainer to be used to provide Crew/Flight Controller training as well as procedure development/verification, engineering assessments, and real-time operations support. This change will also consolidate the current Hi-Fi TCCS, and Med-Fi MCA with the proposed Med/Hi-Fi CDRA giving 360 degree access to all the crew access panel openings on the ARS rack.

Rev A adds SCIF 01 (cost impac(b) (4) SCIF2A (Cost impac(b) (4), and adds travel for supporting TIM in FY14

Rev B add Risk 4 impacts and Opportunity-1 reductions, and changes due date to 3/13/15

Rev C add changes from TDC-03 and extends due date to 4/15/15

7. RATIONALE:

The current CDRA mockup is inadequate to conduct any crew training, procedure development, Flight Controller training or engineering assessments. High fidelity CDRA is best showcased to conduct these events in a rack with other high-fidelity hardware. Putting the ARS Rack with this high-fidelity hardware on the floor, as opposed to in a module, gives the trainers and students better access to see and actuate hardware as required from all sides.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

This project will be done in three(3) phases, estimation will be completed for each phase with a separate pricing for each phase. Estimation for all three phases will be completed and delivered at one time.

Phase 1 Design and manufacturing
Design the CDRA mockup and components using flight drawings and solid models(Boeing provided)
Manufacture and assemble the CDRA and its components
This will provide a CDRA table top trainer if no additional funds become available in FY 14
Purchase all materials
Duration approximately 20 weeks

Phase 2 RSR Rack conversion to an ARS Rack
Design and manufacture center posts
Mount Rack on Stand and manufacture interfaces
Remove all RSR components
Cut access holes in shell
Duration: Approximately 15 weeks

Phase 3 Outfitting, integration and delivery
Remove ARS components fro Node 3 ARS rack, replace with photo facades
Integrate ARS components in new ARS rack
Design and install Air system for ASVs to Sorbent bed
Hazard analysis, Mockup TRR, and ATP
Duration Approximately 15 weeks

Detailed requirements matrix is attached
Provide CDRA/ARS rack mockup per MDRD requirements.

Safety Review was conducted, and a TRR will be required.

Additionally a new directive was given to combine all three phases into a single estimate.

Rev A 8.7 Added requirement for one engineer to support TIM at Honeywell in California for acquiring information on assembly sequence.

(b) (4)

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/30/2014	1/13/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Date: 1/5/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Foss, John W. (JSC-CX141)	global	john.w.foss@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach ☑ No – completion of this form is adequate for

planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$451,200; ($296,500 FY14/ $154,700 FY15)~~ ~~**Rev A** $476,900; ($340,500 FY14 / $136,400 FY15)~~ ~~**Rev B** $489,400; ($340,500 FY14 / $148,900 FY15)~~ **Rev C** $509,000; ($340,500 FY14 / $168,500 FY15)	4/15/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

(b) (4)

Date: 1/5/2015

CCB CHAIR:

(b) (4)

Date: 1/5/2015

COTR for CRs with Cost Impact Only

COTR:

(b) (4)

Date: 1/5/2015

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rev A Requirements Verification Matrix is attached below

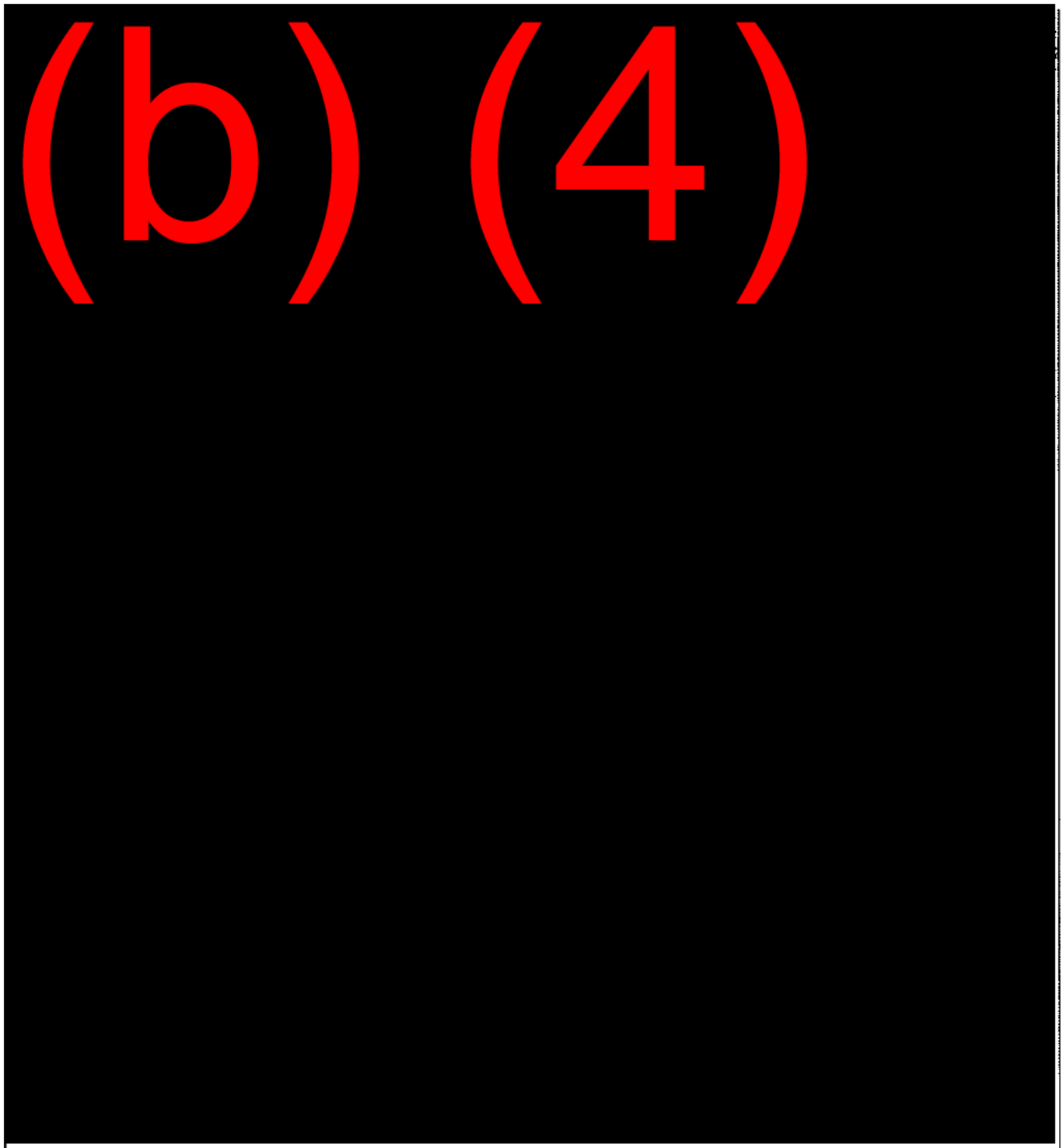
(b) (4)

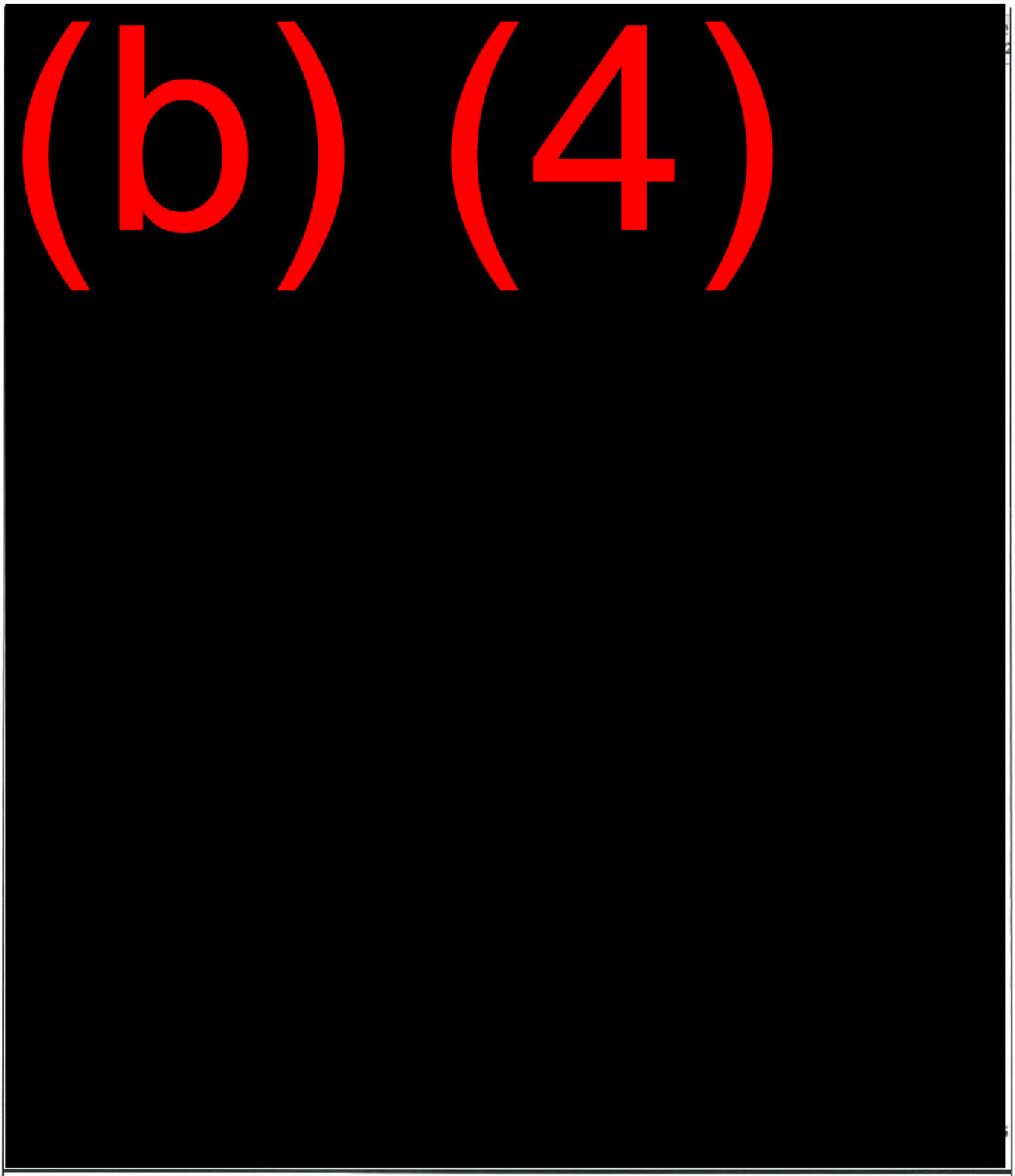
File Attachment

File Attachment

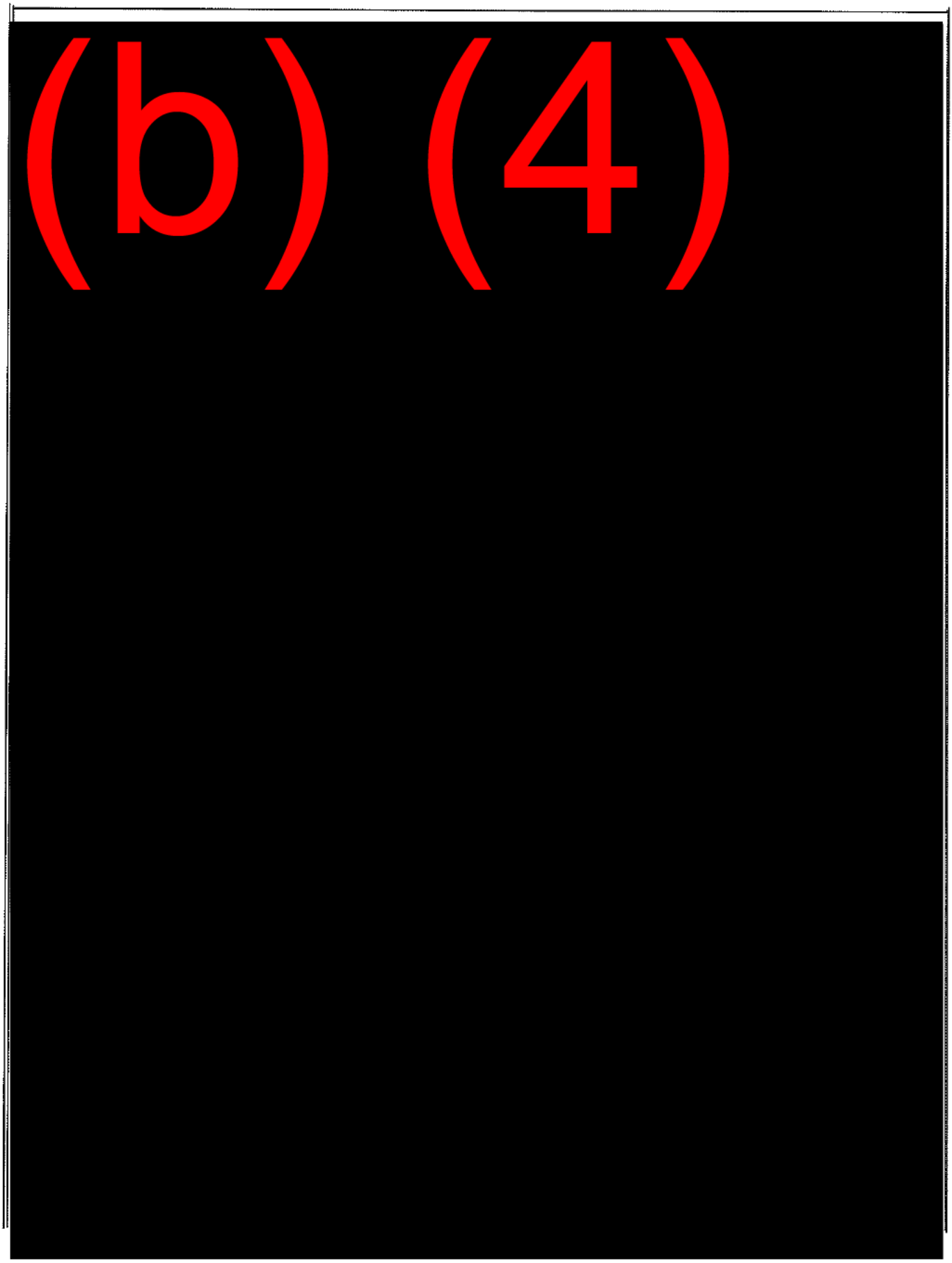
SCHEDULE MILESTONES: (complete or reference separate project plan)

Rev C schedule


(b) (4)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)


(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Project Support	Management	Technician	Material	T
~~FY14~~						
FY14 Rev A						$
~~FY15~~						
~~FY15 Rev A~~						
~~FY15 Rev B~~						
FY15 Rev C						

(b) (4)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1020	02/10/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1020

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 23, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1020

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number NNJ10HD35C DO 1020

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 02/10/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1020 is to incorporate CR2760, FY15 Mockup Upgrades: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $184,235 Work is to be completed by September 23, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	184,235.00	184,235.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 184,235.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT. ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative _____ Date

CR NO.: 2760	DX CHANGE REQUEST

CR TITLE: FY 15 Mockup Upgrades

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	Global

4. PROGRAM/PROJECT:

☑ STATION ☐ MPCV

☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:

☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS

☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

This CR is for FY 15 SVMF mockup upgrades and additional training hardware for alleviating training hardware conflicts. This CR will remain open until the end of the fiscal year.

1. Deconflict Lesson Hardware ((b) (4)
2. Upgrade ARED in Node 3 (b) (4)
3. Additional Stowage Bags (b) (4)
4. Improve JEM Fidelity (b) (4)

7. RATIONALE:

The tasks in the CR will upgrade current mockups and provide new training hardware for crew and flight controller training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Provide additional hardware to de-conflict lesson hardware requirements

8.1.2 Crew Containment Protection Kit (CCPK) (b) (4)

8.1.2.1 Provide 1 ea kit to include the bag per drawing (b) (4) IB fidelity

8.1.2.2 Kits contents will be COTS items. IIB fielity

8.1.2.3 Kit content quantities will be per the above drawing.

8.1.3 Hydraflow Kit

8.1.3.1 Provide 1 ea 0.5 inch, 1.0 inch and 1.5 inch hydraflow connectors and ferrels. IIB fidelity 1 of ea size

8.1.3.2 Attach connector halves to 6-8 inch tubing IIIC fidelity 6 ea

8.1.4 O2 Training Kit

8.1.4.1 Provide 2 ea protective caps/fittings for pn (b) (4) IIB fidelity

8.1.4.2 Provide 2 ea protective caps/fittings for pn (b) (4) IIB fidelity

8.1.4.3Provide 2 ea protective caps/fittings for pn (b) (4) IIB fidelity

8.1.5 Seat Track Equipment Anchors

8.1.5.1 Provide **2** ea Seat Track anchors (b) (4)

8.1.6 Provide 1 ea. Tool Demo Stand IIIC Fidelity

8.1.6.1 Build the new stand similar to the existing unit in use.

8.1.7 Tox 2 PPE Kit

8.1.7.1 Provide 1 ea half CTB container (b) (4) IIB Fidelity

8.1.7.2 Provide the PPE contents listed(COTS) IIB Fidelity

8.1.7.2.1 Kit contents.

name	qty
wet wipes package	1
silver bags	4
silver gloves	25
ziplock bags	8
mess up mitt	15
dust mask	27
goggles	3
Emer proc book, Haz Release (ETHOS Instructors provide	

this)	1
Urine chem strips in lid in a dark baggie	1
Nitrile Gloves	8
Nonsterile Gloves	7

8.1.8 DC Vacuum Cleaner Hair Clipper Hose Adapter

8.1.8.1 Provide 1 ea hose assembly IIIC Fidelity

8.1.8.2 Provide 1 ea adapter using adapter in loose equipment to design and RPM the adapter. IIIC Fidelity

8.1.9 Tool Page

8.1.9.1 Provide 1 ea tool page using the page in loose equipment as a template. IIB Fidelity

8.1.10 (b) (4) [redacted]

8.1.10.1 provide 1 ea RPM PPRV IIIB fidelity

File Attachment

9. NEED DATE: (support date in block 7 rationale): 6/30/2015

Rev

10. CR SUBMISSION DATE: 11/21/2014

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED

Signature: Mcintyre, Allison L. (JSC-DX141)

WBS: 3.6.1

Date: 11/20/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Foss, John W. (JSC-DX141)		john.w.foss@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning

☑ No – completion of this form is adequate for planning

19. COST IMPACT: $184,300

20. NEGOTIATED DELIVERY DATE: 9/23/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

COTR for CRs with Cost Impact Only

COTR:

Date:

Date:	
Closed by:	**Date:**
REQUIREMENTS/REFERENCES (cont.):	

8.2 Upgrade ARED fidelity in Node 3

8.2.1 Provide Main Arm assembly (b) (4) IIB fidelity

8.2.1.1 Arm assembly should be pivotable and lock in the stowed and normal/use positions. IIB fidelity

8.2.1.2 Lift Bar assembly will pivot and is secured to the arm assembly with velcro. IIB fidelity

8.2.1.3 Provide bar between the upper arm assembly IIIC fidelity

8.2.2 Provide Platform assembly (b) (4) IIB fidelity

8.2.2.1 Platform assembly will pivot from the operating position to the stowed position. IIB fidelity

8.2.2.2 Platform will have Non-skid tape installed. IIIC

8.2.3 Provide Pulley assembly attached to platform support arms (b) (4) . IIB fidelity

8.2.3.1 Belt Pulley Cover is removable for access to pully system. IIIB Fielity

8.2.4 Upgrade ARED Frame structure (b) (4) . IIB fidelity

8.2.5 Upgrade ARED support structure that attaches to seat track in Node 3. IIIC

Models and data provided is in this floder on the SVMF drive, \\jsc-mod-svmf3\svmf_temp\ARED

8.3 Additional Stowage Bags

8.3.1 Provide 12 ea half CTB container (b) (4) IIB Fidelity

8.3.2 Provide 6 ea Full CTB container (b) (4) IIB Fidelity

8.3.3 Provide 1 ea MO3 Bag (b) (4) _D IIB Fidelity
8.3.4 Provide bag filler material IIIC fidelity

8.4 Improve JEM Fidelity

8.4.1 Obtain and install 1 ea JEM photo facade IIIC fidelity of the Express Rack (ER) -5 at the JPM1F1 location. Include rack location code label and transfer of existing or new fire port decals, as representative of flight configuration. Image to be provided by CX14.

8.4.2 Obtain and install 1 ea JEM photo facade IIIC fidelity of the Multi-purpose Small Payload Rack (MSPR2, launched on HTV5) at the JPM1F2 location. Include rack location code label and any fire port decals, as representative of flight configuration. Image to be provided by CX14.

8.4.3 Obtain and install 1 ea updated JEM photo facade IIIC fidelity of the Kobairo rack at the JPM1F3 location. Include transfer of existing or new fire port decals and ensure that rack location code label is readable or provide new label. Image to be provided by CX14.

8.4.4 Obtain and install 1 ea JEM photo facade IIIC fidelity of the ER-4 at the JPM1F5 location. Include rack location code label and transfer of existing or new fire port decals, as representative of flight configuration. Image to be provided by CX14.

8.4.5 Obtain and install 1 ea JEM photo facade IIIC fidelity of the JAXA System Stowage (JRSR-2) rack at the JPM1O2 location. The JRSR-1 facade currently located in the JPM1O3 location may be photographed by B8, then text would

need to be photoshopped to reflect O2 versus O3 rack location code labeling.

8.4.6 Obtain and install 1 ea JEM photo facade IIIC fidelity of the ICS/PROX rack at the JPM1O4 location. Include rack location code label and transfer of existing or new fire port decals, as representative of flight configuration. Image to be provided by CX14.

8.4.7 Provide an aft port endcone volumetric closeout with removable IIIC fidelity facade to reflect the flight configuration at the JPM1A7 location. Closeout should be designed with supporting structure that will not deflect more than 1 inch under the leaning force of one person. Structure must allow clearance for removal of the JPM1A6 port wall for maintenance activities. Dimensional details or imagery will be provided by CX14.

8.4.8 Reenforce the current port endcone facade, as needed, and cover with a fabric closeout adding 1 ea IIIC fidelity photo facades of the two portholes and relocating the 2 current JAXA decals. Size and location of the portholes to be provided by CX14.

8.4.9 Relocate the JEM Airlock deeper into the endcone (further port) such that there is a 42 inch space between the outer hatch face and the port edge of the last Bay 6 seat track, reducing the length of the Airlock as needed.

Reference: https://iss-www.jsc.nasa.gov/nwo/seio/vcer/cammp/bbt_docs/icammp/2009-05_USOSInternalPictureBook.pdf.

8.5 TRR if required by the CR safety review.
Note Safety Review 643 on 12/4/14 did not require a TRR, but required analysis of the ARED mounting.

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Acceptance will be conducted for the above requirements incrementally as they are completed.

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A	Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	N/A	Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A	Inspection	Label requirement satisfied.		
8.1.2	Verify that one **Crew Containment Protection Kit (CCPK), reference part number** (b) (4) fidelity IIB, **has been provided**	(b) (4)	Inspection	One **Crew Containment Protection Kit (CCPK),** fidelity IIB, **has been provided**		
8.1.2.1	**Verify that the CCPK** kit includes the bag referenced in drawing (b) (4) in IIB fidelity	(b) (4)	Inspection	**The CCPK** kit includes the bag referenced in drawing (b) (4) in IIB fidelity		
8.1.2.2	Verify that the contents of the kit consist of fidelity IIB COTS items.	(b) (4)	Inspection	The contents of the kit consists of fidelity IIB COTS items.		
8.1.2.3	Verify that the kit content quantities are per the above drawing.	(b) (4)	Inspection	The kit content quantities are per drawing (b) (4)		
	Verify that one Hydraflow Kit has been provided with	N/A	Inspection	**One Hydraflow Kit** has been provided with one 0.5 inch, one 1.0 inch		

8.1.3.1	one 0.5 inch, one 1.0 inch and one 1.5 inch hydraflow connector set with ferrules.			and one 1.5 inch hydraflow connector set with ferrules.		
8.1.3.2	Verify that connector halves are attached to 6-8 inch tubing (qty 6 pieces)	N/A	Inspection	The connector halves are attached to 6-8 inch tubing		
8.1.4.1	**Verify that two fidelity IIB** protective caps for pn 502050 have been provided in the **O2 Training Kit**	N/A	Inspection	**Two fidelity IIB** protective caps for (b) (4) have been provided in the **O2 Training Kit**		
8.1.4.2	**Verify that two fidelity IIB** protective caps and one adapter fitting for pn (b) (4) have been provided in the **O2 Training Kit**	N/A	Inspection	**Two fidelity IIB** protective caps and one adapter fitting for pn (b) (4) have been provided in the **O2 Training Kit**		
8.1.4.3	**Verify that two fidelity IIB** protective caps for (b) (4) (b) (4) have been provided in the **O2 Training Kit**	N/A	Inspection	**Two fidelity IIB** protective caps for (b) (4) (b) (4) have been provided in the **O2 Training Kit**		
8.1.5	Verify that two fidelity IIB Seat Track equipment anchors, (b) (4) have been provided	(b) (4)	Inspection	Two fidelity IIB Seat Track equipment anchors, PN (b) (4) have been provided		
8.1.6	Verify that one fidelity IIIC Tool Demo Stand similar to the existing unit in use has been provided.	N/A	Inspection	One fidelity IIIC Tool Demo Stand similar to the existing unit in use has been provided.		
8.1.7	**Verify that one fidelity IIB Tox 2 PPE Kit** has been provided	N/A	Inspection	**One fidelity IIB Tox 2 PPE Kit** has been provided		
8.1.7.1	Verify that one fidelity IIB mockup of the half CTB container, PN (b) (4) has been provided for the TOX2 PPE Kit	(b) (4)	Inspection	One fidelity IIB mockup of the half CTB container, PN (b) (4) has been provided for the TOX2 PPE Kit		

	Verify that the contents listed below has been provided for the TOX2 PPE Kit in IIB Fidelity: Item Qty Wet wipes package 1 Silver Bags 4 Silver Gloves 25 Ziplock Bags 8 Mess Up Mitt 25 Dust Mask 27 Goggles 3 Emer Proc Book, 1 Haz Release (Instructor) Urine Chem Strips 1 in a dark baggie		Inspection			
8.1.7.2	Nitrile Gloves 8			The contents listed has been provided for the TOX2 PPE Kit in IIB Fidelity:		
8.1.7.2.1	Non-sterile Gloves 7	N/A				
8.1.8		N/A	Inspection			
8.1.8.1	**Verify that one Vacuum Cleaner Hair Clipper Hose** assembly **has been provided**			**One Vacuum Cleaner Hair Clipper Hose** assembly **has been provided**		
		N/A	Inspection	One IIIC hose		

8.1.8.2	Verify that one IIIC hose adapter made from RPM similar to the adapter in loose equipment has been provided.			adapter made from RPM similar to the adapter in loose equipment has been provided.		
8.1.9	Verify that one fidelity IIB tool page similar to the page in Loose Equipment has been provided	N/A	Inspection	One fidelity IIB tool page similar to the page in Loose Equipment has been provided		
8.1.10 8.1.10.1	**Verify that one fidelity IIIB PPRV similar to** (b) (4) made from RPM has been provided	(b) (4)	Inspection	**One fidelity IIIB PPRV similar to** (b) (4) (b) (4) made from RPM has been provided		
8.2	Verify that the ARED mock-up in Node 3 has been modified	N/A	Inspection	The ARED mock-up in Node 3 has been modified		
8.2.1	Verify that one fidelity IIIB ARED Main Arm assembly (ref flight dwg (b) (4) has been provided	(b) (4)	Inspection	One fidelity IIIB ARED Main Arm assembly has been provided		
8.2.1.1	Verify that the Arm assembly will pivot and lock in the stowed and normal/use positions.	N/A	Demonstration	The Arm assembly will pivot and lock in the stowed and normal/use positions.		
8.2.1.2	Verify that the Lift Bar assembly will pivot and can be secured to the arm assembly with Velcro.	N/A	Demonstration	The Lift Bar assembly will pivot and can be secured to the arm assembly with Velcro.		
8.2.1.3	Verify that the bar between the upper arm assemblies has been provided in IIIC fidelity	(b) (4)	Inspection	The bar between the upper arm assemblies has been provided in IIIC fidelity		
8.2.2	Verify that a Platform assembly (ref dwg (b) (4) has been provided	(b) (4)	Inspection	A Platform assembly has been provided		
8.2.2.	Verify that the Platform assembly		Demonstration	The Platform assembly will pivot from the operating		

1	will pivot from the operating position to the stowed position	N/A		position to the stowed position		
8.2.2.2	Verify that the Platform has non-skid tape installed	N/A	Inspection	The Platform has non-skid tape installed		
8.2.3	Verify that a pulley assembly attached to the platform support arms (ref dwg (b) (4) (b) (4) has been provided	(b) (4)	Inspection	A pulley assembly attached to the platform support arms has been provided		
8.2.3.1	Verify that the Belt Pulley Cover is removable for access to the pulley system		Demonstration	The Belt Pulley Cover is removable for access to the pulley system		
8.2.4	Verify that the ARED Frame structure (ref dwg (b) (4) (b) (4)) has been upgraded	(b) (4)	Inspection	The ARED Frame structure has been upgraded		
8.2.5	Verify that the ARED support structure that attaches to seat track in Node 3 has been upgraded Fid IIIC	N/A	Inspection	The ARED support structure that attaches to seat track in Node 3 has been upgraded. (Inspection of proof load test that verified structure has 25% margin)		
8.3.1	Verify that twelve fidelity IIB Half CTB containers (ref dwg (b) (4) have been provided	(b) (4)	Inspection	Twelve fidelity IIB Half CTB containers have been provided		
8.3.2	Verify that six fidelity IIB Full CTB containers (ref dwg (b) (4) G) have been provided	(b) (4)	Inspection	six fidelity IIB Full CTB containers have been provided		
8.3.3	Verify that one fidelity IIB MO3 Bag (ref dwg (b) (4) has been provided	(b) (4)	Inspection	One fidelity IIB MO3 Bag has been provided		
8.3.4	Verify that fidelity IIIC filler material has been provided for the bags		Inspection	Fidelity IIIC filler material has been provided for the bags		

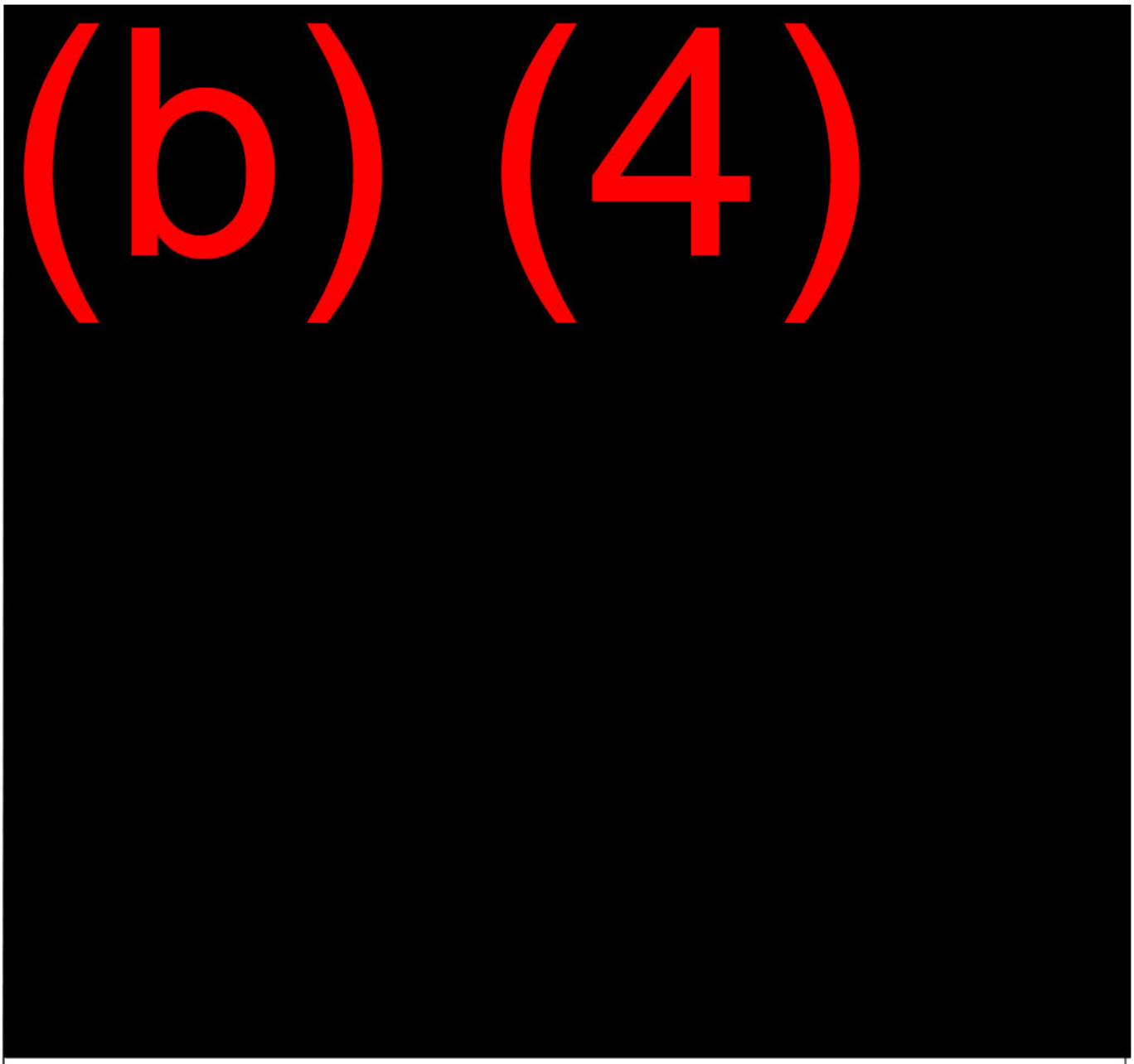
8.4.1	Verify that one photo facade of the Express Rack (ER) -5 has been installed at the JEM JPM1F1 location, including rack location code label and transfer of existing or new fire port decals	N/A	Inspection	One photo facade of the Express Rack (ER) -5 has been installed at the JEM JPM1F1 location with rack location code and fire port decals		
8.4.2	Verify that one photo facade of the Multi-purpose Small Payload Rack (MSPR2, launched on HTV5) has been installed at the JEM JPM1F2 location, including rack location code label and any fire port decals	N/A	Inspection	One photo facade of the MSPR2 has been installed at the JEM JPM1F2 location with rack location code and fire port decals		
8.4.3	Verify that one photo facade of the Kobairo has been installed at the JEM JPM1F3 location, including rack location code label and any fire port decals	N/A	Inspection	One photo facade of the Kobairo has been installed at the JEM JPM1F3 location with rack location code and fire port decals		
8.4.4	Verify that one photo façade of the ER-4 has been installed at the JEM JPM1F5 location, including rack location code label and transfer of existing or new fire port decals	N/A	Inspection	One photo façade of the ER-4 has been installed at the JEM JPM1F5 location with rack location code and fire port decals		
8.4.5	Verify that one photo façade of the JAXA System Stowage (JRSR-2) rack has been installed at the JEM JPM1O2 location, including rack location code	N/A	Inspection	One photo façade of the JAXA System Stowage (JRSR-2) rack has been installed at the JEM JPM1O2 location with rack		

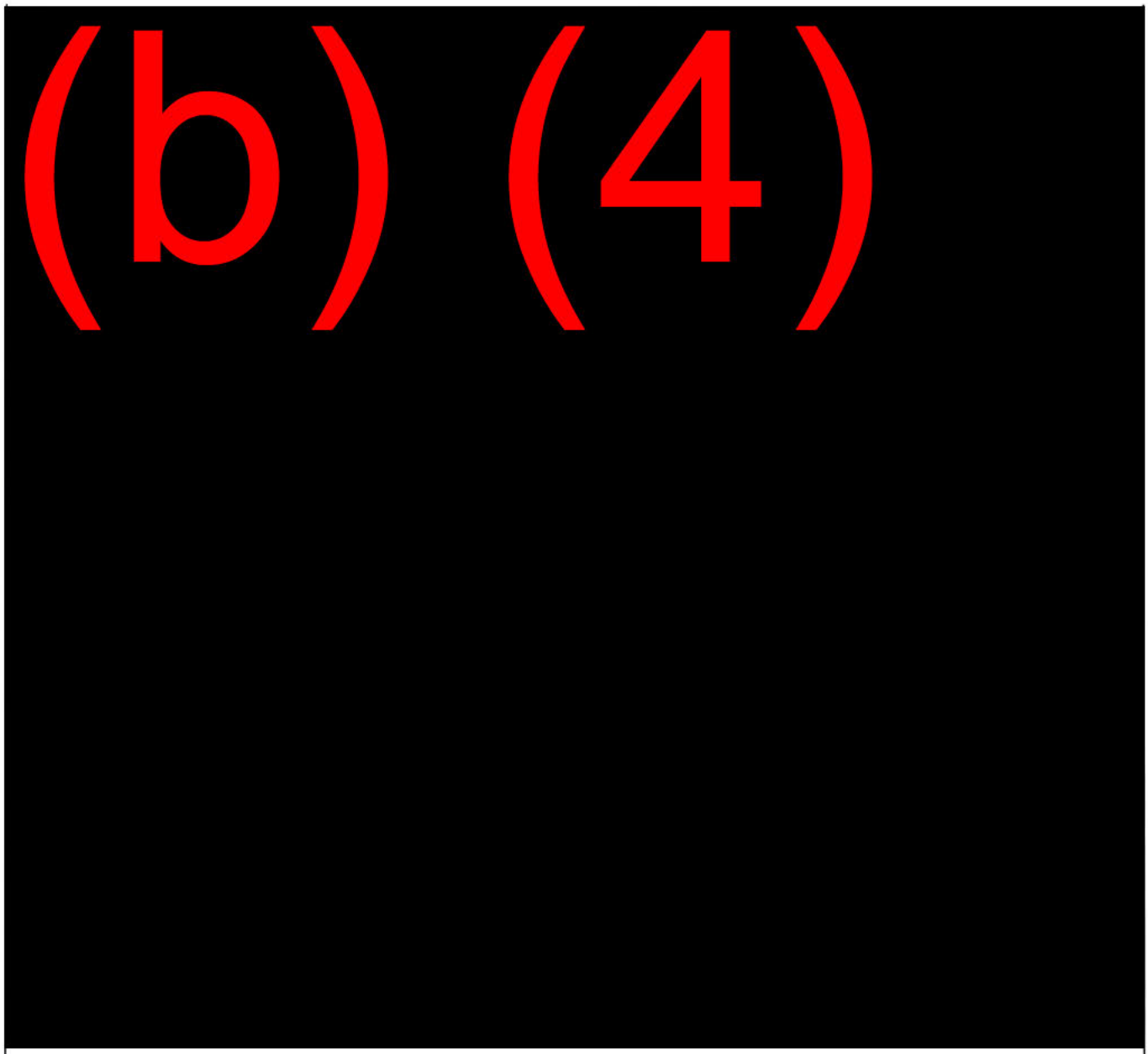
	label			location code		
8.4.6	Verify that one photo façade of the ICS/PROX rack has been installed at the JEM JPM1O4 location, including rack location code label and transfer of existing or new fire port decals	N/A	Inspection	One photo façade of the ICS/PROX rack has been installed at the JEM JPM1O4 location with rack location code and fire port decals		
8.4.7	Verify that an aft port endcone volumetric closeout with removable IIIC fidelity façade has been installed in the JEM to reflect the flight configuration at the JPM1A7 location	N/A	Inspection	An aft port endcone volumetric closeout with removable IIIC fidelity façade has been installed in the JEM to reflect the flight configuration at the JPM1A7 location		
8.4.7	Verify that the JPM1A7 closeout is designed with supporting structure that will not deflect more than 1 inch under the leaning force of one person	N/A	Demonstration	The closeout does not deflect more than 1 inch under the leaning force of one person		
8.4.7	Verify that that the closeout structure allows clearance for removal of the JPM 1A6 port wall for maintenance activities		Demonstration	The JPM1A6 port wall can be easily removed for maintenance activities		
8.4.8	Verify that the port endcone façade has been reinforced as needed and covered with a fabric closeout	N/A	Inspection	The port endcone façade has been reinforced as needed and covered with a fabric closeout		
	Verify that the JEM	N/A	Inspection	The JEM Airlock has been relocated/ (modified in lenth) such that there is a 42 inc		

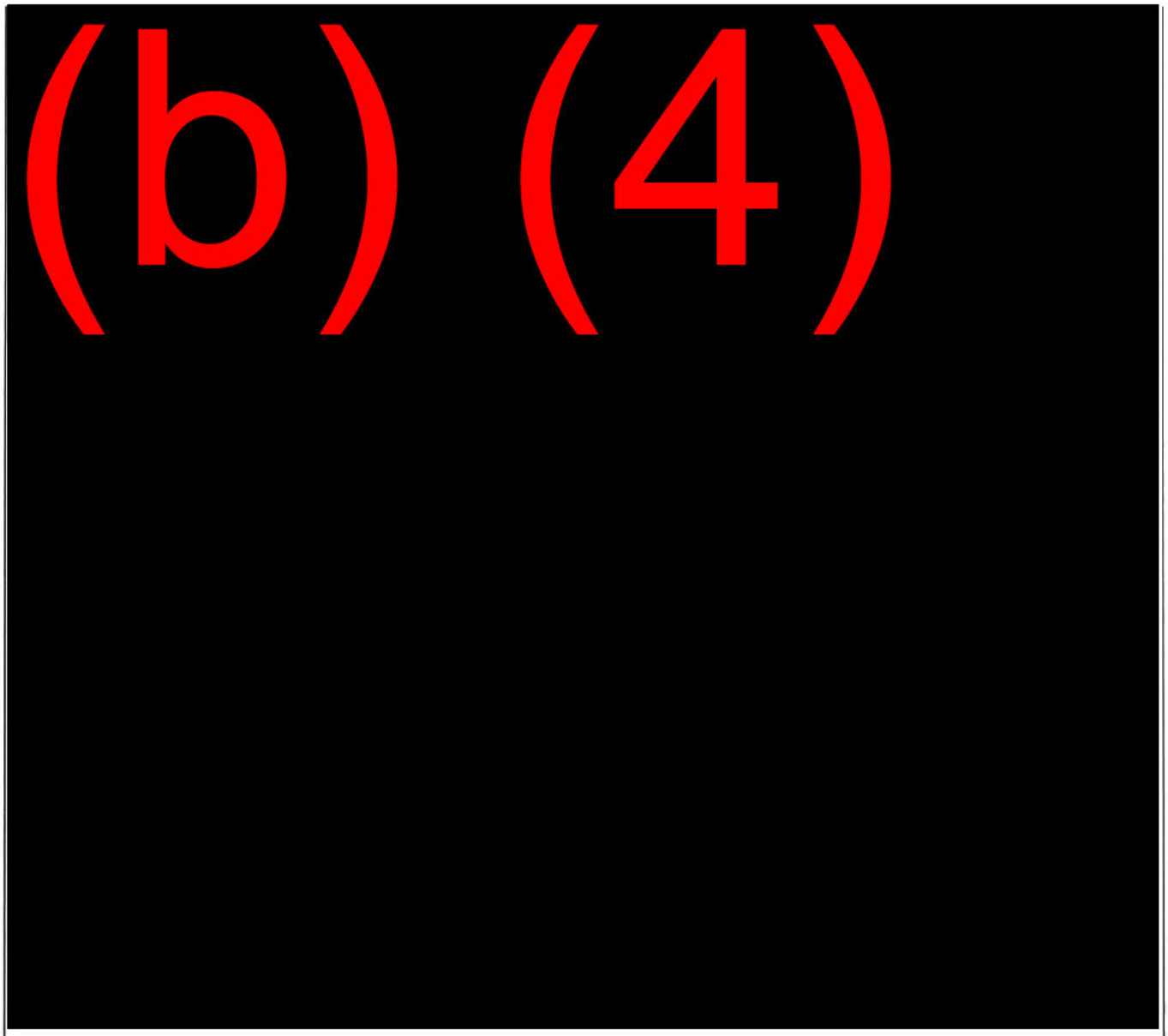
8.4.9	Airlock has been relocated such that there is a 42 inch spac e between the outer hatch face and the port edge of the last Bay 6 seat track			h space between the outer hatch face and the port edge of the last Bay 6 s eat track		
8.4.9	Verify that the existing JAXA decals and the photo facades of the two portholes have been installed in the JEM port endcone	N/A	Inspection	The existing JAXA decals and the photo facades of the two portholes have been installed in the JEM port endcone		
	end of test		I			

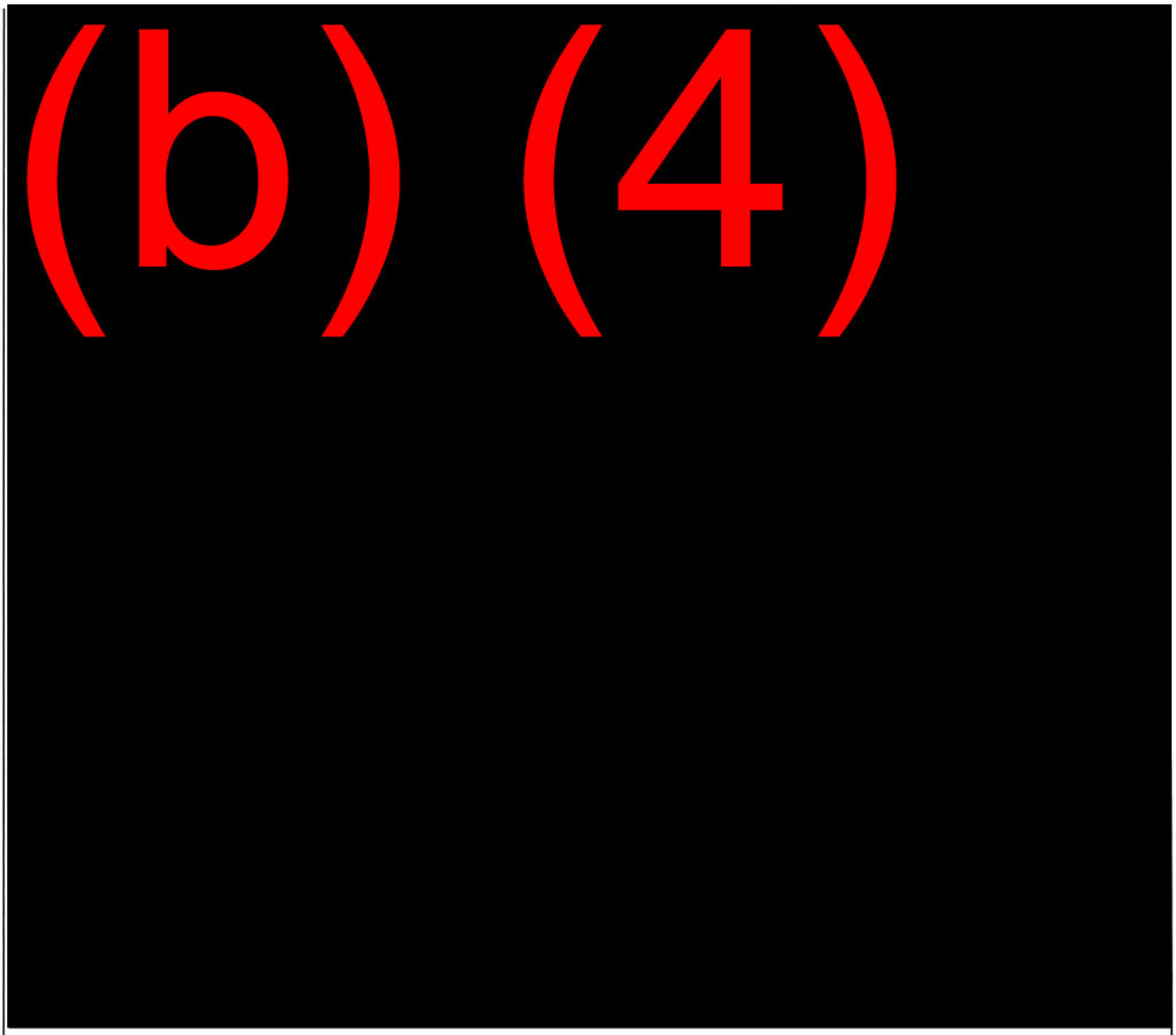
File Attachment

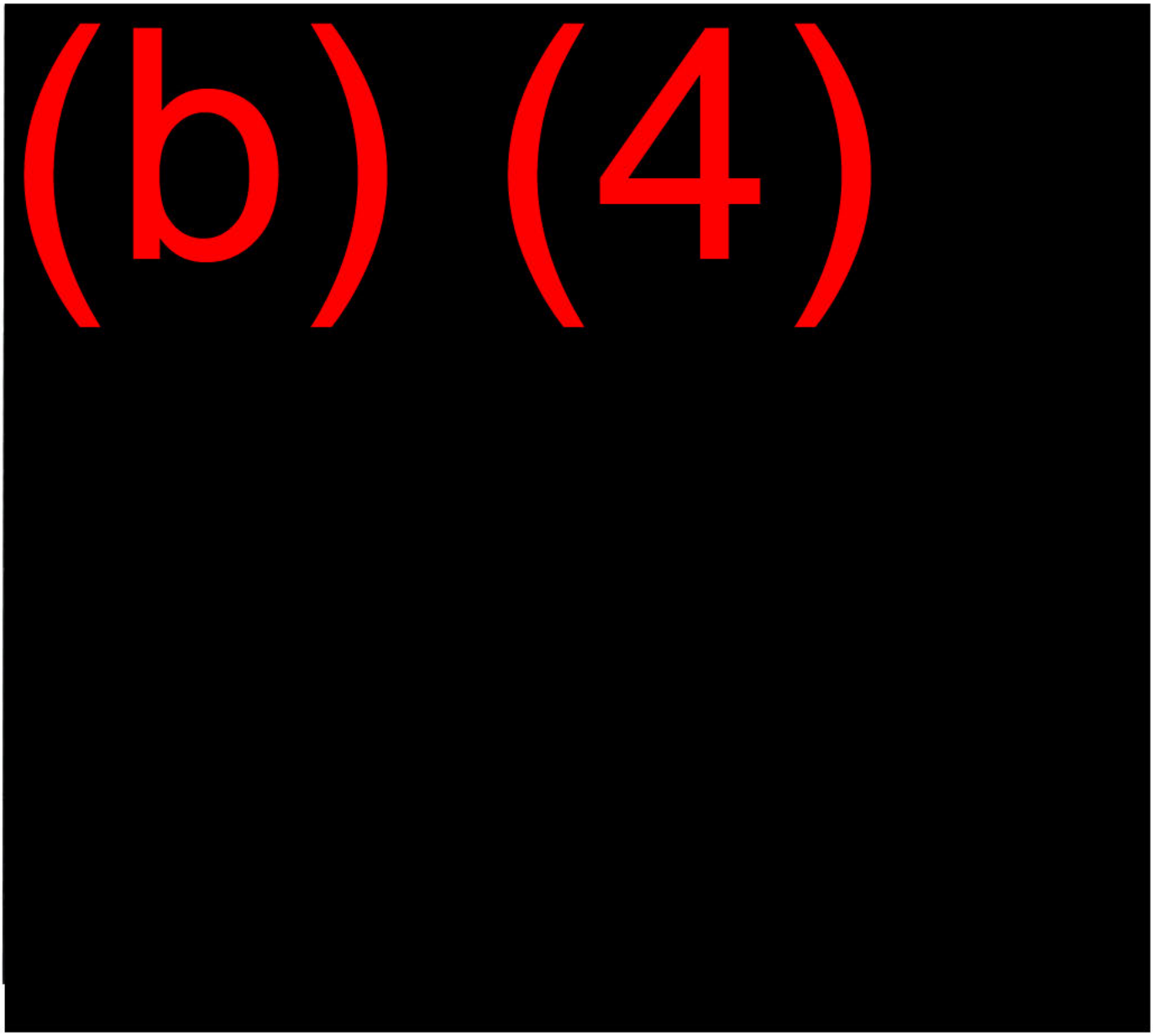
SCHEDULE MILESTONES: (complete or reference separate project plan)

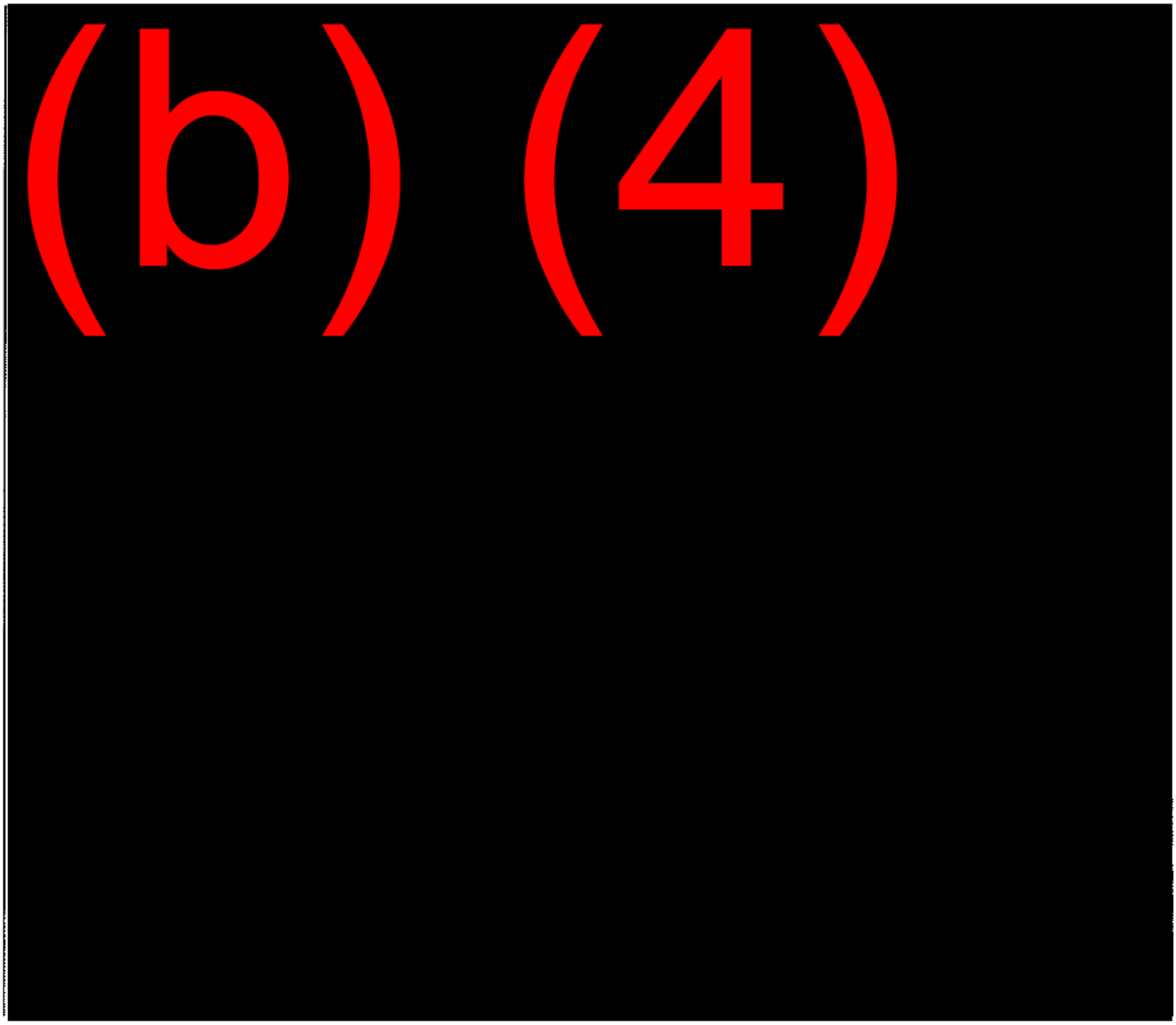

(b) (4)

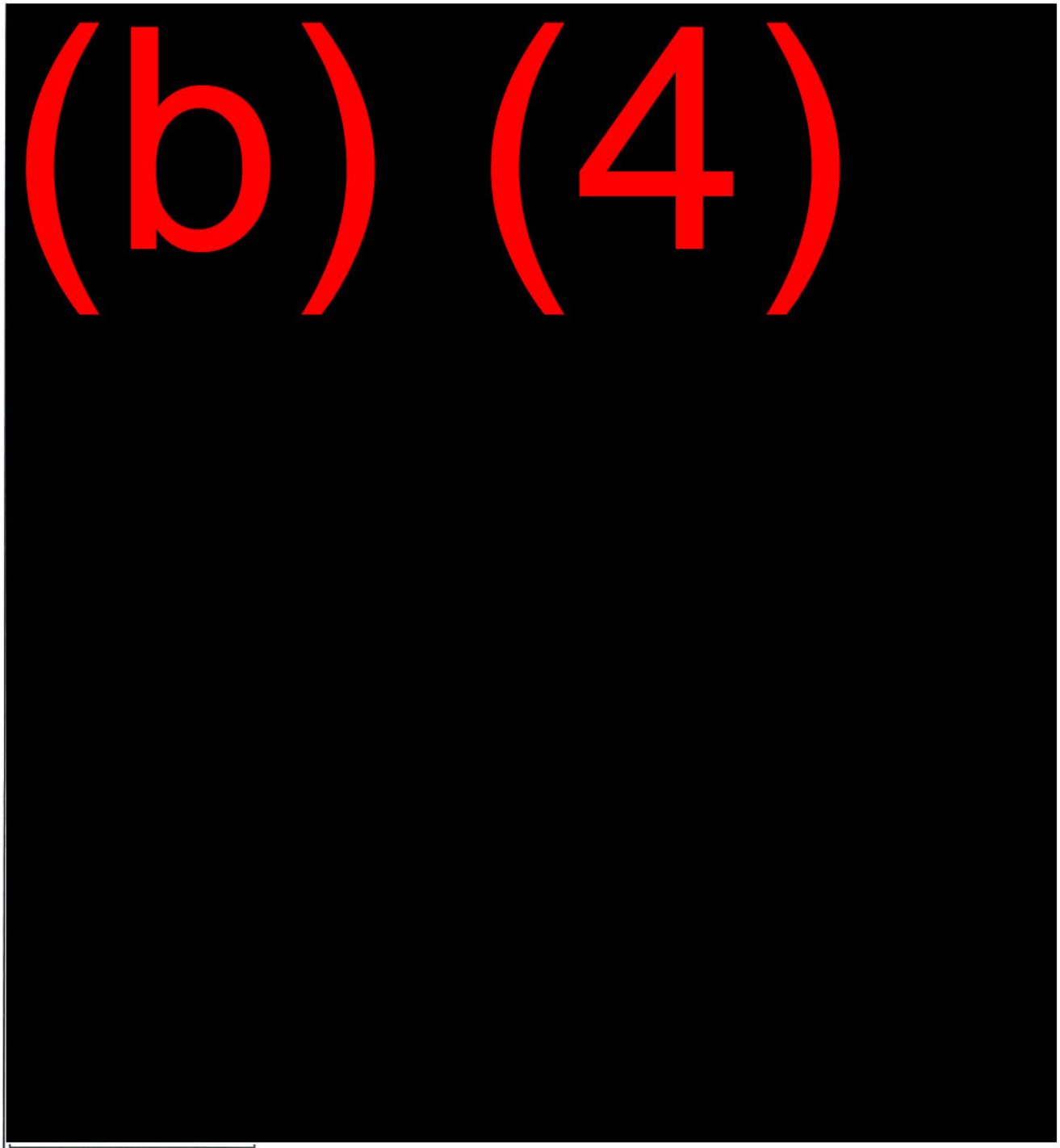

(b) (4)


(b) (4)


(b) (4)

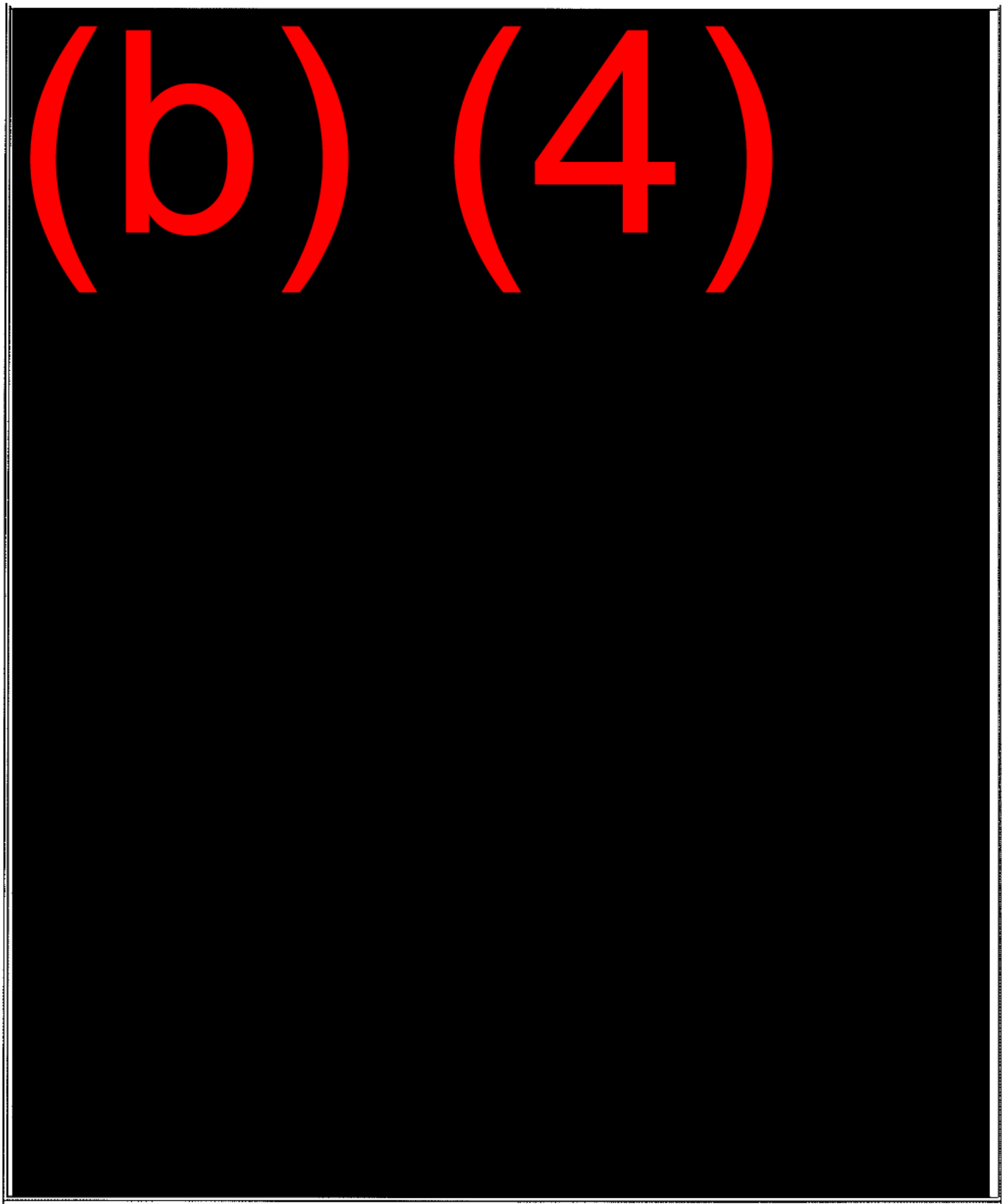

(b) (4)


(b) (4)



File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Engineering and Technician Labor are the primary cost drivers.

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1021	02/18/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1021

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1021

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1021

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 02/18/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1021 is to incorporate CR2773, FY15 3D Printing Services: The estimated cost (b) (4) The estimated awa The estimated ince The total value of this Delivery Order is $28,192 Work is to be completed by September 23, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	28,192.00	28,192.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART PPC

13. Total 28,192.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 2773	DX CHANGE REQUEST

CR TITLE: FY15 3D Printing Services

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Prado, Ernesto J. (JSC-CX141)	x34902	ernesto.j.prado@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☑ OTHER ☑ FUND CODE: EC

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

This IDIQ will serve as an umbrella to cover all 3D printing requests in the SVMF. Services included may make use of the Stratasys Fortus FDM printer, the Stratasys Objet EDEN polyjet printer, and the 3D Scanner.

7. RATIONALE:

Requests to have objects 3D printed at the SVMF have been increasing as knowledge of our capabilities becomes more well known. To avoid the overhead of processing individual Change Requests, this IDIQ will serve as an umbrella project for the Fiscal Year of 2015 under which those requests will fall.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Support shall be provided for five small 3D printing projects (reference ~2K).

8.2 Support shall be provided for five medium ~$4k 3D printing projects (reference ~4K).

8.3 Details for projects shall be documented in individual TDCs and IDIQ shall be revised to include them prior to closure

Note: TRRs are not required for these projects/deliveries per CX-14 CCB decision on 2/9/15

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/15/2015	1/22/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.3
Signature: Mcintyre, Allison L. (JSC-CX141) Date: 1/29/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Prado, Ernesto J. (JSC-CX141)		ernesto.j.prado@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	[redacted]	[redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$28,200	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

COTR for CRs with Cost Impact Only
COTR:

Date:

Date:

CCB CHAIR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

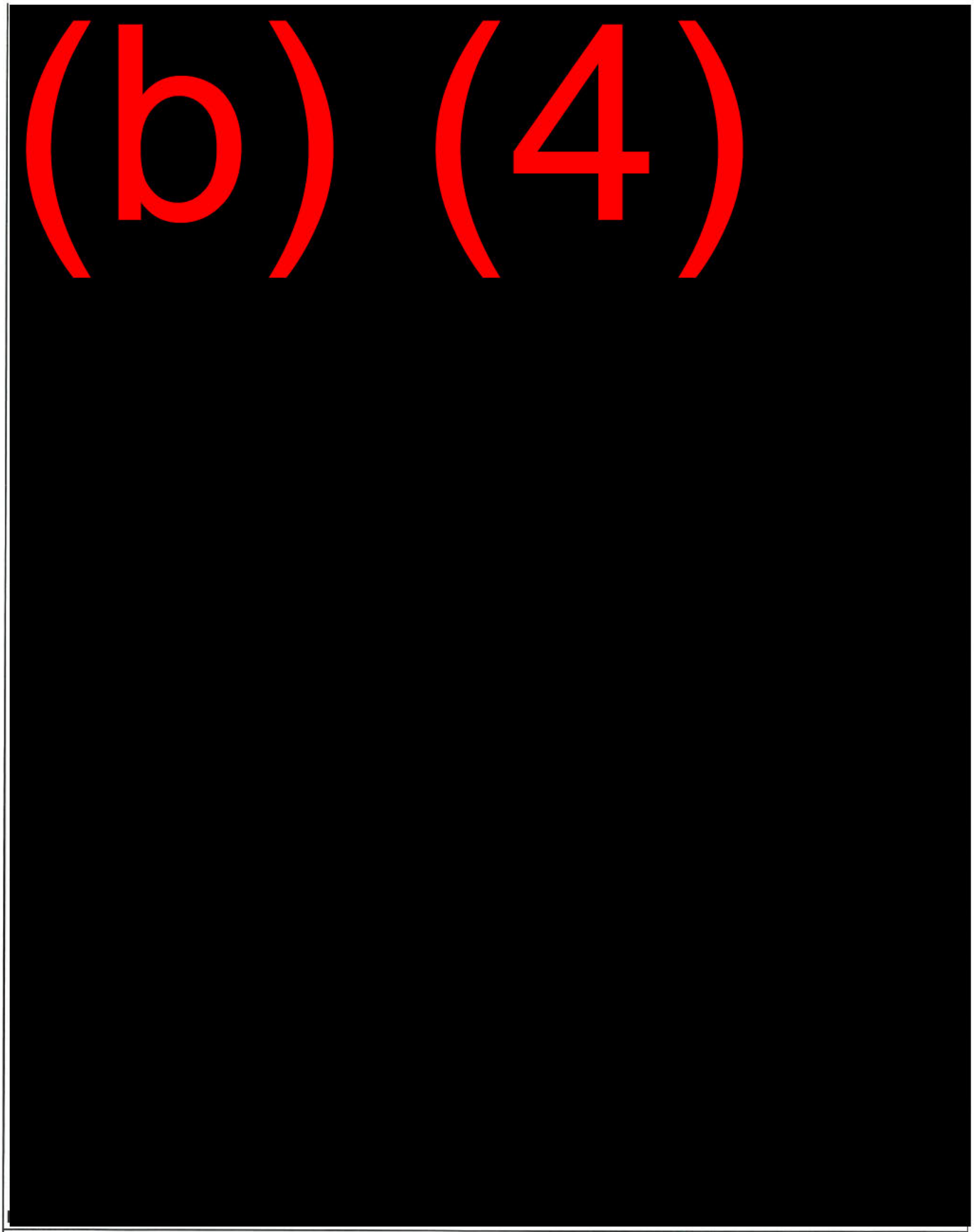
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

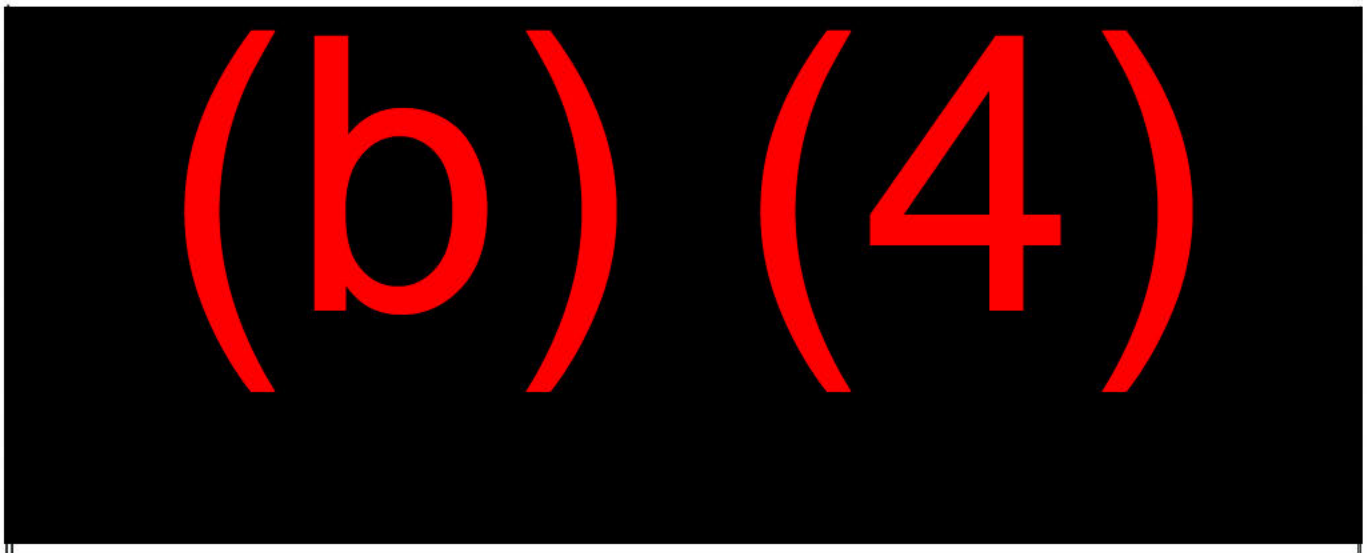
1. Each 3d Printed product shall be counted and inspected for sharp edges prior to being delivered to the end user. A tracking log will be kept in the project folder and updated upon part deliveries.

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1022	02/18/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1022

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 5, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1022

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1022

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS Digitally signed by SCOTT STEPHENS DN: c=US, o=U.S. Government, ou=NASA, ou=PIV, cn=SCOTT STEPHENS, 0.9.2342.19200300.100.1.1=xxxxxxxx Date: 2015.02.19 09:32:49 -06'00'

Contracting Officer — 02/19/2015 Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1022 is to incorporate CR2771, Procure NBL Mockup TA Clamps The estimated cost (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $44,562 Work is to be completed by June 5, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	44,562.00	44,562.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART. PPC

13. Total 44,562.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 2771	DX CHANGE REQUEST

CR TITLE: Procure NBL Mockup TA Clamps

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☑ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Procure spares inventory for 100 1.00" diameter TA Clamps.

7. RATIONALE:

Additional inventory required for new mockup builds. This item has a typical eight to ten week procurement lead-time.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Procure quantity of (b) (4) [redacted] of (b) (4) [redacted] (latest revision). No Safety Review or TRR required due to build-to-print item.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
4/23/2015	1/12/2015

Rev

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Turcotte, Edgar J. (JSC-CX121) Date: 1/14/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Turcotte, Edgar J. (JSC-CX121)	3-5730	edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$44,600	6/5/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

COTR for CRs with Cost Impact Only
COTR:

Date:

Date:

CCB CHAIR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
01	(b) (4) (1.00")	(b) (4) 707	NBL	(b) (4)	Per Dwg	(b) (4)

No Safety Review or TRR required. Items are NBL standard mockup outfitting components and are built-to-print.

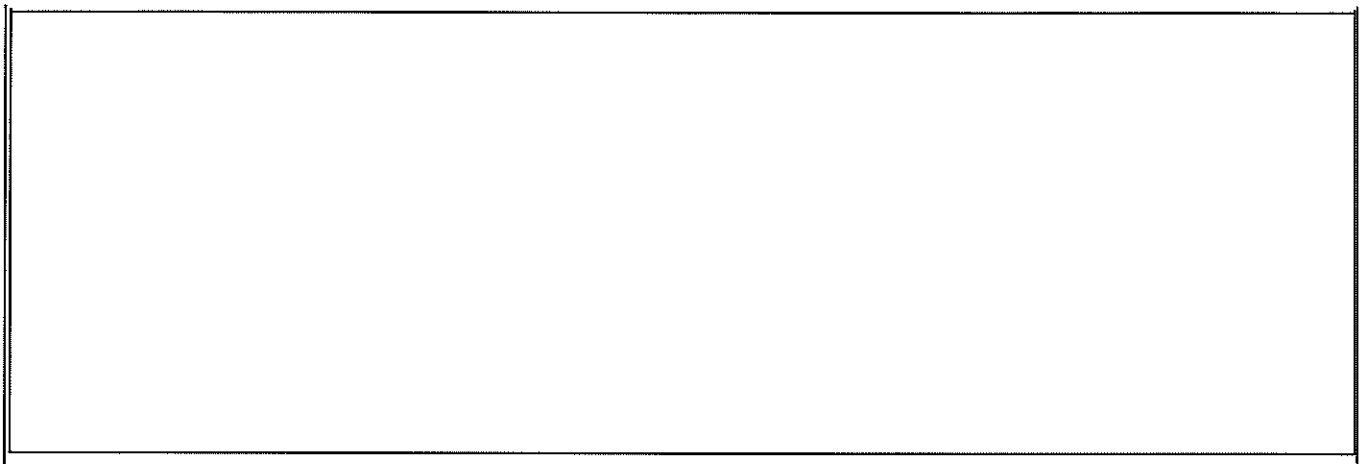
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	(b) (4) 1.00")	EA	(b) (4)	Inspection		(b) (4)

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



ID	Task Number
0	0000
1	1000
2	1500
3	1510
4	1520

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

[redacted]

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

	Engineering and			

Design	Program Support	Management	Technicians	Material

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1023	02/24/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1023

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 15, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1023

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1023

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 02/24/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1023 is to incorporate CR2747, Build Hi-Fi IDA Mockup Second Version: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is (b) (4) Work is to be completed by June 15, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2747	DX CHANGE REQUEST

CR TITLE: Build High Fidelity IDA Mockup

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	(b) (4) @nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☑ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Manufacture a second International Docking Adapter (IDA) mockup for NBL use. The IDA mockup will need to be neutrally weighed out to support crew maneuvering during berthing to PMA 3 (on Node 2 Zenith).

IDA documents referenced in **REQUIREMENTS/REFERENCES** below:

https://iss-www.jsc.nasa.gov/nwo/seio/vcer/cadweb/web/payload.shtml
SR held on 2/4/15 - No Actions; No TRR required (b) (4) 2/4/15

7. RATIONALE:

Required to support NBL development and crew training for IDA 2 post IDA 1 installation.

Hardware needed for 1-G on 6/16/15, and development run on 6/23/15.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See table below.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
6/1/2015	1/8/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Haas, John (JSC-CX121) Date: 2/8/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Honeycutt, Howell {Lane} (JSC-CX121)		howell.l.honeycutt@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
		(b) (4) @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
(b) (4)	6/15/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:	**COTR for CRs with Cost Impact Only** COTR:

Date:	Date:
CCB CHAIR:	
Date:	
Closed by:	**Date:**

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	International Docking Adapter 2	Boeing Provide Step File (Note 1)	Step File	(b) (4)	III-C	(b) (4)
1.1	WIF Dovetail plates(Non-Load Bearing), Per IDA 1 Design	Existing NBL design	Existing NBL Design		II-B	
1.2	Planar Reflector and bracket	Boeing Provide Step File	Step File		III-D	
1.3	NZGL Connector Panel with label	Boeing Provide Step File	Step File		III-D	
1.3a	Size 15 NZGL Receptacle with label	Existing NBL Design	Existing NBL Design		II-D	
1.3.b	Size 15 NZGL Receptacle with label	Existing NBL Design	Existing NBL Design		II-D	
1.3.c	Size 17 NZGL Receptacle with label	Existing NBL Design	Existing NBL Design		II-D	
1.3.d	Size 21 NZGL Receptacle with label	Existing NBL Design	Existing NBL Design		II-D	
1.3.e	Size 25 NZGL Receptacle with label	Existing NBL Design	Existing NBL Design		II-D	
1.4	Trunnion Pins – that accept retro reflector	Boeing Provide Step File	Step File		II-D	
1.5	Trunnion Pin	Boeing Provide Step File	Step File		III-D	
1.6	Tether Loops	684-017131	VMDB		III-D	
1.7	Top Mounted Handrail Assemblies labeled with **15xx series for IDA 2**	(b) (4)	VMDB		II-D	
1.8	H-fixture and Target	Existing NBL design	Existing NBL Design		III-D	
1.9	OTCM Connector Bracket	Existing NBL design	Existing NBL Design		III-D	
1.10	Alignment Petals to visiting vehicle – these are EVA installable through a bolted interface	Boeing Provide Step File	Step File		II-B	
1.11	Receptacle Umbilical – volumetric only	Boeing Provide Step File	Step File		III-D	
1.12	Plug Umbilical – volumetric only	Boeing Provide Step File	Step File		III-D	
1.13	Coarse alignment guides to PMA	Boeing Provide Step File	Step File		II-D	
1.14	Fine alignment holes – interface to PMA 2	Boeing Provide Step File	Step File		II-D	
1.15	Fine alignment pins – interface to PMA 2	Boeing Provide Step File	Step File		II-D	
1.16	IDA 2 Label	Boeing Provide Step File	Step File		III-D	
1.17	Retro-reflector Assembly A	(b) (4)	VMDB		II-B	

1.18	Retro-reflector Assembly B	(b) (4)	VMDB	(b) (4)	II-B
1.19	Peripheral Docking Target (Reference DX CR-2712)		VMDB		II-B
1.20	Modify IDA 1 Thermal Cap to have 7 straps instead of 8		VMDB		II-B
2	Verify Hemi Reflector Bag (Update Velcro per drawing)		VMDB		II-B
3	PMA Reflector Cover (one for IDA 1 & one for IDA 2)		VMDB		II-B
4	Blanket Assembly, H-Fixture		VMDB		II-B
4a	Cap Assembly	Note 2	VMDB		II-B
4b	Tether Strap Assembly	(b) (4) Note 3	VMDB		II-B
5	Fit check of IDA 2 to modified PMA 2 & PMA 3	N/A	N/A		N/A

1. VV guide petals on the IDA1 mockup are an early design, not flight-like. Build IDA 2 to the new and larger diameter IVA corridor (~31.5"). Due to being needed to support upcoming NBL training events, the IDA1 VV guide petals shall be updated at a later date on an additional CR.

2. Manufacture item 4.a using two layers of Phifertex

3. Item 4.a shall be hard mounted to H-fixture (one IDA 1 and one on IDA2)

4. Item 4.a shall include four black patches on sides

(CR Requirement list reviewed by Curt Carlton 12/16/14)

File Attachment

File Attachment

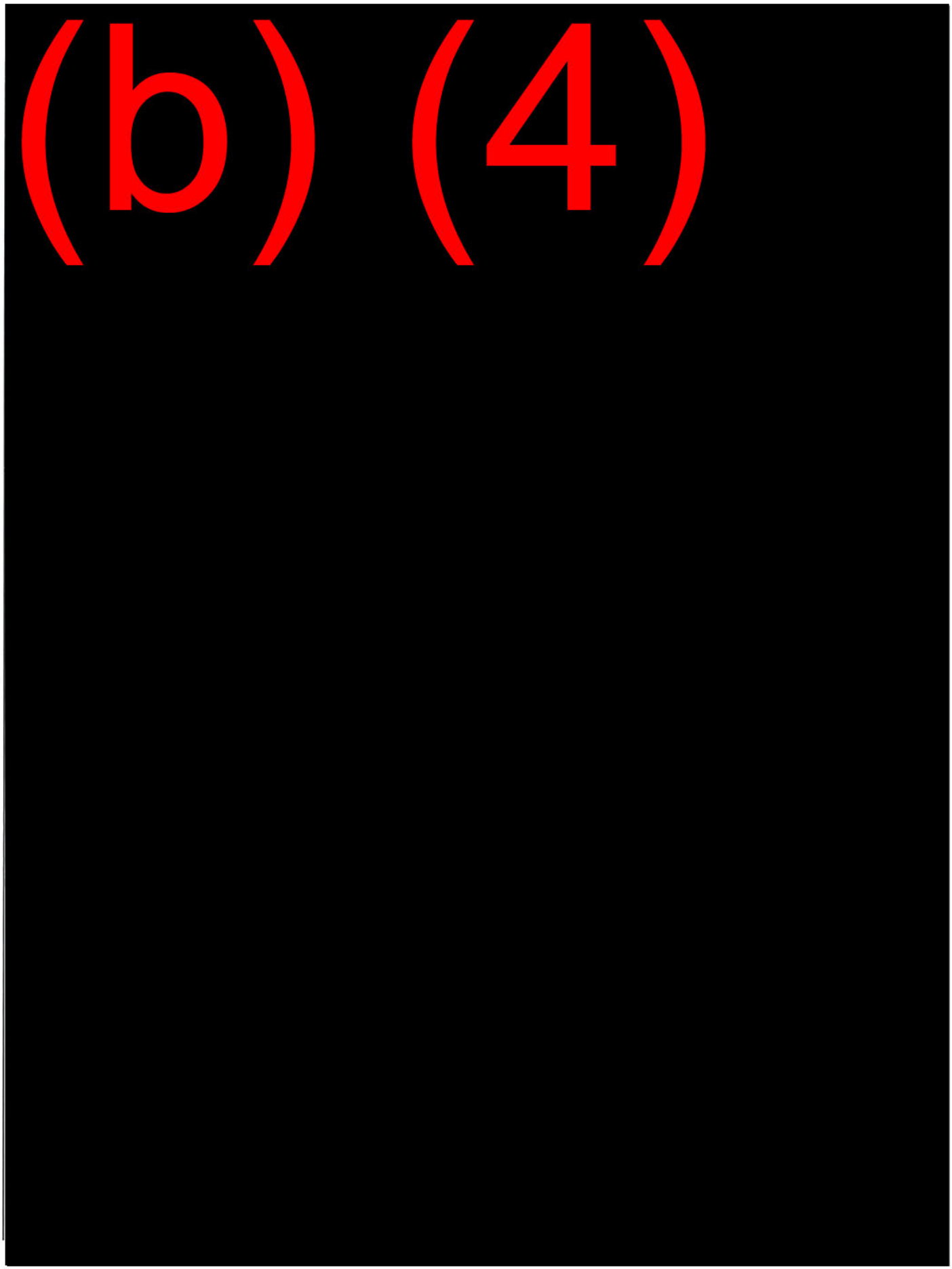
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	International Docking Adapter 2	(b) (4)	III-C	
1.1	WIF Dovetail Plates per IDA 1		II-B	
1.2	Planar Reflector and bracket		III-D	
1.3	NZGL Connector Panel with label		III-D	
1.3a	Size 15 NZGL Receptacle with label		II-D	
1.3.b	Size 15 NZGL Receptacle with label		II-D	
1.3.c	Size 17 NZGL Receptacle with label		II-D	
1.3.d	Size 21 NZGL Receptacle with label		II-D	
1.3.e	Size 25 NZGL Receptacle with label		II-D	
1.4	Trunnion Pins – that accept retro reflector		II-D	
1.5	Trunnion Pin		III-D	
1.6	Tether Loops		III-D	
1.7	Top Mounted Handrail Assemblies labeled with **15xx series for IDA 2**		II-D	
1.8	H-fixture and Target		III-D	
1.9	OTCM Connector Bracket		III-D	
1.10	Alignment Petals to visiting vehicle – these are EVA installable through a bolted interface		II-B	
1.11	Receptacle Umbilical – volumetric only		III-D	
1.12	Plug Umbilical – volumetric only		III-D	
1.13	Coarse alignment guides to PMA		II-D	
1.14	Fine alignment holes – interface to PMA 2		II-D	
1.15	Fine alignment pins – interface to PMA 2		II-D	
1.16	IDA 2 Label		III-D	
1.17	Retro-reflector Assembly A		II-B	
1.18	Retro-reflector Assembly B		II-B	
1.19	Peripheral Docking Target (Reference DX CR-2712)		II-B	
1.20	Modify IDA 1 Thermal Cap to have 7 straps instead of 8		II-B	
2	Verify Hemi Reflector Bag (Update Velcro per drawing)		II-B	
3	PMA Reflector Cover (one for IDA 1 & one for IDA 2)		II-B	

4	Blanket Assembly, H-Fixture	(b) (4)	II-B	
4a	Cap Assembly		II-B	
4b	Tether Strap Assembly		II-B	
5	Fit check of IDA 2 to modified PMA 2 & PMA 3	(b) (4)	N/A	

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

General Design Review will be performed.

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1024	03/26/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1024

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1024

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1023

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens
SCOTT STEPHENS
Contracting Officer
03/26/2015
Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1024 is to perform CR547, DCR SW HW Architecture study and prototype: The estimated cost (b) (4) The estimated awa The estimated ince The total value of this Delivery Order is $127,982. Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level, The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	127,982.00	127,982.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 127,982.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative
Date

CR NO.: 547	DX CHANGE REQUEST

CR TITLE: DCR SW HW Architecture study and prototype

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Williamson, Paul (JSC-CX121)	x47814	paul.williamson-1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

This project will explore what software architecture, design patterns, and tools are needed to replace existing obsolete SSRMS DCR Module 1A software through proof of concept testing. All related software and hardware dependencies in use by the SSRMS DCR Module 1A software will need vendor-supported replacements.

7. RATIONALE:

The existing SSRMS DCR Module 1A software was developed using Microsoft's Visual Studio 6 (C++/VB6). These software tools entered into the non-support phase in April of 2008; Windows XP, the operating system currently in use, entered into the non-support phase in April of 2014. Finally, all related software and hardware dependencies that are in use by this software package are also obsolete.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Safety Review conducted

TRR not required (SR-2015-349)

1. Architectural Design Documentation
   - o Shall document the architectural changes needed utilizing vendor-supported functionally equivalent software tools and hardware replacements
   - o Documentation
     - Basic Software Architecture Design Documentation
     - APIs / Interfaces
     - Related State Machine Modifications
2. Report on Proof of Concept Results
   - o Shall perform proof of concept testing to validate the proposed architectural changes
   - o Shall procure all required software and hardware replacements to perform proof of concept testing
   - o Shall assemble the operating platform needed to perform the proof of concept testing
3. Presentation of project results

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	3/6/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.2
Signature: Haas, John (JSC-CX121) Date: 1/28/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Williamson, Paul (JSC-CX121)		paul.williamson-1@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
	9/25/2015

$128,000

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Turcotte, Edgar J. (JSC-CX121)

Date: 3/10/2015

CCB CHAIR:

Murray, Sarah L. (JSC-CX111)

Date: 3/11/2015

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

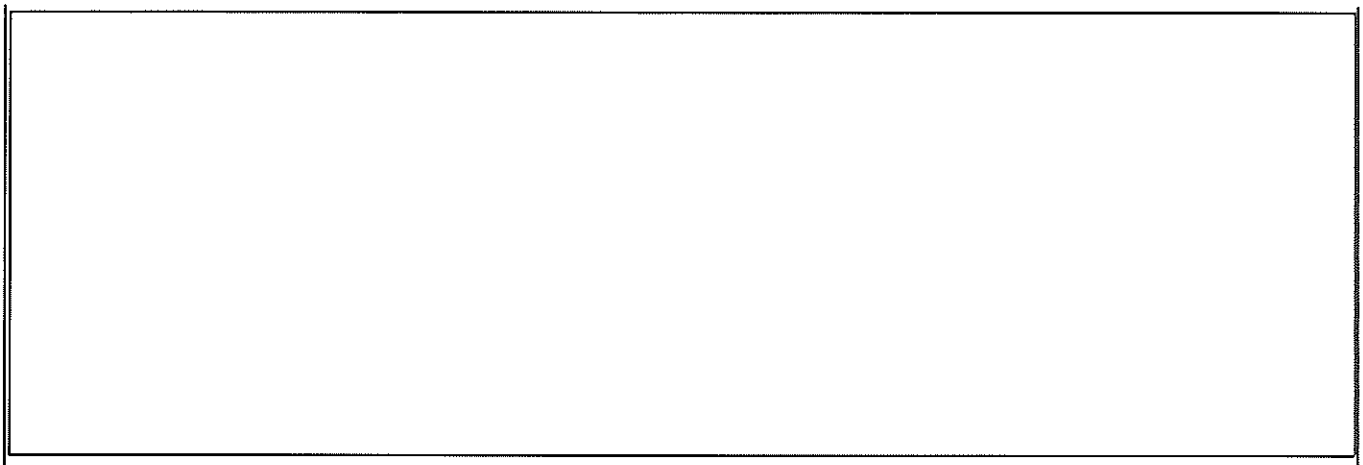
File Attachment

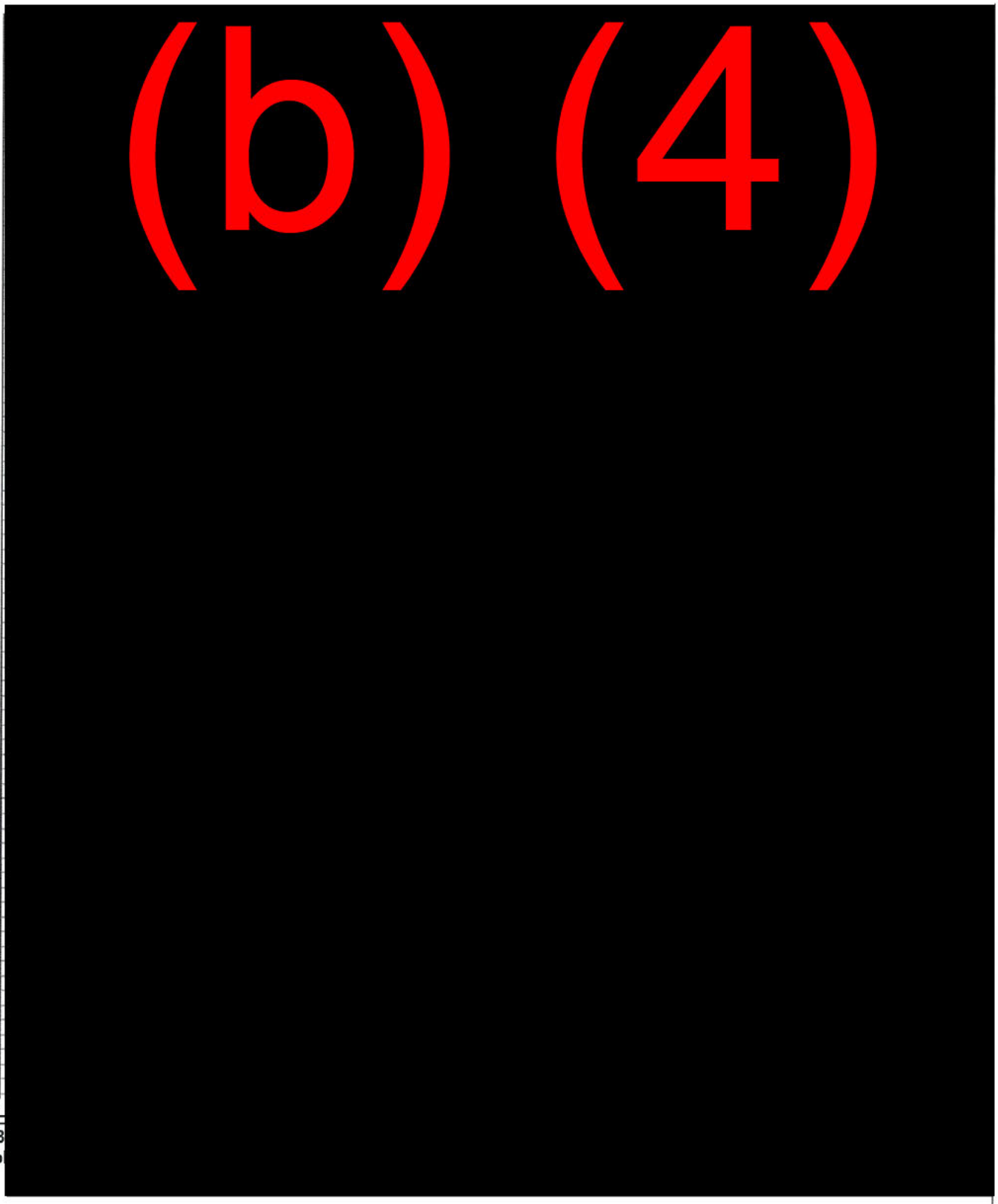
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	Architectural Design Documentation	Task	1	Inspection		(b) (4)
2	Report on Proof of Concept Results	Task	1	Inspection		
3	Presentation of project results	Task	1	Inspection		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)




(b) (4)

Labor (labor estimates priced with IDIQ rates)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1025	04/13/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1025

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1025

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1025

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 04/10/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1025 is to perform CR557, JSC Education Micro-G NEXT Student Design Evaluation: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is (b) (4) Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 557	DX CHANGE REQUEST

CR TITLE: JSC Education Micro-G NEXT Student Design Evaluation

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Schneider, Gail A. (JSC-DX321)	281-244-1147	Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: External cust...

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Support JSC Education by providing development, integration, and execution support for 2 occurrences of a 5 day, university student, EVA tool design evaluation.

Note: this project is for a non-FOD customer (JSC-AD) for which CX will be externally funded. NSOC shall price this effort as an external customer IDIQ. The estimate should separately delineate the cost for the first occurrence and for each subsequent occurrence.

7. RATIONALE:

The America Competes Reauthorization Act and NASA's Strategic Plan education goals were enacted to encourage more student involvement in STEM disciplines. The customer, JSC Education, would like to host university student, engineering design evaluations to achieve those goals and provide a realistic, technical project as an opportunity for the students.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

(b) (4) [redacted]

[redacted]

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	3/19/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.3
Signature: Haas, John (JSC-CX121) Date: 2/17/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Schneider, Gail A. (JSC-CX321)		

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted] @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
(b) (4) [redacted]	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Durkin, Robert J. (JSC-CX121)

Date: 3/26/2015

CCB CHAIR:

Murray, Sarah L. (JSC-CX111)

Date: 3/30/2015

COTR for CRs with Cost Impact Only

COTR:

Mcdaniel, Randall S. (JSC-CX111)

Date: 3/30/2015

Closed by:

Date:

REQUIREMENTS/REFERENCES (cont.):

Day 3/4: Dive and 1-G Test Days - Group A will perform test activities in the morning; Group B will perform test activities in the afternoon

- Two complete teams of divers will support both sessions; allowing each team of students in turn to brief "their" divers on their particular tool or device. Diver debrief tool with students post test
- The 1-g briefings and demonstration will be given poolside; after which time the students will go up to the Test Conductor Room to monitor and conduct their particular tool activity or device test.
- The initial dive tests will be 30 minutes; a second 20 minute 1-G or underwater test is optional

Day 5: Debriefs and closing event

Other requirements:

- Support: TD, Divers, Dive Sup, Topside, SR/TRR Support, engineering, technical review of student projects, Flight Lead, video, 1-2 escorts (including TC-B support).
- Configuration: Mockups for ARM mission, some testbeds on pool floor, 2-way communication between TC and diver
- Space requirements:
  - High Bay space for student congregation, team workspace, and 1-G testing
  - Conference room for safety and engineering presentations
  - Pool space for tool testing
  - Pool deck space adjacent to water entry location for staging the teams' tests and briefing/debriefing the divers
  - TC room for student direction of tool testing operations
- NSOC responsibilities:
  - Provide divers and support personnel needed for the event
  - Provide set up, execution, and tear down support as needed
  - Work with JSC Education personnel to ensure that their hardware and event plans meet NBL requirements.
  - Develop integration / engineering plans, including:
    - Operations Plan and Logistics Coordination (including event schedule, hardware integration, lift plan, etc)
    - Badging / escort plan – All participants must be US citizens, students must be 16 years or older before arrival in Houston
    - Camera configuration / recording plan; provide video to highbay, TC room, and conference rooms and provide video (DVD's) to student teams after event; provide video feed for Micro-G website
  - The NSOC contractor will develop and present the safety review and TRR package required for the integration of the event

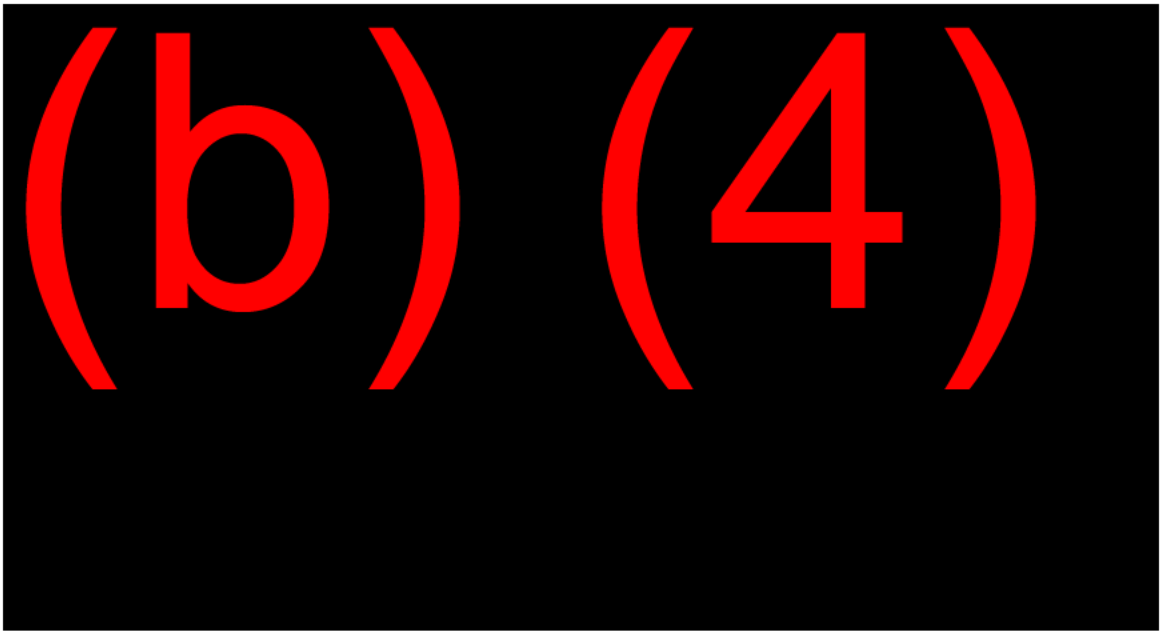
Other Event Information

- Typical participation per session: 10-12 teams with ~8 people per team (including students, mentors, and faculty)
- 5 design projects for student teams to choose from (see attachment)
- Students prepare a Technical Equipment Data Package (TEDP) and deliver an engineering and safety presentation
- 2015 preliminary requested dates: June 1-5, August 3-7
- The TEDP safety and engineering information for the design projects will be completed by the students
- Currently no anticipated manufacturing/preparation of "props" needed for student testing/ EC Engineering will provide all needed support hardware.

(b) (4)

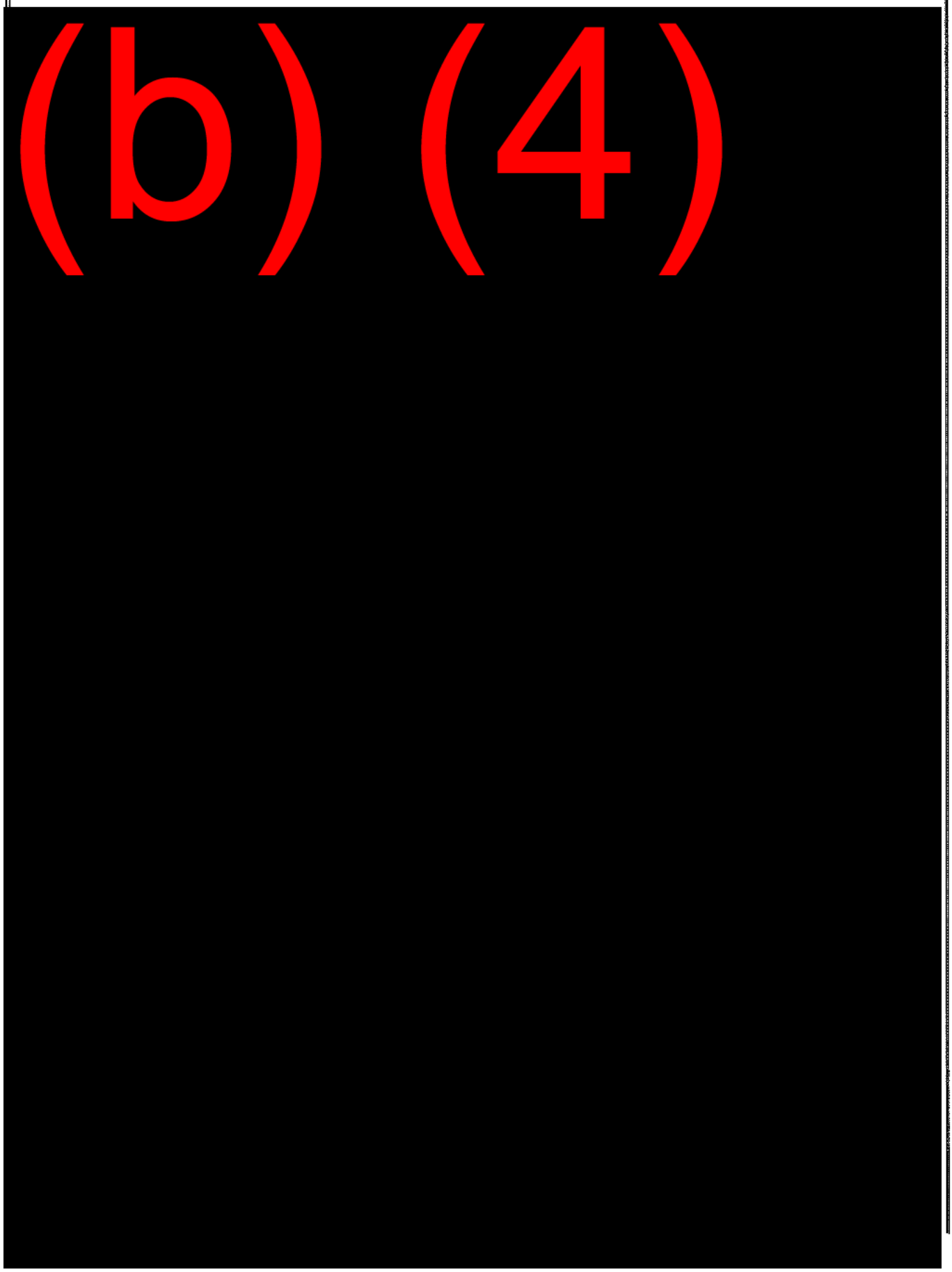
ECHNICAL
ONTACT

(b) (4)



File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

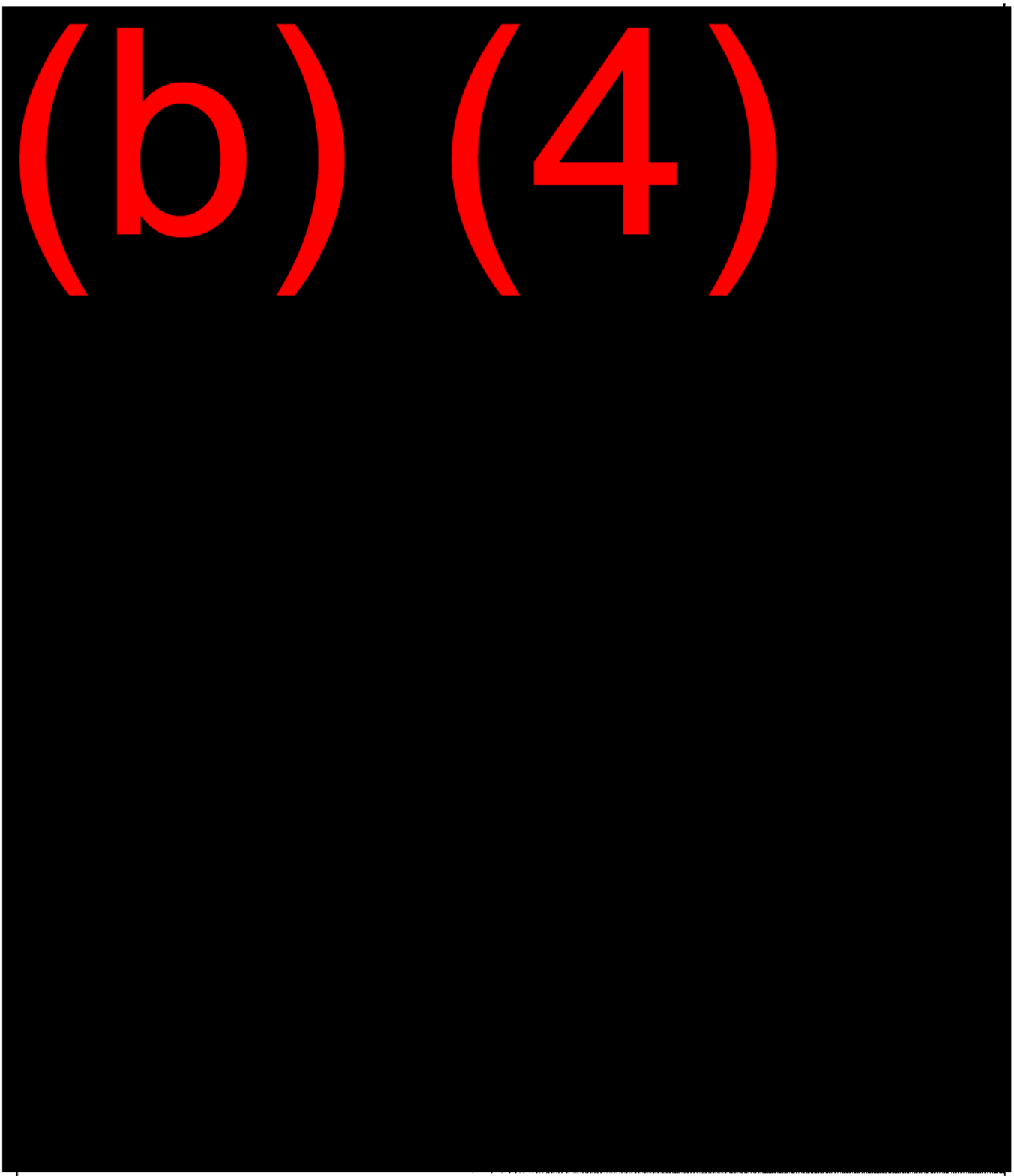

(b) (4)

	and tear-dowm (Labor)			Work performed		
11.	(b) (4) blank DVD (provided to teams)	Each	(b) (4)	Inspection		(b) (4)

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

File Attachment



File Attachment

(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or

reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1026	04/21/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1026

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1026

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1026

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 04/21/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1026 is to perform CR553, FY15 Critical Systems Trainers: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $150,902 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	150,902.00	150,902.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total 150,902.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative _____ Date

CR NO.: 553	DX CHANGE REQUEST

CR TITLE: Critical Systems Trainers

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Turcotte, Edgar J. (JSC-CX121)	281-483-5730	edgar.j.turcotte@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 60954

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Provide simulation capability, similar to the ECS Training simulator (CR 416), to provide enhanced training and testing of operators for the following critical systems: BGS, SSRMS, WTS, Comm and Video. This simulation capability does not have to be in the same form as the ECS simulator but should provide an equivalent level of training and testing capability.

Enhance the critical system training program for all critical systems. This enhancement would ensure consistent training with all critical systems and verify training/proficiency requirements for each one.

NOTE: Annual (fiscal year) funding would be necessary so as to ensure sustenance of these programs through the end of the existing NSOC II contract and in consideration of continuing NBL operations for outlying years.

7. RATIONALE:

Critical Systems Engineering would like to expand competencies, similar to the level of skills and capabilities of Senior SSRMS Engineers into each of the other systems.

The critical systems training program for each systems differs slightly with respect to training requirements, material provided, OJT and testing criteria. The intent of this CR is to enhance the consistency of training among all systems and add simulation based realism in order to build confidence in off-nominal responses by the operators.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No SR & TRR required.

- The following critical systems are to be covered by this CR: BGS, SSRMS, WTS, and Comm and Video.
- Define what areas of system knowledge and malfunction identification/response for the aforementioned critical systems could be tested and trained via a simulator.
- Determine which simulation method (i.e. computer based testing, mechanical/electrical simulator, etc.) is the most appropriate for each of the critical systems above.
- Work with the training development department to see how this type of training could be integrated into each critical systems training flows and if any training content could be removed as a result of the new simulation capability.
- Determine the design requirements that would allow the simulation method determined for each critical system. This data will be used as the requirements for a follow on CR should it be decided to provide the simulation for a given critical system.
- Present the derived requirements and recommendations for each of the critical systems involved in this CR at a CX12 CCB by 09/21/2015 for consideration.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	3/16/2015

Rev

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.2

Signature: Turcotte, Edgar J. (JSC-CX121) Date: 3/23/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Turcotte, Edgar J. (JSC-CX121)	3-5730	edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
(b) (4)		nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$151,000	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

(b) (4)

Date: 4/13/2015

CCB CHAIR:

(b) (4)

Date: 4/13/2015

COTR for CRs with Cost Impact Only

COTR:

(b) (4)

Date: 4/13/2015

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

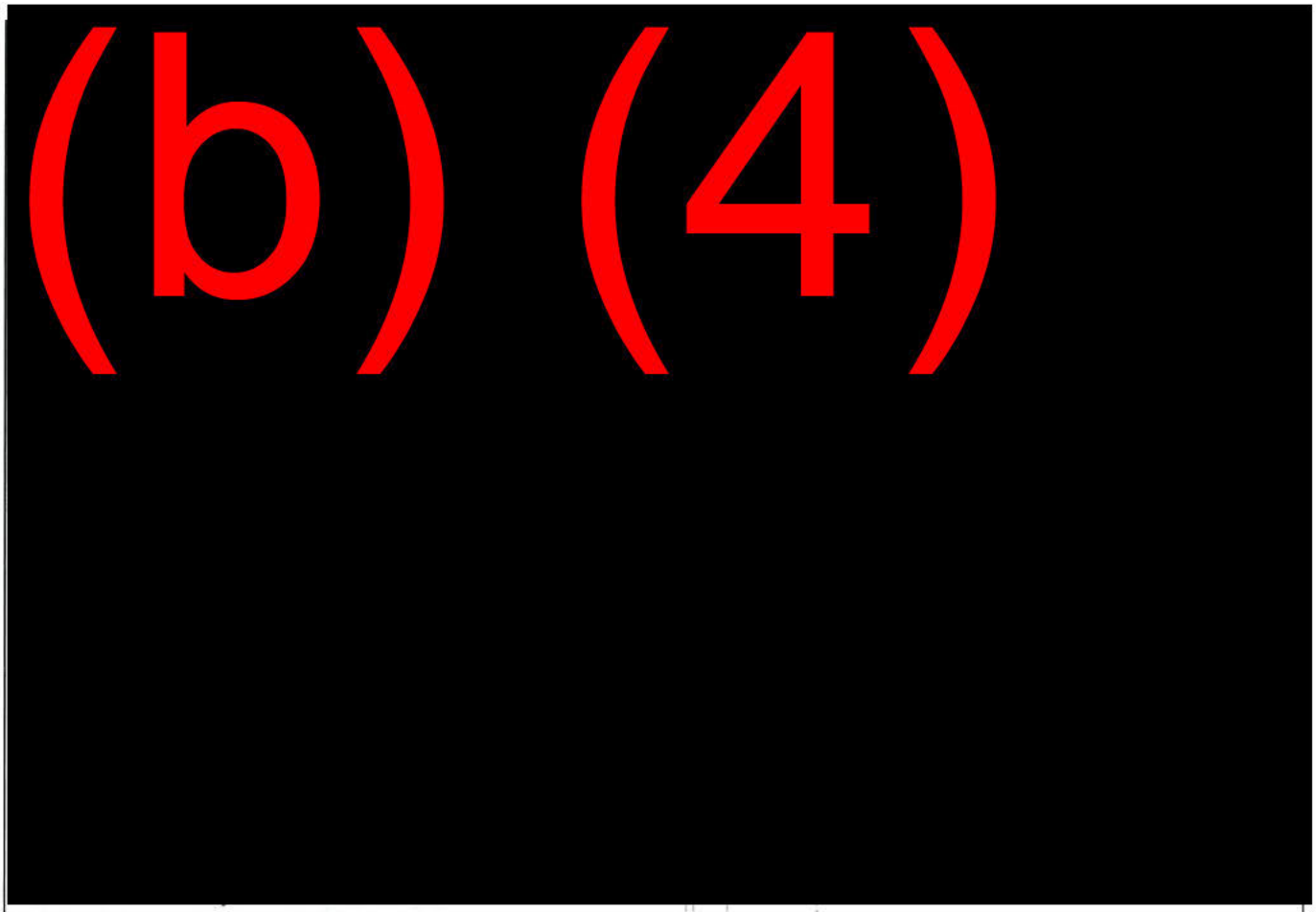
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty.	Method of Verification	Verified	Technical Contact
1.	Verify that each of the following critical systems has been covered by this CR – BGS	1	(b) (4)	Inspection		(b) (4)
2.	Verify that each of the following critical systems has been covered by this CR – ECS	1		Inspection		
3.	Verify that each of the following critical systems has been covered by this CR – SSRMS	1		Inspection		
4.	Verify that each of the following critical systems has been covered by this CR – Comm	1		Inspection		
5.	Verify that each of the following critical systems has been covered by this CR – Video	1		Inspection		
6.	Verify what areas of system knowledge and malfunction identification/response for BGS could be tested and trained via a simulator	1		Inspection		
7.	Verify what areas of system knowledge and malfunction identification/response for ECS could be tested and trained via a simulator	1		Inspection		
8.	Verify what areas of system knowledge and malfunction identification/response for SSRMS could be tested and trained via a simulator	1		Inspection		
9.	Verify what areas of system knowledge and malfunction identification/response for WTS could be tested and trained via a simulator	1		Inspection		
10.	Verify what areas of system knowledge and malfunction identification/response for Comm. could be tested and trained via a simulator	1		Inspection		
11.	Verify what areas of system knowledge and malfunction identification/response for Video could be tested and trained via a simulator	1		Inspection		

12.	Verify which simulation method (i.e. computer based testing, mechanical/electrical simulator, etc.) is the most appropriate for each of the critical system – BGS, ECS, SSRMS, WTS, Comm., Video	1	(b) (4)	Inspection		(b) (4)
13.	Verify the identification of design requirements that would allow the simulation method determined for each critical system - BGS, ECS, SSRMS, WTS, Comm., Video	1		Inspection		
14.	Verify completion of CX-12 CCB presentation covering requirements & Recommendations by 09/21/15.	1		Inspection		

SCHEDULE MILESTONES: (complete or reference separate project plan)



File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or

reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1027	04/21/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1027

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1027

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number. NNJ10HD35C DO 1027

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer
04/21/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1027 is to perform CR562, FY15 MHE Upgrades: The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is (b) (4) Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 562	DX CHANGE REQUEST

CR TITLE: FY15_MHE_Upgrades

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
[redacted]	[redacted]	[redacted]

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Procure Qty 1- 12,000 lb & 36,000 lb Forklifts

7. RATIONALE:

Current forklifts are aging equipment, and this procurement would enhance the capabilities of the facility by de-conflicting overhead bridge crane usage as well as falling in line with our green effort with emissions control.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Procure (b) (4) 12,000 lb Pneumatic Tire Forklift
Procure 36,000 lb Pneumatic Tire Forklift

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	3/10/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.2
Signature: Turcotte, Edgar J. (JSC-CX121) Date: 3/10/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Williamson, Paul (JSC-CX121)	4-7814	paul.williamson-1@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
(b) (4) [redacted]	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:
Turcotte, Edgar J. (JSC-CX121)

COTR for CRs with Cost Impact Only
COTR:
(b) (4) [redacted]
Date: 4/13/2015

Date: 3/30/2015

CCB CHAIR:
(b) (4)

Date: 4/13/2015

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

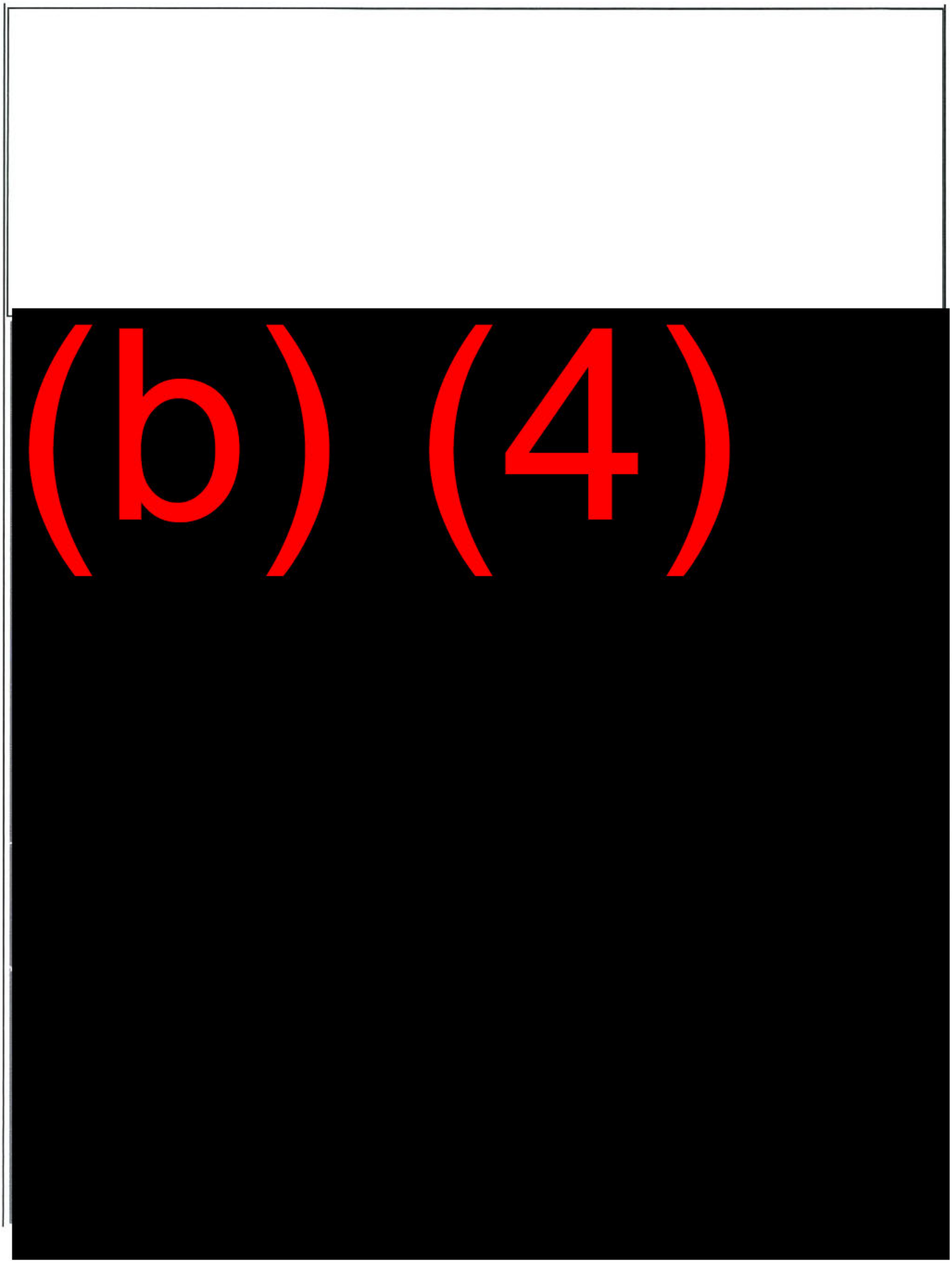
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	**TOYOTA MODEL 8FGC60U,** Internal Combustion Lift Truck. LP Gas Powered - UL Type "LP" Rating, **12,350 lbs. @24"** load center to 239" MFH	EA	(b) (4)	Inspection		(b) (4)
2.	**TOYOTA HOIST MODEL P360,** 136" WB, Diesel Lift Truck, 36,000 lbs. @ 24" Load Center	EA		Inspection		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

	Engineering and			

Design	Program Support	Management	Technicians	Material

[redacted]

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1028	05/05/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1028

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1028

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1028

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 05/06/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1028 is to perform CR561 SSRMS FY15 Upgrades-Load Analysis System DAQ Support: The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $222,824 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	222,824.00	222,824.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 222,824.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 561	DX CHANGE REQUEST

CR TITLE: SSRMS FY15 Upgrades-Load Analysis System DAQ Support

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
[redacted]	[redacted]	[redacted]

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Develop, test, and implement software change to the SSRMS DCR Module 1A software to monitor solenoid DC power supply and safe the system in the event a fault is detected.

Procure replacement PCs for NBL Robotic Systems, SSRMS actuator vane energizers, and SSRMS underwater connectors.

Procure data acquisition control instrumentation additions with additional labor required to augment experimental data acquisition tools and techniques for CR-558 Data Acquisition Tools and Technician Support.

7. RATIONALE:

SSRMS changes are recommendations from TRR-2015-307 (DR11968) SSRMS return to operation and were deemed highest priority by CX12 NASA and NSOC personnel.

Additional procurement of hardware and technician support is needed to augment CR-558 Data Acquisition Tools and Technician Support for this FY15.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Modify SSRMS DCR module 1A software to monitor solenoid DC power supply and safe the system in the event a fault is detected
2. Procure replacement PCs for NBL Robotic Systems
3. Procure SSRMS spare vane energizers and connectors.
4. Procure additional data acquisition instrumentation hardware (loadcells, integration hardware and work positioning system)
5. Provide additional hours of labor to augment experimental data acquisition tools and techniques for CR-558 Data Acquisition Tools and Technician Support.

Item 1 requires SR (completed 3/25/15) and TRR
Items 2-3 does not require a SR or TRR
Item 4 and 5 are controlled by SR and TRR requirements listed under CR-558

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	3/11/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.2
Signature: Haas, John (JSC-CX121) Date: 3/9/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Williamson, Paul (JSC-CX121)		paul.williamson-1@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for

planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$223,000	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Modify SSRMS DCR module 1A software to monitor solenoid DC power supply and safe the system in the event a fault is detected	1	JOB	SECP CWP		(b) (4)
2.	Procure replacement PCs for NBL Robotic Systems	1	LOT	Inspection		
3.	Procure SSRMS spare vane energizers and connectors.	1	LOT	Inspection		
4.	Procure additional data acquisition control instrumentation hardware procurement (loadcells and work positioning system)	1	LOT	Inspection		
5.	Provide additional labor to augment experimental data acquisition tools and techniques for CR-558 Data Acquisition Tools and Technician Support. Note: Labor acceptance will be actively managed by the CR requestor and Project Engineer and is assumed to be acceptable as long as a Work Request is open.	1	JOB	Work Orders		

For CR558 additional support deliverables will be verified under the premises of that CR.

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

561.pdf
Adobe Acrobat Document
77.2 KB

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1029	05/12/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1029

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phon (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1029

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1029

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 05/12/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1029 is to perform CR563, FY15 NBL System Upgrades: The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is (b) (4) Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 563	DX CHANGE REQUEST

CR TITLE: CR_NBL_563_FY15_Systems_Upgrades

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Procure upgrades for HD Video Recorders, HD float cameras, still cameras, HD helmet cameras, exercise equipment, AAD computers & rendering servers, LMF Tumbler, ArtCam Insignia Software, and manufacturer triangle weights.

7. RATIONALE:

Video and still camera equipment upgrades to support HD video system per FY15 CR-544.

Upgrade animation computers and rendering servers due to exceeding 5 year service life.

Enhance exercise gym by providing additional equipment for exercise. New gym location added additional space to support more equipment.

Enhance LMF capabilities and services by adding tumbler and etching design software for awards production on the Water Jet machine.

Add additional triangle weights in support of future mock-up configurations in pool.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No SR & TRR required. HD Float cameras, HD Helment cameras, and associated cables are being reviewed (TRR) before they are being tested in the pool on CR-544.

Procure the following:

- HD Video Recorders (b) (4)
- HD Float cameras (b) (4)
- HD Float camera cables (b) (4)
- HD Helmet cameras (b) (4)
- HD Helmet camera cables (b) (4)
- DSLR cameras/enhancements, underwater cameras and lighting, lenses
- Animation and Analysis computers and rendering servers upgrades
- LMF tumbler
- LMF ArtCam Insignia Software
- Exercise equipment (b) (4) treadmill, (b) (4) eliptical and (b) (4) rowing machine

Manufacture the following:

- Triangle weights (b) (4) per Drawing SGG-43121986 build to print. Material procured on FY14 CR-530.

Update SIBC software investment business case (IT security plan) as required

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:

9/25/2015	3/11/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.2

Signature: Turcotte, Edgar J. (JSC-CX121) Date: 3/10/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Turcotte, Edgar J. (JSC-CX121)	3-5730	edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$481,300	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

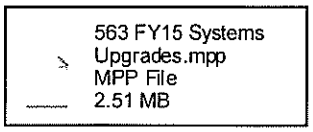
#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	HD Video Recorders (b) (4)	Task	(b) (4)	Inspection		(b) (4)
2	HD Float cameras (b) (4)	Task		Inspection		
3	HD Float camera cables ((b) (4)	Task		Inspection		
4	HD Helmet cameras (b) (4)	Task		Inspection		
5	HD Helmet camera cables (b) (4)	Task		Inspection		
6	DSLR cameras/enhancements, underwater cameras and lighting, lenses	Task		Inspection		
7	Animation and Analysis computers and rendering servers upgrades	Task		Inspection		
8	LMF tumbler	Task		Inspection		
9	LMF ArtCam Insignia Software	Task		Inspection		
10	Exercise equipment (b) (4) treadmill, (b) (4) elliptical and (b) (4) rowing machine	Task		Inspection		
11	Triangle weights (b) (4)	Task		Inspection		
12	Update SIBC software investment business case (IT security plan) as required	Task		Inspection		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Task Name

(b) (4)


563 FY15 Systems
Upgrades.mpp
MPP File
2.51 MB

ID	Task Name
	(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
[redacted] (b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1030	05/19/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1030

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 4, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1030

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1030

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 05/19/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1030 is to perform CR2691, Build ATA Deployable Carrier Mockup: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $155,079 Work is to be completed by September 4, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	155,079.00	155,079.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total 155,079.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U S Government Representative — Date

CR NO.: 2691	DX CHANGE REQUEST

CR TITLE: Build ATA Deployable Carrier Mockup

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4) [redacted]	(b) (4) [redacted]	(b) (4) [redacted]@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Fabricate a functional mockup of the proposed Ammonia Tank Assembly (ATA) Deployable Carrier for the September 2015 EVA Development Tests.

7. RATIONALE:

To launch future ATAs on the SpaceX vehicle, a Deployable Carrier will be required.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See Requirements Chart below

GDR & TRR required per safety Review held on 04/15/2015.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
7/31/2015	3/24/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Haas, John (JSC-CX121) Date: 3/25/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Pelischek, Timothy E. (JSC-EA531)		timothy.e.pelischek@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$155,100	9/4/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:
Turcotte, Edgar J. (JSC-CX121)

COTR for CRs with Cost Impact Only
COTR:
Mcdaniel, Randall S. (JSC-CX111)
Date: 5/7/2015

Date: 5/7/2015

CCB CHAIR:
Murray, Sarah L. (JSC-CX111)
Date: 5/7/2015

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

#	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Deployable ATA Carrier	ISS CAD Model – DEPLOYABLE CARRIER	(b) (4)	1	IIB	(b) (4)
1.1	All Handrails certified for BRT loads			8	IIB	
1.2	On-orbit WIF dovetails – Support APF & WIF EXtender loads			4	IIB	
1.3	Grapple Fixture Tower with FRGF			1	IIB	
1.4	PVGF able to accept LEE			1	IIB	
1.5	Identify Pool Stands to support carrier			1	N/A	
2	ATA FSE			1	IIB	
2.1	FSE Baseplate			1	IIB	
2.2	Bolt 3 Cup Cone			1	IIB	
2.3	Bolt 2 & 4 Clevis			2	IIB	
2.4	Bolt 1 Rotating Clevis			1	IIB	
2.5	FSE Electrical Connectors (Volumetric)			2	IIIC	
3	Verify ATA MLI is the same as ELC MLI and reuse			1	N/A	
4	Fitchecks				N/A	
4.1	Fitcheck ATAs on FSE				N/A	
4.2	OIWIF Dovetails				N/A	
4.3	LEE to PVGF				N/A	

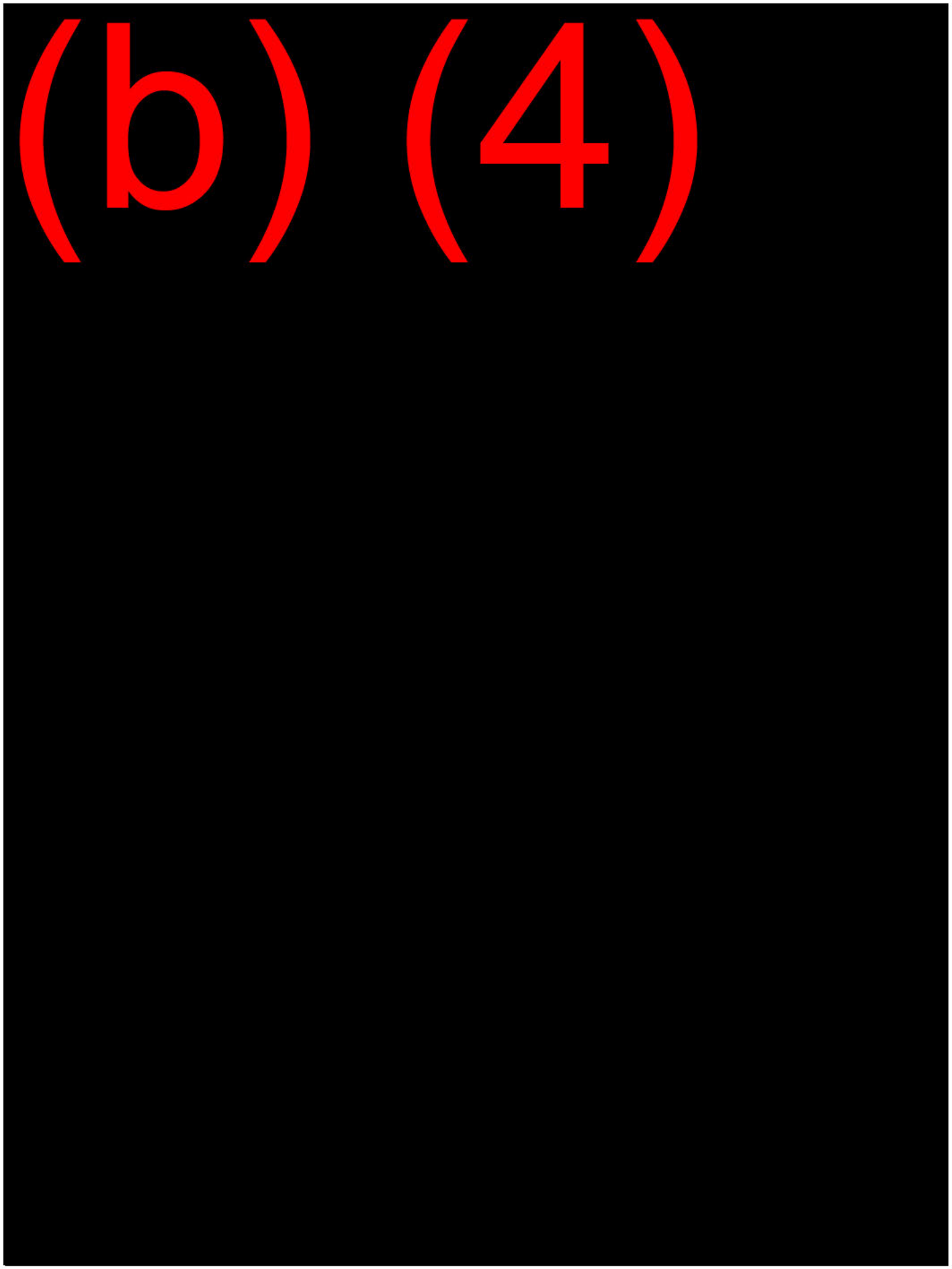
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Description	QTY	FID. CODE	Verification
1	Deployable ATA Carrier	1	IIB	
1.1	All Handrails certified for BRT loads	8	IIB	
1.2	On-orbit WIF dovetails – Support APF & WIF EX loads	4	IIB	
1.3	Grapple Fixture Tower with FRGF	1	IIB	
1.4	PVGF able to accept LEE	1	IIB	
1.5	Identify Pool Stands to support carrier	1	N/A	
2	ATA FSE	1	IIB	
2.1	FSE Baseplate	1	IIB	
2.2	Bolt 3 Cup Cone	1	IIB	
2.3	Bolt 2 & 4 Clevis	2	IIB	
2.4	Bolt 1 Rotating Clevis	1	IIB	
2.5	FSE Electrical Connectors (Volumetric)	2	IIIC	
3	Verify ATA MLI is the same as ELC MLI and reuse	1	N/A	
4	Fitchecks		N/A	
4.1	Fitcheck ATAs on FSE		N/A	
4.2	OIWIF Dovetails		N/A	
4.3	LEE to PVGF		N/A	

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

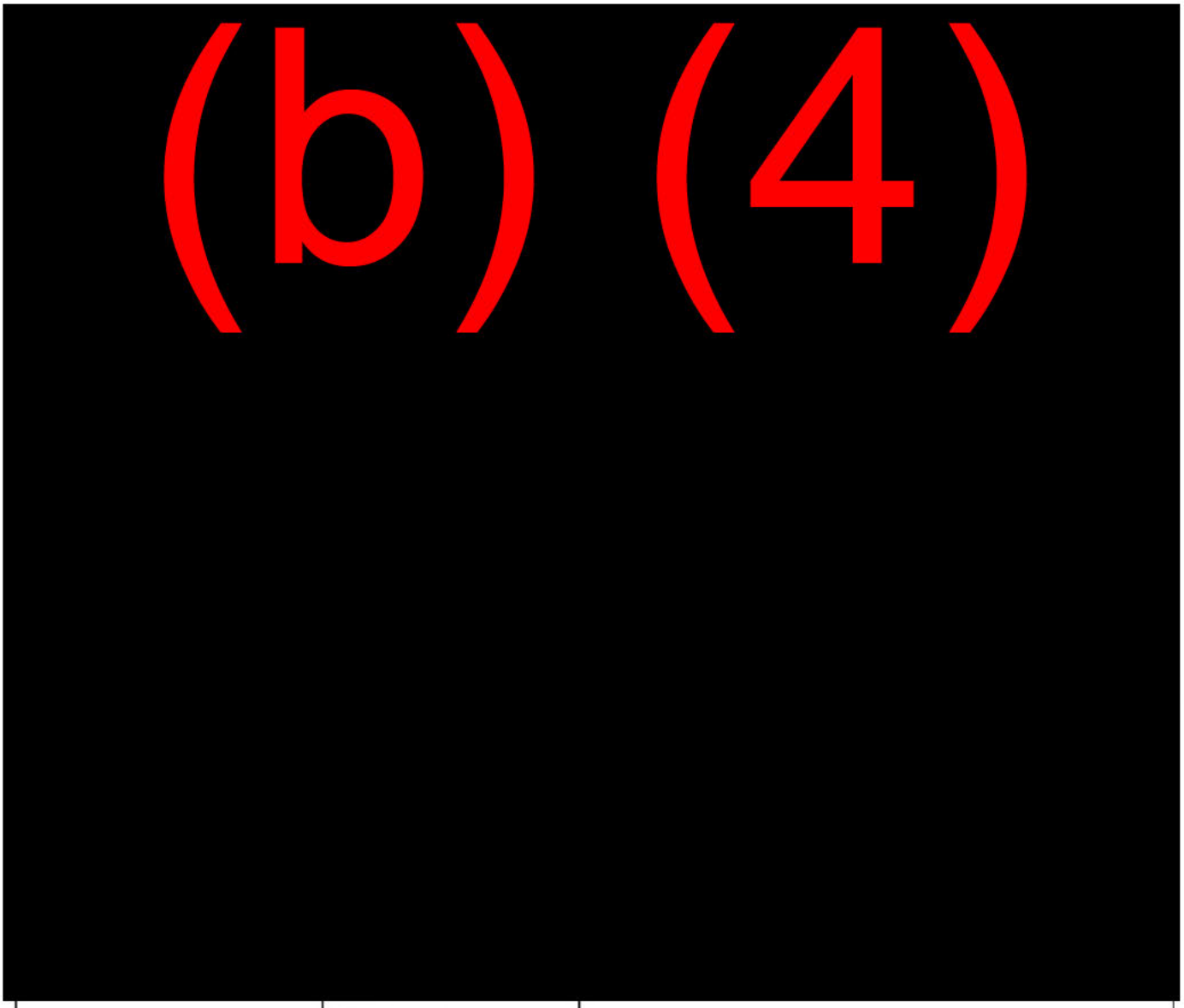
File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)



File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1031	05/20/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1031

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1031

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number. NNJ10HD35C DO 1031

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 05/21/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1031 is to perform CR2763, FY15 SVMF Systems Upgrades: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $251,531 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	251,531.00	251,531.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 251,531.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 2763	DX CHANGE REQUEST

CR TITLE: FY 15 SVMF Systems Upgrades

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Foss, John W. (JSC-CX141)	3-4851	Global

4. PROGRAM/PROJECT:

☐ STATION ☐ MPCV

☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:

☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS

☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

1. New Power Console - (b) (4)

2. Replace LAB UPS - (b) (4)

3. Russian Comm system upgrades - (b) (4)

4. ISS Comm upgrade- (b) (4)

5. VOT briefing monitor installation - (b) (4)

7. RATIONALE:

This CR is for the upgrade of SVMF systems in mockups that support ISS Crew training

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 New Power Console (for CST100, commercial crew display kiosks, and Cygnus future use)

8.1.1 Build to print one power console similar to the Orion console.

8.1.2 Place console near the Commercial Kiosk displays

8.1.3 Provide power outlets for the Commercial displays.

8.1.4 Update facility drawings for new power console location

8.2 Replace LAB UPS

2.1 New Lab UPS will be able to provide at least the same total power as the present UPS for a period of at least one hour under a typical load.
2.2 New Lab UPS will fit in roughly the same rack/storage space as the present UPS.

8.3 Russian Comm Upgrades

8.3.1 Russian Headset(TDB)

8.3.1.1 Provide Russian FGB COTS headsets, 2 ea.

8.3.1.2 Users to provide make and model NLT Mar 13 15

8.3.2 Russian Comm Upgrades

8.3.2.1 Build to print second FGB Comm panel with headset receptacle, IIB, 1 ea.

8.3.2.2 Comm panel will replace aft FGB comm panel facade.

8.3.2.3 Comm panel will have the following capabilities; RSA 1 and 2, Page, and PTT.

8.3.2.4 Update the Comm model for the addition of the Russian Comm panel

8.3.2.5 Update the instructor audio summary pages and create aft FGB comm panel page.

8.3.2.5.1 Relocate the associated caution warning panels with the applicable pages.

8.3.2.5.2 Maintain the DDCU model links to the ATU and Caution Warning panel displays.

8.3.2.6 FGB forward and aft comm panel speaker volume shall be controllable from the instructor Audio page FGB displays. Shall allow audio speaker enable.

8.3.2.7 Update Comm system drawings to reflect aft FGB comm panel additions

8.3.3 MRM/Soyuz Upgrades

8.3.3.1 Provide Soyuz Comm receptacles near the MRM 1 and 2 locations, IIB 2

8.3.3.2 Provide two snoopy style Russian Headsets for use with the Soyuz headset receptacles.

8.3.3.3 Provide a functional partial InPu adjacent to each Soyuz headset receptacle. IIb, 2 ea

8.3.3.4 When enabled via adjacent InPU, each Soyuz comm panel with provide ~~S/G~~ RSA 1 loop access. (InPU image and functional button labels/sequence to be provided to CX-14 MM NLT 3/13/15).

8.3.3.5 Update the instructor audio summary page, and create two InPU panel pages with the ability to enable Soyuz headset comm. instead of the physical panel

8.3.3.6 Provide a funtional C/W panel for MRM-1 and MRM-2

8.3.3.7 Cautions and Warnings shall be displayed on each panel.

8.3.3.8 C/W tones can be intitated and silenced from MRM-1 and MRM-2 C/W panels

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/15/2015	3/2/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 3.6.1

Signature: Jacobs, Rebecca J. (JSC-CA321)[TIETRONIX SOFTWARE INC] Date: 4/30/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Foss, John W. (JSC-CX141)		john.w.foss@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$251,600	9/24/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

8.4 ISS Comm System upgrade

8.4.1 Upgrade ISS Spy mike Comm system

8.4.1.1 Provide a system capable of supporting eight lapel mics, useable in all ISS Mockups

8.4.1.2 Provide 10 ea Beltpack Transmitters

8.4.1.3 provide 15 ea Micro Lavalier - Lapel Microphones

8.4.1.4 Provide 1 ea Extension Antenna Kit, Pair, with 75' RG58, Plenum Cables, Tuned

8.4.1.5 Install and Integrate new ISS Spy Mic system.

8.4.1.6 Update ISS Comm systems drawings

8.4.2 Procure 100 ea Handheld mic elements

8.4.3 Provide 6 ea Hand Held Mic cables to support new HHMs, build to print.

8.4.4 Procure 4 ea PLC Flex module spares to support PLC-5 and PAC.

8.5 VOT briefing monitor installation

8.5.1 Install existing monitor in the VOT. (radial port furthest from the PMM)

8.5.1.1 Provide an articulating TV mount to and attach to an existing monitor to the radial hatch opening

8.5.1.2 Mounting will not obstruct the use of the table tops.

Note - PER SR655 a Genereal design review is required for section 8.3 requirements. No HA or TRR required.

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.			
2	Verify there are no unidentified pinch points.	Finished product is safe for contact.			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.			
4	Inspect power console, verify location near the Commercial Kiosk displays	Power console near Kiosk			
5	Verify power outlets for Commerical displays	Power outlets are available		8.1.1, 8.1.2,	
6	Inspect Facility drawings showing new power console	Drawings updated showing new power console		8.1.3	
7	Verify LAB UPS is located next to the A/L platform in the same place as the original UPS. Verify it is on line and functional	UPS located in same area as previous UPS		8.2.1, 8.2.2	
8	Inspect and verify operation of 2 new FGB headsets	Headsets can transmit and receive audio		8.3.1.1, 8.3.1.2	
	Inspect and verify	FGB-2 comm			

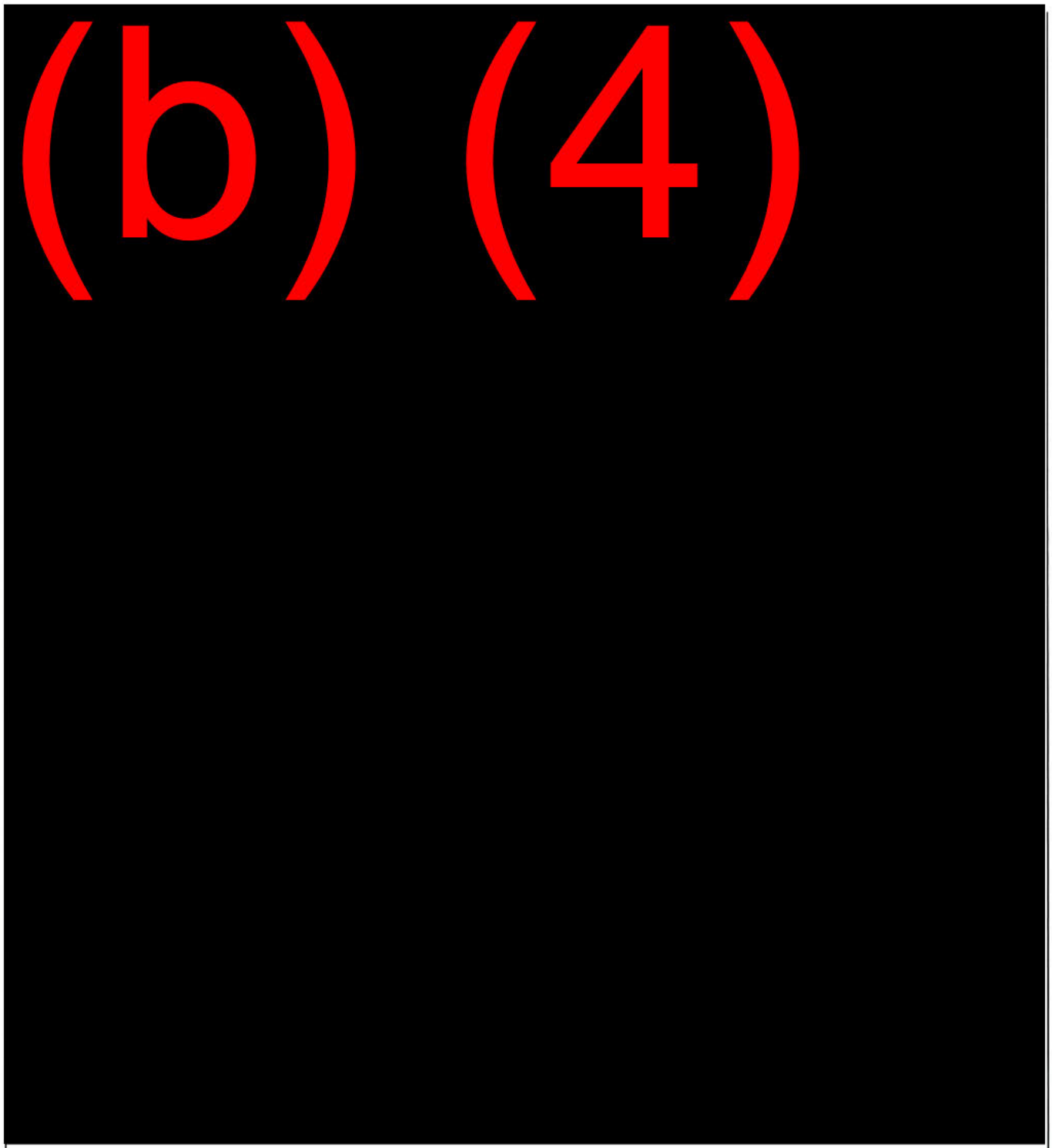
9	a new FGB-2 comm panel located in the FGB AFT replacing the FGB speaker	panel installed in FGB AFT		8.3.2.1, 8.3.2.2	
10	Verify FGB comm panel PTT transmits and receives on RSA-1	xmit and rec audio on RSA-1		8.3.2.3, 8.3.2.4	
11	Verify FGB comm panel PTT transmits and receives on RSA-2	xmit and rec audio on RSA-2		8.3.2.3, 8.3.2.4	
12	Verify FGB-2 can PAGE	FGB-2 page functons		8.3.2.3, 8.3.2.4	
13	Inspect instructor audio page for the following: 1. Separate Russian audio page 2. FGB-2 Comm panel US C/W panels on US Audio page and Russian C/W panel on Russian Audio page	Instructor audio pages are updated		8.3.2.5, 8.3.2.5. 1	
	Verify DDCU functions are operational on the instructor US Audio page	DDCU functions are correct		8.3.2.5. 2	
14	Verify FGB-1 and FGB-2 speaker volumes can be controlled from Instructor Russian Audio page	FGB-1 and FGB-2 speaker volumes are controlled from Inst page.		8.3.2.6	
15	Inspect Audio system drawing to refect new FGB-2 comm panel	Drawing updated		8.3.2.7	
16	Inspect Soyuz InPu-1 and InPu-2 for headset jacks	Each InPu has a headset jack and Russian (Snoopy style) headsets		8.3.3.2, 8.3.3.3	
	Verify the InPu-1	Soyuz-1 audio			

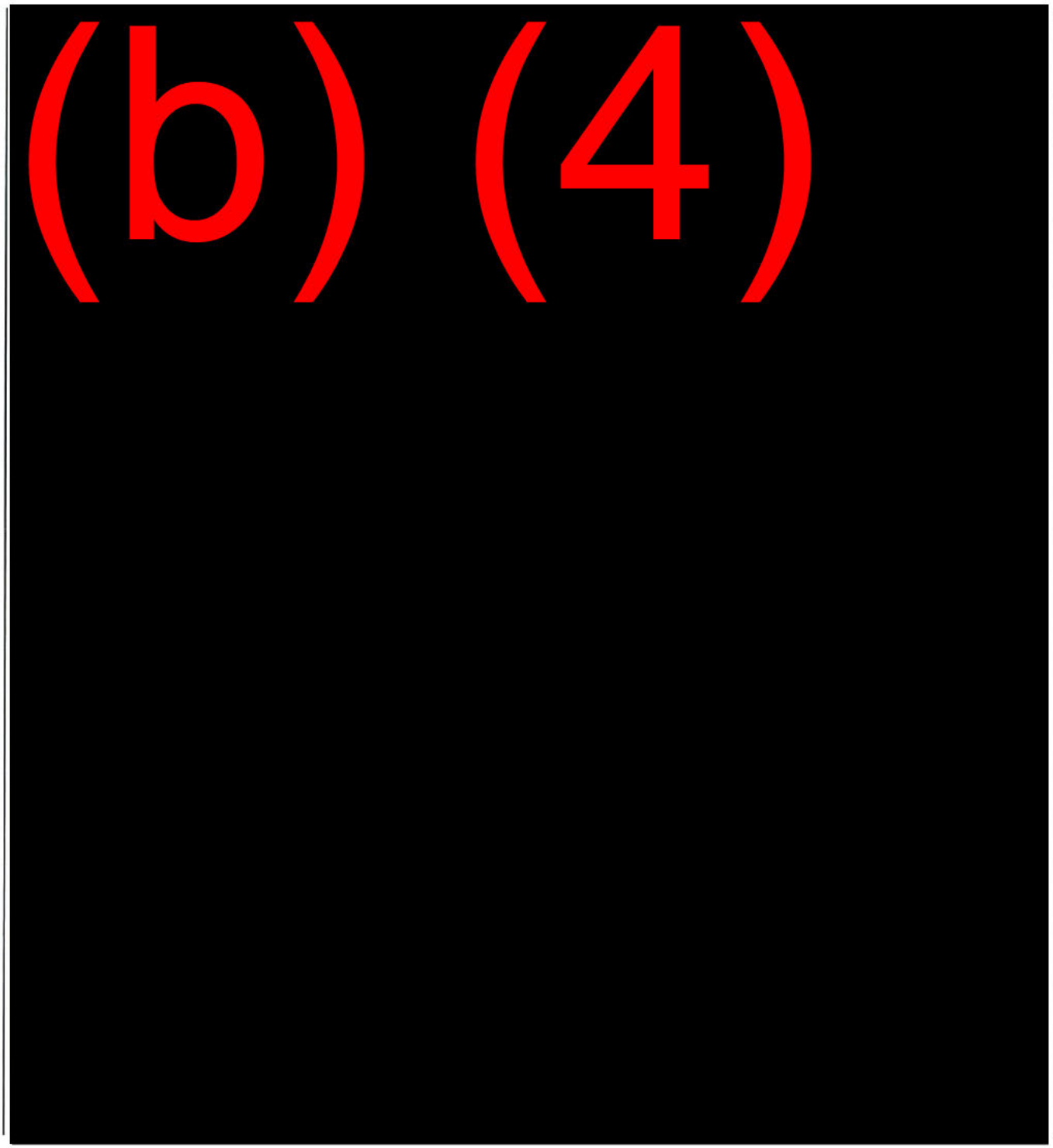
17	functions as follows: 1. Soyuz power on when power button is pressed. 2. InPu powers up when InPu power button is pressed. 3. Navigate three InPu pages and enable Soyuz audio 4. Souyz-1 audio is in hot mic and listen mode only on RSA-1	mic is hot and can receive RSA-1 aduio		8.3.3.4	
18	Verify the InPu-2 functions as follows: 1. Soyuz power on when power button is pressed. 2. InPu powers up when InPu power button is pressed. 3. Navigate three InPu pages and enable Soyuz audio 4. Souyz-2 audio is in hot mic and listen mode only on RSA-1	Soyuz-2 audio mic is hot and can receive RSA-1 aduio		8.3.3.4	
19	Inspect and verify instructor Russian Audio page has InPu-1 and InPu-2 audio panels and can be enabled from instructor page	Soyuz-1 and Soyuz-2 Headsets can transmit and receive audio on RSA-1		8.3.3.5	
20	Verify Spy Mics are functional through out the entire stack	Spy mics can be heard from each module of the US and Russian segments		8.4.1	
	Inspect the	8 mics are			

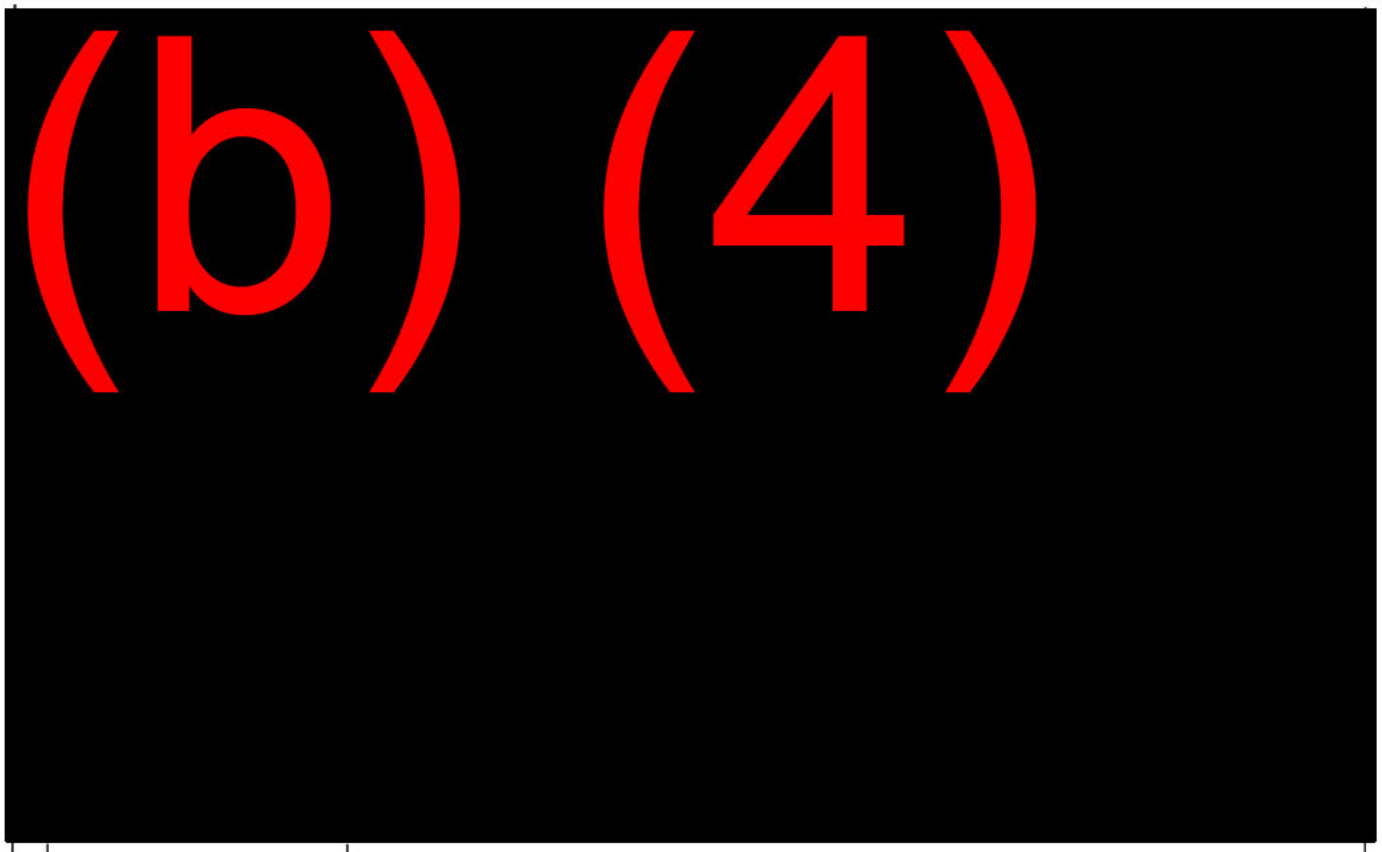
21	system is capable of using 8 mics	functional		8.4.1.1	
22	Inspect 10 beltpacks and 15 lavalier microphones	10 beltpacks and 15 mics		8.4.1.2, 8.4.1.3	
	Inspect Extension antennae's are installed in the stack	antennae's installed		8.4.1.4	
23	Verify the spy mic system is received on the DVIS keysets	8.4.1.5			
24	Inspect audio system drawing are updates showing new spy mic system	8.4.1.6			
25	ATU critical spares	Requirement deleted		8.4.2	
26	Verify 100 HandHeld Mic	100 mics verified		8.4.3	
27	Verify 6 HHM new cables	6 new HHM cables		8.4.4	
28	Verify 4 ea Flex module spares	4 Flex module spares are in stockFlex module spares are in stock		8.4.5	
29	Verify VOT TV is mounted in the radial port furthest from the PMM and does not interfere with the table tops	TV is mounted in the radial port furthest from the PMM		8.5.1, 8.5.1.1, 8.5.1.2	

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

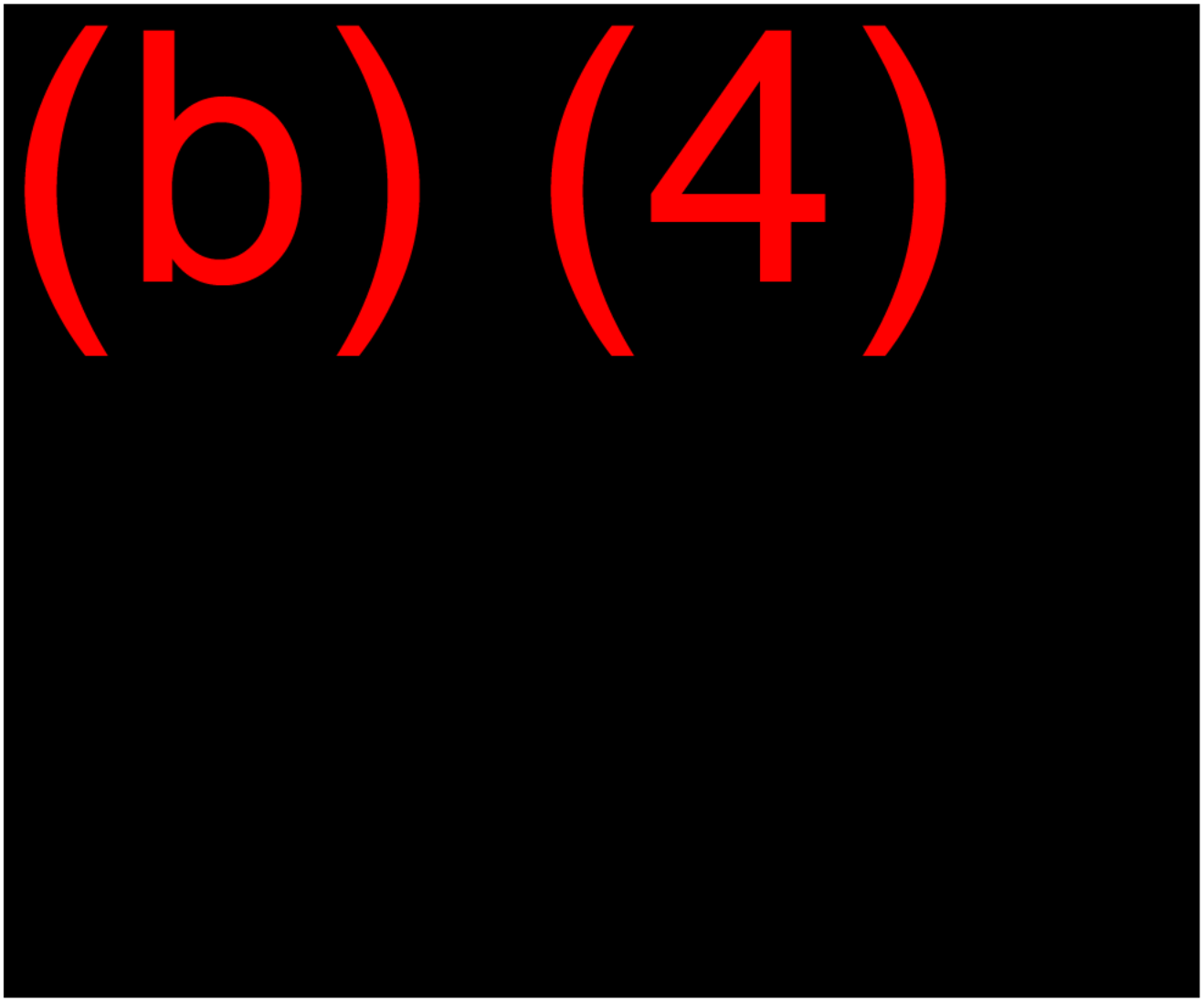

(b) (4)


(b) (4)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

- Assumptions:



File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

2. The procurement and material acquisition are the greatest schedule driver.
3. The InPu displays and model development are significant cost and schedule drivers.
4. Assembly of the power console, InPu and FGB-2 comm panels and cables.

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

[redacted] (b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1032	05/21/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1032

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1032

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1032

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 05/21/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1032 is to perform CR2785, FY15 SVMF Facility Support Purchases: The estimated cost (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is (b) (4) Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

CR NO.: 2785	DX CHANGE REQUEST

CR TITLE: SVMF FY15 Facility Support Purchases

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Newman, Ronny L. (JSC-CX141)	31793	ronny.l.newman@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

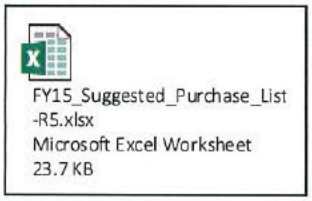
Purchase various items for use in the SVMF

7. RATIONALE:

These items will provide spares and supplies to help operate the facility through 2020.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Procure the items on the attached spreadsheet.



9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/30/2015	3/30/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Mcintyre, Allison L. (JSC-CX141) Date: 4/5/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Newman, Ronny L. (JSC-CX141)		ronny.l.newman@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
(b) (4) [redacted]	9/25/2015

AUTHORIZATION TO PROCEED

COTR for CRs with Cost Impact Only
COTR:

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Description / Operator / Equipment Action	Verification Criteria	Verification Method	Expected Results	Observed Results (Pass / Fail)	Test Date	Reqt #	Con
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.	Visual Inspection	Finished product is safe for contact.				
2	Verify there are no unidentified pinch points.	Finished product is safe for use.	Visual Inspection	Finished product is safe for use.				
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.	Visual Inspection	Label requirement satisfied.				
4	(b) (4) Paper Tray for Phaser 7100 Printer is delivered to the SVMF.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			1	
5	(b) (4) Motorola High Capacity walkie talkie batteries are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			2	
6	(b) (4) SVMF Lapel Pins are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			3	
7	(b) (4) SVMF Patches are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			4	
8	(b) (4) SVMF Decals are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			5	
9	(b) (4) Black Table cloths, 54 inches by 96 inches, plus or minus 6 inches, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			6	
10	(b) (4) Black Table cloths, 90 inches by 132 inches, plus or minus 2 inches, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			7	

11	(b) (4) Black Table cloths, 60 inches by 102 inches, plus or minus 2 inches are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			8	
12	(b) (4) HETA style Stainless Workbench, mobile with lower shelf, 72 inches by 30 inches by 35 inches high plus or minus 1 inch, are delivered. 6232T23	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			9	
13	(b) (4) Cable Covers Rigid, three foot length, color black, FL1X4-B, 22F233, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			10	
14	(b) (4) Safcord Velcro and Cable Protector, 4 inch wide by 30 foot roll, black, hooks to carpet, SAS430B, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			11	
15	(b) (4) Sony digital multi-media projector, VPL-CH375 is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			12	
16	(b) (4) blue chairs from the SVMF High Bay are sent to vendor for steam cleaning and returned to the SVMF.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			13	
17	(b) (4) Dome back stacking chairs with blue fabric are delivered. FD-C03-ALLGOLD-H203774-GG	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			14	
18	(b) (4) Long Handle Chair Dolly for stacking chairs are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			15	
19	(b) (4) Rolling flat dolly for stacking chairs are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			16	
20	(b) (4) Traffic Safety Cones 18 inches high, color orange, are delivered. S-7877	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			17	
21	(b) (4) Traffic Safety Cones 28 inches high, color orange, are delivered. S-7879	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			18	

22	(b) (4) Logitech Z323 Speaker System, P/N 980-000354, 1862296, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			19	
23	(b) (4) HDMI Cables, 25 ft long, Belkin p/n F8V3311B25 are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			20	
24	(b) (4) StarTech HDMI splitters are delivered. 3447934	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			21	
25	A quantity of (b) (4) PRIMO 601126 Industrial cold bottom loading water dispenser that supports Keuring K150P plumbable brewing system and one Primo 601177 industrial hot cold bottom loading dispenser have been delivered to the SVMF.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware.	Product delivered meets customer requirements.			22	
Step	Description / Operator / Equipment Action	Verification Criteria	Verification Method	Expected Results	Observed Results (Pass / Fail)	Test Date	Reqt #	Commen
26	(b) (4) Keurig K150P Plumbable Brewing System has been delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			23	
27	(b) (4) Panasonic 1200 Watts, 1.2 cu ft Stainless Microwave, NN-SD681S	Fit and form of product meets customer requirements.	Visual Inspection of Purchase Order.	Product delivered meets customer requirements.			24	
28	(b) (4) Maintenance Contract for 3D Scanner - 3 Yr Plan has been purchased.	Purchase Order for 3 year maintenance contract meets customer requirements.	Visual Inspection of Purchase Order	Product delivered meets customer requirements.			25	
29	(b) (4) Maintenance Contract for Stratasys FDM 360mc - one year contract has been purchased.	Purchase order for one year maintenance contract meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			26	
30	(b) (4) HME HS16 Headsets have been delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			27	
	(b) (4) Earpads for HS16	Fit and form of	Visual	Product delivered				

31	Headsets, ClearCom 306G103 have been delivered.	product meets customer requirements.	Inspection of delivered hardware	meets customer requirements.			28	
32	(b) (4) HM Electronics HS4-3 CZ11454 Earpiece and Lapel mic have been delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			29	
33	(b) (4) Bunn Coffee Station VPR with 2 glass decanters, 12 cup pour over Coffee Brewer with 2 warmers is delivered. 33200.0015	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			30	
34	(b) (4) Folding tables, IceBerg IndestrucTable TOO 1200 Series Folding Table 29 inches H by 30 inches W by 72 inches D, Charcoal, are delivered. 531586	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			31	
35	(b) (4) Table Dolly, 72 inch wide, 4162T13, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			32	
36	(b) (4) NENP Style Fiber Crimp Kits, UniCam Connector installation Tool kit, LC, SC, ST Compatible, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			33	
37	(b) (4) USB Charge Station, StarTech.com 7 Port dedicated USB Charging Station, 5 x 1 amp, 1 x 2 amp, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			34	
38	(b) (4) Electronic Stencil Cutter, 3/4 Inch High Characters, is delivered. 7350T1	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			35	
39	(b) (4) Apple Lightning Cables, MD818ZM/A, 3.3 ft	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			36	
40	(b) (4) ipod Touch Cases, Speck gemShell Case (5th Gen)	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			37	
41	(b) (4) ipod Touch, one Red and one Silver, Engraved SVMF, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			38	
42	(b) (4) Small HD Cameras KPC-HD38M, are delivered.	Fit and form of product meets customer	Visual Inspection of delivered	Product delivered meets customer			39	

		requirements.	hardware	requirements.				
43	(b) (4) Dorm Fridge Danby DAR026A1BDD 2.6 Cu Ft, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			40	
44	(b) (4) Sewing Machine LED Lights, Gooseneck with Magnetic Base, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			41	
45	Item removed from CR during estimate phase. Vitec FS-H70 Recorder	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			42	
46	(b) (4) 2GB SDHC memory cards are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			43	
47	(b) (4) DIGI Internaitional XR-Z14-CW1P1 XBEE Pro Wall Routers are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			44	
48	(b) (4) iceberg IndustrucTable TOO 1200 Series Folding Table, 29 by 30W by 96 D Charcoal, are delivered 633699	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			45	
49	(b) (4) Extra Heavy Duty Full Height Shelf Cabinets 60 inch wide, (b) (4) for Loose Equipment receiving storage, (b) (4) for Sewing Area, (b) (4) for Pogo Area, (b) (4) for OMT Shop (b) (4) for Bldg. 59, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			46	
50	(b) (4) Extra Heavy Duty Full Height Shelf Cabinets 48 inch wide, (b) (4) for Straps, (b) (4) for Bldg 59 Air Compressor parts, (b) (4) for breathing air compressor parts, (b) (4) for Bldg 59 (b) (4) for Loose Equipment, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			47	
Step	Description / Operator / Equipment Action	Verification Criteria	Verification Method	Expected Results	Observed Results (Pass / Fail)	Test Date	Reqt #	Commen
51	(b) (4) UniCam High Performance Connectors, LC, 62.5 um Multimode (OM1) Kit of 25, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			48	
		Fit and form of	Visual	Product delivered				

52	(b) (4) 4 FTX-SS fittings are delivered.	product meets customer requirements.	Inspection of delivered hardware	meets customer requirements.			49	
53	(b) (4) 4-6 FTX-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			50	
54	(b) (4) 8 FTX-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			51	
55	(b) (4) 8-8 FTX-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			52	
56	(b) (4) 6 HTX-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			53	
57	(b) (4) 8-4 HTX-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			54	
58	(b) (4) 4 HX6-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			55	
59	(b) (4) 6 HX6-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			56	
60	(b) (4) 8 HX6-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			57	
61	(b) (4) 8 C6X-SS fittings are delivered.	Fit and form of product meets customer requirements.Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			58	
62	(b) (4) 4 FNTX-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			59	
		Fit and form of	Visual	Product delivered				

63	(b) (4) 10 PNTX-SS fittings are delivered.	product meets customer requirements.	Inspection of delivered hardware	meets customer requirements.			60	
64	(b) (4) 10-4 TRTXN-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			61	
65	(b) (4) 10-4 TRTX-SS fittings are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			62	
66	(b) (4) Eight Foot Dolly for 8 ft tables is delivered. 4162T14	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			63	
67	(b) (4) Coleman Cable Portable Work Lights LED L1326, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			64	
68	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			65	
69	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			66	
70	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			67	
71	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			68	
72	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			69	
73	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			70	
		Fit and form of	Visual	Product delivered				

74	Item removed from CR during estimate phase.	product meets customer requirements.	Inspection of delivered hardware	meets customer requirements.			71	
75	(b) (4) Power Tool Batteries, 2 pk Lithium ion, Dewalt XR, 2 Ahr, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			72	
76	(b) (4) kit, DeWalt - DCK281D2 Cordless Tool Combination Kit, 20V 1/2 inch Compact Drill Driver; 1/4" Impact Driver, Lithium Ion Battery, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			73	
77	(b) (4) DeWalt - DCD740C1 Cordless Right Angle Drill, 20V, Lithium ion Battery, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			74	
78	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			75	
79	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			76	
80	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			77	
81	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			78	
82	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			79	
83	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			80	
84	(b) (4) each of 1/8 Inch Stainless Steel Tubing 8 ft long, .028 Wall are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			81	
85	(b) (4) each of 1/4 Inch Stainless Steel Tubing 8 ft long, .028 Wall are delivered.	Fit and form of product meets customer	Visual Inspection of delivered	Product delivered meets customer			82	

		requirements.	hardware	requirements.				
86	(b) (4) each of 3/8 Inch Stainless Steel Tubing 8 ft long, .035 Wall are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			83	
87	(b) (4) each of 1/2 Inch Stainless Steel Tubing 8 ft long, .035 Wall are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			84	
88	(b) (4) Ultrasonic Cleaner with Digital Readout, Heater, Timer, 10 qt, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			85	
89	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			86	
90	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			87	
91	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			88	
92	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			89	
93	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			90	
94	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			91	
95	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			92	
96	(b) (4) Dymo 1734520 Electronic Label Maker Kit is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			93	
	(b) (4) Industrial	Fit and form of	Visual	Product				

97	Circulation Fan Low Floor Stand, 18 inch Blade is delivered.	product meets customer requirements.	Inspection of delivered hardware	delivered meets customer requirements.			94	
98	(b) (4) IND Flexible Nylon Labels 1 Inch Wide, Black on White, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			95	
99	(b) (4) Iceberg IndestrucTable TOO 1200 Series Folding Table 29 H by 48 W by 24 D Platinum, are delivered. 746173	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			96	
Step	Description / Operator / Equipment Action	Verification Criteria	Verification Method	Expected Results	Observed Results (Pass / Fail)	Test Date	Reqt #	Commen
100	(b) (4) Samsung 48 inch LED 1080p Smart HDTV Black , on for the Break Room and one for the SHEL/Portable, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			97	
101	(b) (4) SmartMount Full Featured Flat Panel Cart for 32 to 75 Inch Displays model SR575M with 4 casters 2 locking, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			98	
102	(b) (4) Two Step Rolling Safety Ladder, 300 pound rating, for US LAB and PMM are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			99	
103	(b) (4) Pliers, Connector - ISS Tool Box are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			100	
104	(b) (4) Torque Wrench, Adj Click type 10-50 In-LBS 1/4 inch drive, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			101	
105	(b) (4) set of 12 PT Combination Wrench Set 14 Pcs in C1401 Kit Bag is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			102	
106	(b) (4) set of 12 PT Combination Wrench Set 10 Pcs, Metric 10mm to 19 mm is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			103	
107	(b) (4) 12 PT Combination Wrench 24 mm, Standard Length, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			104	

108	(b) (4) Wrench, Metric, Combination, Standard Length, 7mm, 6 pt is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			105	
109	(b) (4) Wrench, Metric, Combination, Standard Length, 8mm, 12 pt, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			106	
110	(b) (4) Wrench, Metric, Combination, Standard Length, 9mm, 12 pt, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			107	
111	(b) (4) Wrench, Metric, Combination, Standard Length 22mm, 12 pt, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			108	
112	(b) (4) Wrench, open End, Low Torque Slimline, Offset, 3/4 - 13/16, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			109	
113	(b) (4) Mustang MV-ARM-XL Articulating Wall Arm for Flat Screen 32 inch to 65 inch Collaboration Room/Break Room, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			110	
114	(b) (4) Samsung 55 Class LED 2160p Smart 4K Ultra HD TV Black, for the Collaboration room, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			111	
115	(b) (4) Air Cordless Lift Upright Vacuum Hover Lithium Battery 20V, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			112	
116	(b) (4) Additional Batteries for Cordless Vacuum Lithium Battery 20V, extended Runtime LithiumLife Battery, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			113	
117	Item removed from CR during estimate phase.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			114	
118	(b) (4) Dell Small Form Factor Pluggable (SFP+) Module for high speed uplink data transmission with 2 SFP+ ports capable for supporting 10-G Base SR, LR, RM Optical, P/N 330-2467, is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			115	
				Product				

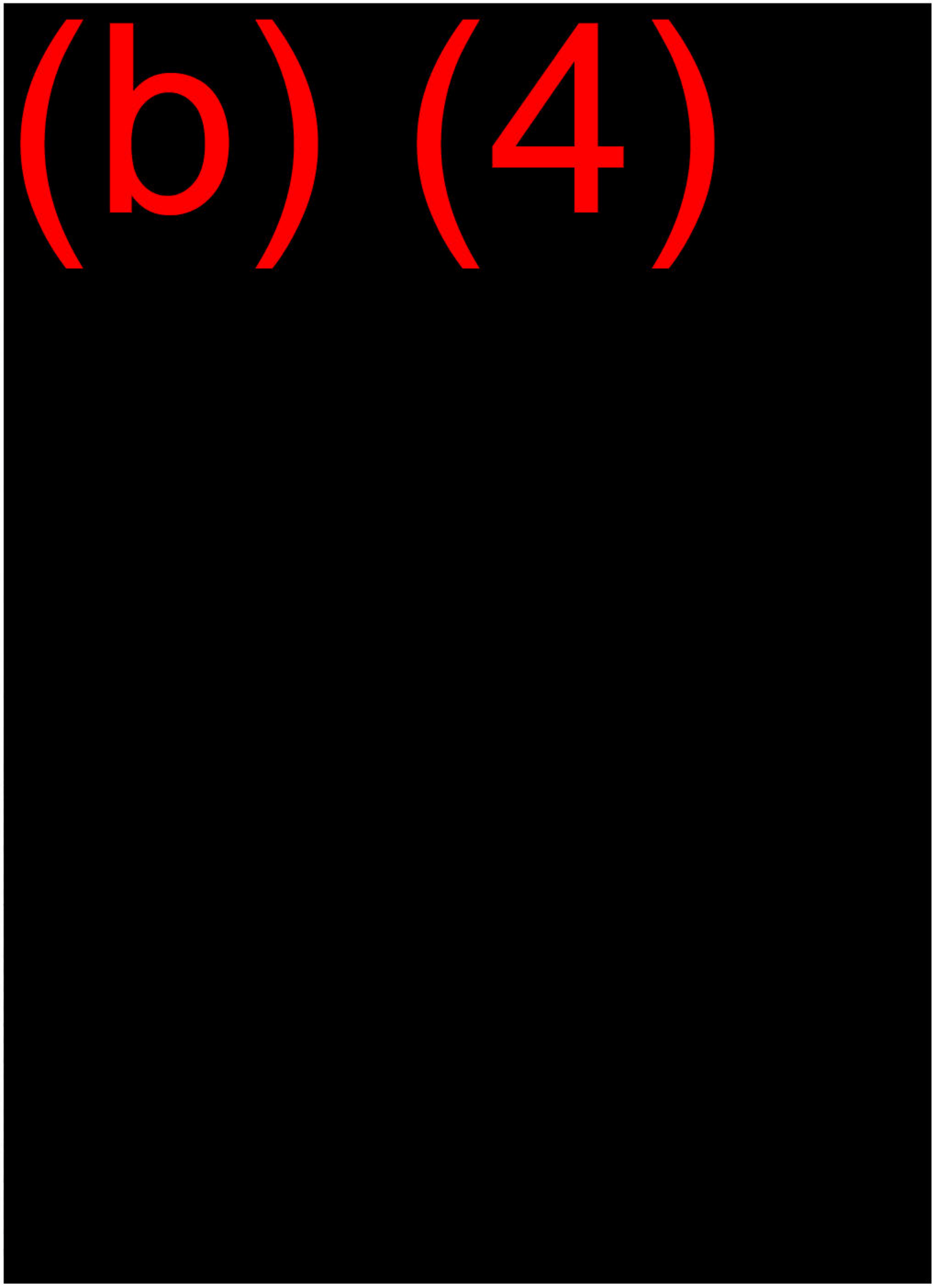
119	(b) (4) each of Female Shoes for Tourists size 5.5 Sketchers Gowalk Impress - Gray are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	delivered meets customer requirements.			116	
120	(b) (4) each of Female Shoes for Tourists size 6 Sketchers Gowalk Impress - Gray are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			117	
121	(b) (4) each of Female Shoes for Tourists size 7 Sketchers Gowalk Impress - Gray are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			118	
122	(b) (4) each of Female Shoes for Tourists size 8 Sketchers Gowalk Impress - Gray are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			119	
123	(b) (4) each of Female Shoes for Tourists size 9 Sketchers Gowalk Impress - Gray are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			120	
124	(b) (4) each of Female Shoes for Tourists size 10 Sketchers Gowalk Impress - Gray are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			121	
125	(b) (4) each of Male Shoes for Tourists size 8 Clarks Niland Energy Slip On Brown Leather are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			122	
126	(b) (4) each of Male Shoes for Tourists size 8.5 Clarks Niland Energy Slip On Brown Tumbled Leather are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			123	
127	(b) (4) each of Male Shoes for Tourists size 9 Clarks Niland Energy Slip On Brown Tumbled Leather aree delivered	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			124	
128	(b) (4) each of Male Shoes for Tourists size 10 Clarks Niland Energy Slip On Brown Leather are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			125	
129	(b) (4) each of Male Shoes for Tourists size 11 Clarks Niland Energy Slip On Brown Leather are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			126	
130	(b) (4) each of Male Shoes for Tourists size 12 Clarks Niland Energy Slip On Brown Leather	Fit and form of product meets customer	Visual Inspection of delivered	Product delivered meets customer			127	

	are delivered.	requirements.	hardware	requirements.				
131	(b) (4) each of Male Shoes for Tourists size 13 Clarks Niland Energy Slip On Brown Leather are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			128	
132	(b) (4) OCC Chairs, Linear Collection, Mesh Back Fabric Seat with Memory Foam, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			129	
133	(b) (4) bags of Tourist Disposable Socks - Female 48 per Bag, Color White, Athletic/Sports DFS, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			130	
134	(b) (4) packs of Ankle Length Disposable Socks -Box of 5 pairs, size Medium, Unisex, Color White, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			131	
135	Furniture for Collaboration room: Narrow motorized variable-height table, (b) (4) stools with backrests to go with table, (b) (4) free-standing cushioned chairs, (b) (4) small tables, wall-mounted whiteboard, and rolling white board are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			132	
136	(b) (4) Uniform Shirts with SVMF Logo, various sizes, Men Shirts, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			133	
137	(b) (4) Uniform Shirts with SVMF Logo, various sizes, women shirts are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			134	
138	(b) (4) Sharp - 42" Class (42" Diag.) - LED - 1080p - HDTV - Black - or equivalent, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			135	
139	(b) (4) AVF EL204B-A Eco-Mount EL204B-A Flat-Panel TV Mount - Multi-Position, Black or equivalent, are delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements.			136	
140	(b) (4) Full Size Microwave, Panasonic 2.2 Cu Ft Stainless, NN-SN952S is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements			137	
	(b) (4) Microwave Stand Catskill Craftsman	Fit and form of product meets	Visual Inspection of	Product delivered				

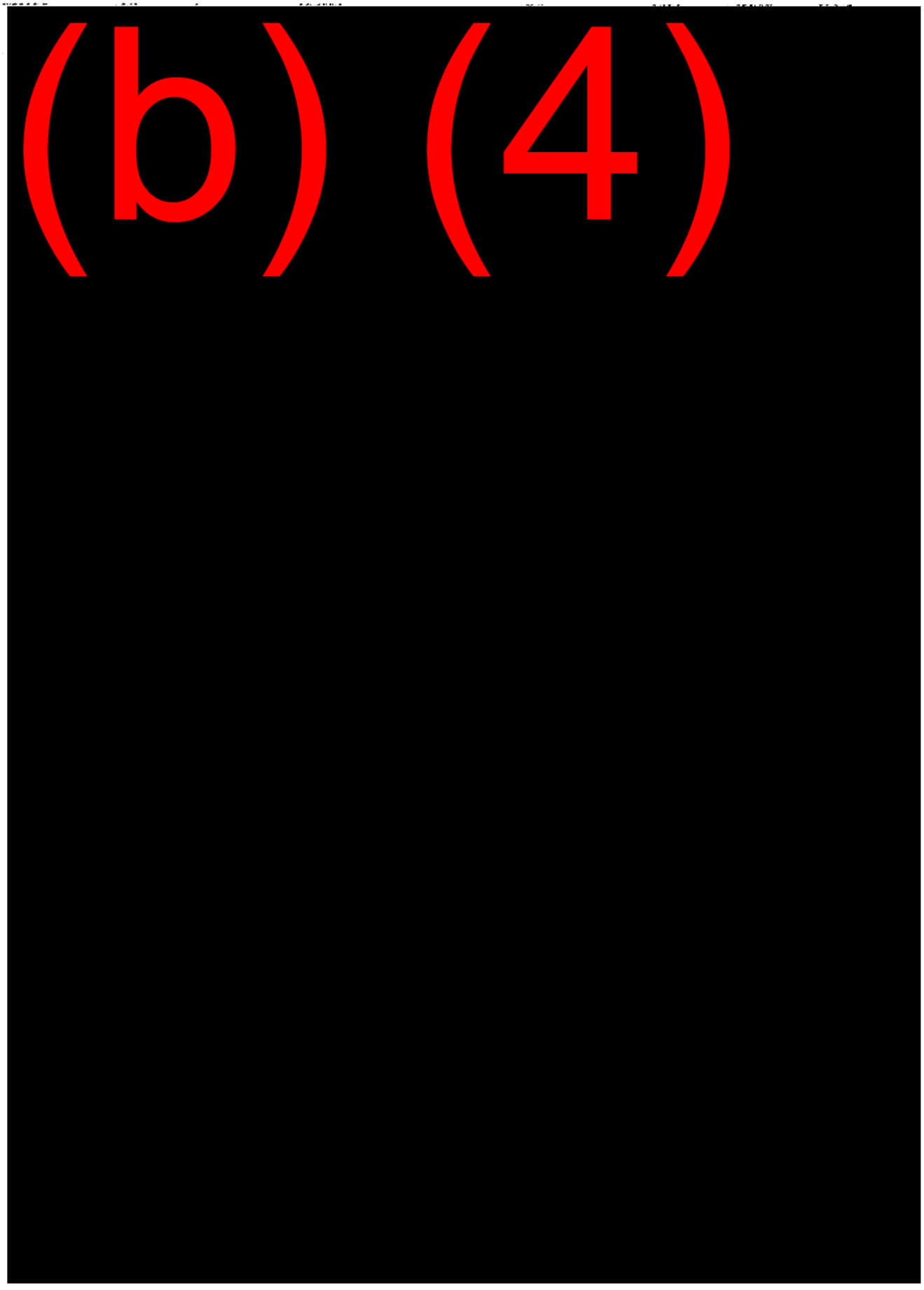
141	Butcherblock Wood Kitchen Work Center Model 51536, is delivered	customer requirements.	delivered hardware	meets customer requirements			138	
142	(b) (4) Large Computer Monitor, ASUS PB278Q LED Monitor 27 Inch 2854454 is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements			139	
143	(b) (4) Convection Microwave Oven similar to Cuisinart CMW-200 or equivalent is delivered.	Fit and form of product meets customer requirements.	Visual Inspection of delivered hardware	Product delivered meets customer requirements			140	
	end of test							

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

File Attachment


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Materials are the major cost driver for this project

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
[redacted]				

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1033	06/03/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1033

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1033

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1033

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1033 is to perform CR2784, PORT Forward Bay Modifications FY15: The estimated cost i (b) (4) The estimated awar The estimated incen The total value of this Delivery Order is $138,308 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government	1	JOB	138,308.00	138,308.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 138,308.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY SCOTT STEPHENS
Authorized U.S. Government Representative

06/03/2015
Date

CR NO.: 2784	DX CHANGE REQUEST

CR TITLE: PORT Forward Bay Modifications FY15

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Honeycutt, Howell {Lane} (JSC-CX121)	48174	howell.l.honeycutt@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 699123

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Update the PORT Forward Bay to EM-1 flight design. Provide engineering and design support for FY15. Effort to provide fabrication will be in FY16.

7. RATIONALE:

Original PORT design was to 606G flight dimensioning. In order to effectively train for Orion Exploration Mission 1 recovery operations, the Forward Bay area needs to be upgraded to the current EM-1 flight design to the extent possible. In particular, the CMUS deployment system and the contingency uprighting operations require flight-like structural elements.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

The PORT Mods RVM is the requirments verification matrix with agreed-to requirements. These requirements include all tasks (including fabrication and installation). For fiscal year 2015 only the modeling / design and preliminary analyses will be perfomed (all tasks through Critical Design Review).

No TRRs will be performed in the FY15 portion of this CR

(b) (4)

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	3/10/2015

Rev

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.3
Signature: Turcotte, Edgar J. (JSC-CX121) Date: 3/23/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Honeycutt, Howell {Lane} (JSC-CX121)		howell.l.honeycutt@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
(b) (4)	(b) (4)	(b) (4) @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$138,400	9/25/2015

AUTHORIZATION TO PROCEED

COTR for CRs with Cost Impact Only

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Acceptance criteria is detailed in the Requirements Verification Matrix (attached in requirements section)

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

see attached schedule file (.pdf)

ONLY those task scheduled in FY15; 6/9/2015 through 9/25/2015 are included in the original pricing for this CR

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

[redacted]

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1034	06/25/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1034

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 4, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1034

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1033

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1034 is to perform CR2776, Build Solar Array Wing Section Mockup: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $47,719 Work is to be completed by September 4, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	47,719.00	47,719.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 47,719.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY SCOTT STEPHENS Digitally signed by SCOTT STEPHENS DN: cn=US, o=U.S. Government, ou=NASA, ou=People, cn=SCOTT STEPHENS, 0.9.2342.19200300.100.1.1=1000000000 Date: 2015.06.25 11:09:22 -05'00'
Authorized U.S. Government Representative

06/25/2015
Date

CR NO.: 2776	DX CHANGE REQUEST

CR TITLE: Build Solar Array Wing Section Mockup

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	(b) (4) @nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Build a section of Solar Array Wing (SAW) to allow task development and crew training of flex batten repairs in the NBL. The section must be large enough to provide realistic interferences while allowing crew to install the repair from the SSRMS. The repair tool will be supplied by the hardware provider.

7. RATIONALE:

Imagery survey identified a 2A SAW damaged flex batten caused by a Micro Meteoroid Orbital Debris (MMOD) strike. The flexible batten repair method will mitigate the risk of a SAW collapse. The mockup is needed to verify the feasibility of the operation and to train the crew. An EVA Development and Verification Test (EDVT) is scheduled in September, with the 1G on 9/9/2015.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Safety Review held on 6/10/15 by (b) (4) TRR required

1. Build 3 bays (~15 ft) of mast
   - Dimensions of longeron structure must be flight-like to accommodate repair
   - Flex battens are not required to flex, but should be identifiable in comparison to other cross-supports (ABS or UHMW)
2. Build corresponding Solar Array Panel on one side of the mast.
   - Can be very low fidelity and represented by Kydex, phiffertex, or other fabric on a PVC frame
   - Must be volumetrically correct w.r.t. mast
3. Must be capable of being configured in the NBL such that it is accessible via the SSRMS. Longerons should run vertical in the pool to reduce the need for heads down operations.

#	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Build 3 bays of SAW mast	CAD model	See attached	1	II.D.	(b) (4)
2	Build Solar Array Panel on one side of the mast	CAD model	See attached	1	II.D.	

SAW Repair NBL CR-attachment.docx
Microsoft Word Document
2.96 MB

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/8/2015	5/15/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.1
Signature: Haas, John (JSC-CX121) Date: 5/18/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Pelischek, Timothy E. (JSC-CX121)		timothy.e.pelischek@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:

(b) (4) | (b) (4) | (b) (4) @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
$47,800	9/4/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

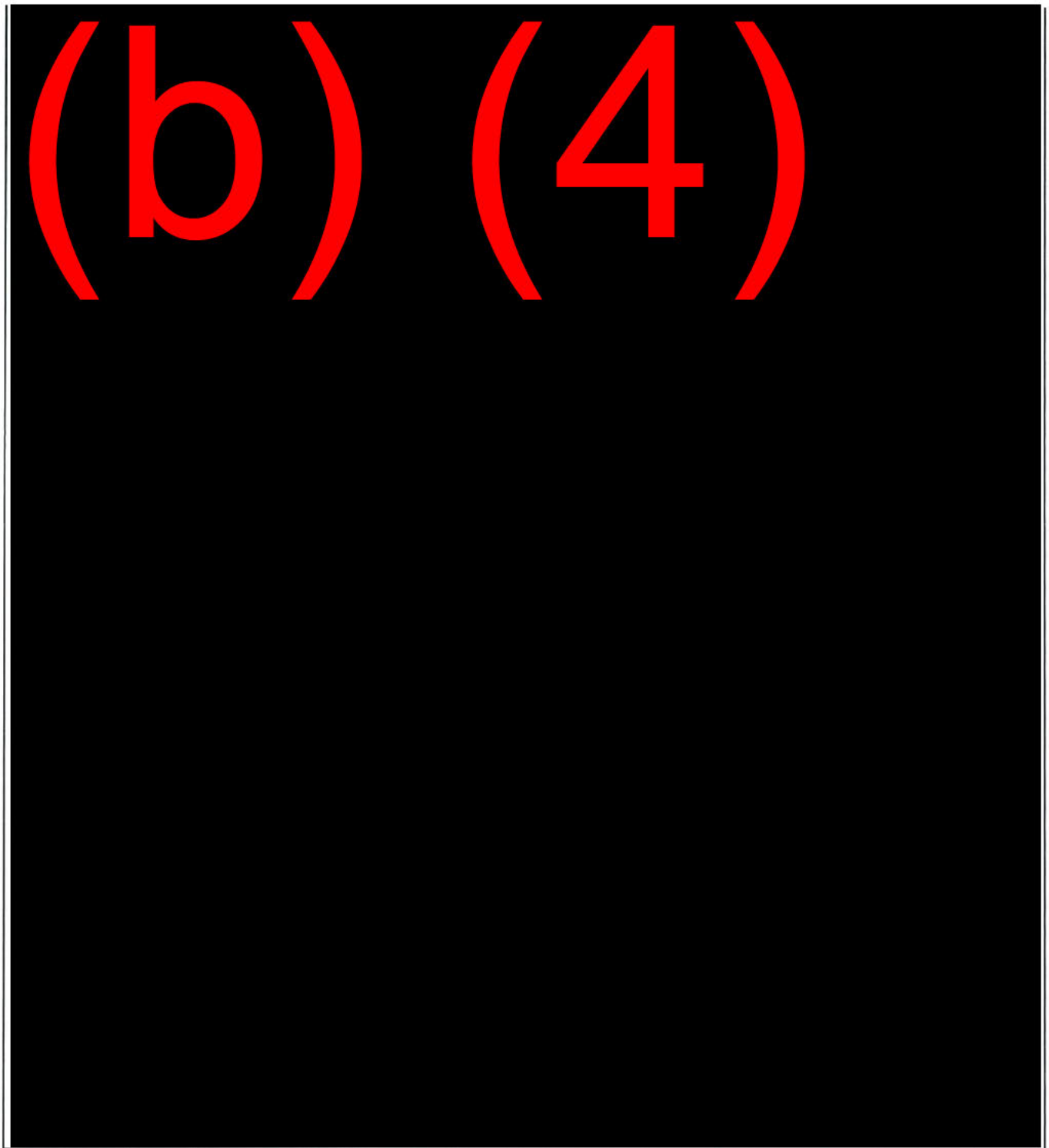
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Description	QTY	FID. CODE	Verification
1	Build 3 bays of SAW mast	1	II.D.	
2	Build Solar Array Panel on one side of the mast	1	II.D.	

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

Assumptions:

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

(b) (4)

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1035	06/29/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1035

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1035

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1035

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 06/29/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1035 is to perform CR551, Design/Build Hydro Test Bench: The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $46,556 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	46,556.00	46,556.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 46,556.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 551	DX CHANGE REQUEST

CR TITLE: Design/Build Hydro Test Bench

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Design and fabricate a Hydrostatic Test Bench.

7. RATIONALE:

The existing Hydro Test Bench is inefficient in maintaining specified test points used for hydrostatic testing and recertification of various components used throughout the NBL pressure systems including but not limited to flex hoses, hydraulic relief valves, tubing, fittings, etc.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. SR required

2. GDR required

3. TRR required

4. Design and fabricate mobile Hydrostatic Test Bench to provide means of hydrostatic testing of various components with the following components and features:

- Provide a minimum of 6,000 psi of pressurized water to components to be tested utilizing potable facility water
- All components on bench must be certified to a minimum Working Pressure (WP) of 6,600 psi
- A certified relief valve set to 6,600 psi
- 1 high pressure water regulator & 1 low pressure water regulator
- 1 high accuracy pressure transducer
- Gauges, valves, regulators, etc shall be installed in a console or similar
- Test bench must be mobile and fit through a standard 32" door
- Output connections will be via a 20' 1/4" JIC connection flex hose
- Comply with the JPR 1710.13F (Design, Inspection, and Certification of Pressure Vessels and Pressurized Systems)
- Certified by PSMO

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	6/3/2015

Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED		WBS: 2.6.2
Signature: Haas, John (JSC-CX121)		Date: 6/10/2015
12. NASA POC:	**13. PHONE:**	**14. E-MAIL:**
Williamson, Paul (JSC-CX121)		paul.williamson-1@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	[redacted]	(b) (4) [redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes -- prepare per contractor's procedures and attach planning ☐ No -- completion of this form is adequate for planning

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
$46,600	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:	**COTR for CRs with Cost Impact Only**
	COTR:
Date:	Date:
CCB CHAIR:	
Date:	

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

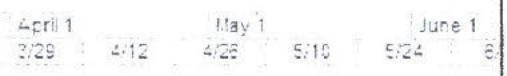
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	Provide a minimum of 6,000 psi of pressurized water to components to be tested utilizing potable facility water	Task	(b) (4)	Inspection		(b) (4)
2	All components on bench must be certified to a minimum Working Pressure (WP) of 6600 psi	Task		Inspection		
3	A certified relief valve set to 6600 psi	Task		Inspection		
4	(b) (4) high pressure water regulator & (b) (4) low pressure water regulator	Task		Inspection		
5	(b) (4) high accuracy pressure transducer	Task		Inspection		
6	Gauges, valves, regulators, etc shall be installed in a console or similar	Task		Inspection		
7	Test bench must be mobile and fit through a standard 32" door	Task		Inspection		
8	Output connections will be via a 20' 1/4" JIC connection flex hose	Task		Inspection		
9	Comply with the JPR 1710.13F	Task		Inspection		
10	Hydro Test Bench Certified by PSMO	Task		Inspection		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)



File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1036	06/29/15	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1036

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1036

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1036

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS — Contracting Officer — 06/29/2015 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1036 is to perform CR564, FY15 Facility Infrastructure Upgrades: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $471,917 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	471,917.00	471,917.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 471,917.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 564	DX CHANGE REQUEST

CR TITLE: FY15 Facility Infrastructure Upgrades

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
[redacted]	[redacted]	(b) (4) @nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Provide FY15 Facility Infrastructure Upgrades consisting of Building 925 procurement and installation of netting to prevent birds from nesting in building roof, procure painting services to paint identified SCTF areas, replace carpeting for rooms 1330 and adjacent hallway, 1335, 1335 C and D, 1337A-B-E-F, 2330 and stairways from pool deck going to both men's and women's locker rooms and TC/TD rooms, replace 50 rectangle lights over pool with equivalent energy saving LED lights to include per light remote control capability, procure an additional 108 LED lights with per light remote control capability, and perform encapsulated bubble study to allow for sound abatement to help reduce noise.

7. RATIONALE:

Building 925 procurement and installation of netting to prevent birds from nesting in building roof,

Outdoor facility areas are in need of painting due to paint has reached its life expectancy,

Replacement of carpet is needed due to existing carpet is stained and worn beyond repair,

Existing lighting over pool is in need of replacement to increase facility energy savings with new LED lighting and to reduce annual cost in maintaining fixtures that are 20 years old and experiencing a high rate of replacement. Additionally, individual light control will allow lights to be controlled on/off/dimmed to facilitate specifically needed task lighting.

Existing NBL and LMF facility lighting is in need of replacement to increase facility energy savings with new LED lighting and to reduce annual cost in maintaining fixtures that are 25 years old and experiencing a high rate of replacement. Additionally, individual light control will allow lights to be controlled on/off/dimmed to facilitate specifically needed task lighting.

and lastly, encapsulated bubble study to allow for sound abatement to help reduce noise in the pool during test activities.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No SR & TRR required except for encapsulated bubble study.
Perform the following:

- Building 925 procurement and installation of netting to prevent birds from nesting in building roof.
- Procure outdoor paint and painting services to paint identified SCTF areas which consist of; all exterior doors and supporting frame structure (personnel and high bay doors), ladder on the north side of building going to roof area, racks between BGS/WTS and NBL, safety yellow on curbs going to BGS and WTS, WTS filters and all exposed piping in the WTS area, the WTS boiler building, WTS backwash basin and a minimum of an additional 200 sq. ft. as directed by the Facility Manager.
- Procure and install replacement carpeting for the following areas; rooms 1330 and adjacent hallway, 1335, 1335 C and D, 1337A-B-E-F, 2330 and stairways from pool deck going to both men's and women's locker rooms and TC/TD rooms.
- Procure 50 energy saving LED light fixtures of equivalent type to the existing 1000 Watt Metal Halide lights and perform R/R of existing rectangle lights over pool. (Added 6/16/2015 and removed painting North pool wall)
- Procure 108 energy saving LED light fixtures of equivalent type to the existing 1000 Watt Metal Halide lights. Installation to be completed by others and not part of this CR. (Added 6/16/2015 and removed painting North pool wall)
- Perform encapsulated bubble study to allow for sound abatement to help reduce noise.

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/25/2015	6/17/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 2.6.2
Signature: Haas, John (JSC-CX121) Date: 6/16/2015

12. NASA POC:	13. PHONE:	14. E-MAIL:
Williamson, Paul (JSC-CX121)	3-5730	paul.williamson-1@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
[redacted]	[redacted]	(b) (4) @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$472,000	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

Date:

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only
COTR:

Date:

Closed by: **Date:**

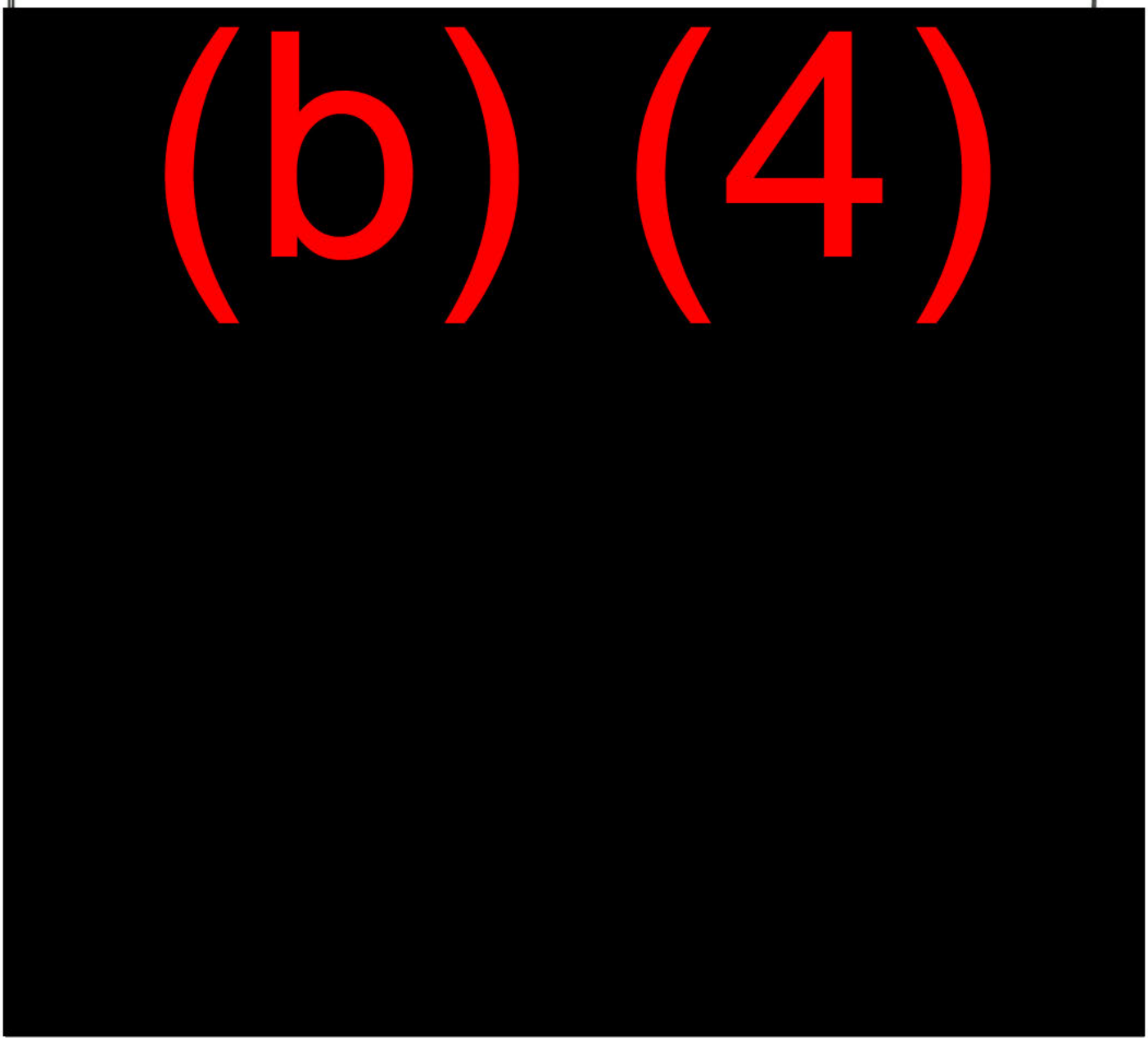
REQUIREMENTS/REFERENCES (cont.):

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	Building 925 procurement and installation of netting to prevent birds from nesting in building roof	Task	1	Inspection		(b) (4)
2	Procure outdoor paint and painting services to paint identified SCTF areas which consist of; all exterior doors and supporting frame structure (personnel and high bay doors), ladder on the north side of building going to roof area, racks between BGS/WTS and NBL, safety yellow on curbs going to BGS and WTS, WTS filters and all exposed piping in the WTS area, the WTS boiler building, WTS backwash basin and a minimum of an additional 200 sq. ft. as directed by the Facility Manager.	Task	1	Inspection		
3	Procure and install replacement carpeting for the following areas; rooms 1330 and adjacent hallway, 1335, 1335 C and D, 1337A-B-E-F, 2330 and stairways from pool deck going to both men's and women's locker rooms and TC/TD rooms.	Task	1	Inspection		
4	Procure fifty 50 energy saving LED light fixtures of equivalent type to the existing 1000 Watt Metal Halide lights and perform R/R.	Task	1	Inspection		
5	Procure 108 energy saving LED light fixtures of equivalent type to the existing 1000 Watt Metal Halide lights.	Task	1	Inspection		
6	Perform encapsulated bubble study to allow for sound abatement to help reduce noise.	Task	1	Installation		

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 1037	07/20/19	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 1037

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 400
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 1037

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 1037

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Scott A. Stephens

SCOTT STEPHENS Digitally signed by SCOTT STEPHENS. DN: c=US, o=U.S. Government, ou=NASA, ou=People, cn=SCOTT STEPHENS, 0.9.2342.19200300.100.1.1=xxxxx Date: 2015.07.01 15:33:45 -05'00'
Contracting Officer

07/01/2015
Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of Delivery Order 1037 is to perform CR2737, Default Configuration Update: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $85,692 Work is to be completed by September 25, 2015 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	85,692.00	85,692.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 85,692.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2737	DX CHANGE REQUEST

CR TITLE: Default Configuration Update

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	(b) (4) @nasa.gov

4. PROGRAM/PROJECT:

☐ STATION ☐ MPCV

☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:

☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS

☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

This CR updates the rack layout in the SVMF ISS stack and PDL II modules to account for current and future configuration needed to provide a realistic training environment.

7. RATIONALE:

The current facades and/or facility racks in PDL II are out of date and no longer reflect the current ISS vehicle rack configuration. These updates would bring PDL II more in line with current ISS vehicle rack configuration and make it more aesthetically pleasing for use as an additional facility tour option.

Periodic updates to the ISS default configuration are needed in order to keep the SVMF ISS stack up-to-date with changes in the on-orbit vehicle. Inability to keep the mockups up-to-date would result in negative training for CB and other users in the facility.

The PDLI mockup is used as a Human Research Facility (HRF). The ISS HRF racks are currently located in the Columbus Module. The SVMF PDL1 mockup is a six rack Laboratory module and the ISS Columbus Module is a four rack configuration. Rack moves and updates in the PDLI mockup will provide a more flight-like representation of the Columbus on-orbit module.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Note: Form size limitations prevent all reference material from being attached. Supporting information can be found at the following location:
\\jsc-mod-svmf3\svmf_temp\CR2737

1.0 General

1.1 All photo facades requested by this CR shall be IIIC fidelity. Referenced facade pictures can be found at the following link. https://iss-www.jsc.nasa.gov/nwo/seio/vcer/cammp/bbt_docs/icammp/2009-05_USOSInternalPictureBook.pdf.

1.2 Configure ISS mockups according to the new draft ISS Default Configuration file (see temp folder) and provide any discrepancies to CA7 and CX14 personnel.

1.3 Post updated versions of the ISS Default Configuration, Mockup Rack Layout, and PDL Rack Layout files on the CX14 home page. Final files to be provided by CA7 within two weeks of receiving feedback from requirement 1.2.

1.4 Reconfigure ISS mockups according to final ISS Default Configuration file if changes were needed based on findings from requirements 1.2 and 1.3.

Safety Review 659 was held on 5/28/25, chaired by (b) (4) A combined TRR and Mockup TRR is required (non-hazardous). An update to the existing HA is required. A stress analysis is required for the PMM endcone floor and the PDL racks. No tip-over analysis, design reviews, weld inspection reports, lift plans, or DRD-41 update is required.

☒ Click here to insert a picture

File Attachment

9. NEED DATE: (support date in block 7 rationale): 8/28/2015	**10. CR SUBMISSION DATE:** 6/18/2015
Rev	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED WBS: 3.6.1

Signature: Jacobs, Rebecca J. (JSC-DA221)[TIETRONIX SOFTWARE INC] Date: 6/18/2015

12. NASA POC:	**13. PHONE:**	**14. E-MAIL:**
Huhn, June A. (JSC-CX141)		june.a.huhn@nasa.gov
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
(b) (4)	(b) (4)	(b) (4) @nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:

☐ Yes – prepare per contractor's procedures and attach planning ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
$85,700	9/25/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

(b) (4)

Date: 6/24/2015

CCB CHAIR:

Date:

COTR for CRs with Cost Impact Only

COTR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

2.0 PDL II: Note that the PDLII mockup is oriented from entrance/aft endcone to end /fwd endcone (rack location numbering from 6-1). Use existing hardware and facades where available.

2.1 Remove ZSR rack from P1 and retain in B59 for future use.

~~2.2 Install EXPRESS rack (CFE from B5) into P1 location.~~ Deleted prior to CR approval

2.3 Install shelf in existing P2 rack to hold a future GFE computer.

2.4 Fabricate a frame and attachment mechanism, or use existing if available, in the S3 and P6 locations to provide a backing for installing rack photo façades.

2.5 Obtain and install 1 ea photo façade of EXPR-2 (ARIS) in the O1 location (see temp file, ER2_O1).

2.6 Obtain and install 1 ea photo façade of EXPR-1 in the O2 location (relocate from O3, see temp file, ER1_O2).

2.7 Obtain and install 1 ea photo façade of MSRR-1 in the O3 location (see temp file, MSRR_O3).

2.8 Obtain and install 1 ea photo façade of EXPR - 6 in the O4 location (see temp file, ER6_O4).

2.9 Obtain and install 1 ea photo façade of ZSR in the O5 location (reference p68 of 1.1 link).

2.10 Obtain and install 1 ea photo façade of DDCU-2 in the O6 location (reference p34 of 1.1 link).

2.11 Obtain and install 1 ea photo façade of Avionics-2 in the D1 location (reference p24 of 1.1 link).

2.12 Obtain and install 1 ea photo façade of Avionics-3 in the D2 location (need picture, see temp file).

2.13 Obtain and install 1 ea photo façade of WORF in the D3 location (see temp file, WORF).

2.14 Obtain and install 1 ea photo façade of RSR in the D4 location (reference p33 of 1.1 link).

2.15 Obtain and install 1 ea photo façade of Avionics-1 in the D5 location (reference p27 of 1.1 link).

2.16 Obtain and install 1 ea photo façade of ARS in the D6 location (see temp file, ARS_D6).

2.17 Relocate MELFI facade from existing O4 location and install on the LW rack in the S1 location.

2.18 Obtain and install 1 ea photo façade of MSG in the S3 location (needs removable frame, see temp file, MSG_S2).

2.19 Obtain and install 1 ea photo façade of TCS in the S6 location (see temp file, TCS_P6).

2.20 Obtain and install 1 ea photo façade of Robonaut in the P2 location (see temp file, Robonaut_P2).

2.21 Obtain and install 1 ea photo façade of DDCU-1 in the P3 location (see temp file, DDCU_1_P3).

2.22 Obtain and install 1 ea photo façade of TCS in the P6 location (needs removable frame, reference p40 of 1.1 link).

2.23 Obtain and install 1 ea photo façade of the Forward and Aft Endcones. Provide a cutout in the Forward Endcone closeout to allow access to the existing ATU panel. Provide a cutout in the Aft Endcone closeout to allow access to the existing C&W panel.

2.24 Create and install plexiglass or equivalent flooring (similar to what is in Lab module) to cover D6 - D1 facades.

2.25 Install 1 ea powered UOP ("flat" design removed from PDLI in requirement 8 .2.2) at P2 overhead standoff and connect existing 10 amp, 120 VDC power to connectors J3 and J4.

3.0 JEM

3.1 Obtain and install 1 ea photo facade of the Multi-purpose Small Payload Rack (MSPR2, launched on HTV5) at the JPM1F2 location. Include rack location code label and any fire port decals, as representative of flight configuration. Image to be provided by CA7 (see temp file).
3.2 Obtain and install 1 ea photo facade of the CTB stowage rack at the JPM1O3 location per photo provided by CA7 (see temp file, JPM_O3).

4.0 PMM: Note that the new location for PMM is installed at Node 3 Fwd. This changes the existing orientation of the mockup as follows: Aft becomes Stbd, Port becomes Deck, Fwd becomes Port, and Stbd becomes Ovhd.

4.1 Obtain and install new rack labels (see temp file, PMM new Rack Labels).

4.2 Obtain new orientation labels and replace existing labels in the port endcone to reflect STBD, DECK, PORT, and OVHD according to 4.0.

4.3 Fabricate and install a removable "false floor" in the port endcone that is flush with existing floor level and extends fully East to West, allowing clearance for the existing ducting.

4.4 Fill the endcone space behind the bungee jail to closely match the provided Endcone stowage picture (see temp file, PMM Endcone).

4.4.1 Use tight webbing or equivalent facade to create a barrier "wall" to protect the existing ducting and thermostat from being crushed or knocked loose by bag loading. Provide a "wall" cutout, or equivalent, to allow access for thermostat adjustments.

4.4.2 As a minimum, fill using existing low fidelity stuffed bags of the following: 4 ea MO-2 bags, 1 ea 5 MLE bag, 1 ea 3.0 CTB, 2 ea 2.0 CTB, 3 ea blocks of Nomex covered foam, 3 ea Mesh Bags, 10 JSBs, 1 ea off-white JSB (simulates Russian bag), 2 ATV bags (to be used to help with packing, but not be in the viewing area)

5.0 LAB

5.1 Obtain and install 1 ea photo facade of the MELFI3 at Lab1S1. Include rack location code and any fire port decals as representative of flight configuration. Image to be provided by CA7 (see temp file).

5.2 Obtain and replace 1 ea photo facade of the MSG at Lab1S2. Include rack location code and any fire port decals as representative of flight configuration (see temp file, MSG_S2).

~~5.3 At Lab1D3 (over WORF), clean or replace polycarbonate flooring with plexiglass or equivalent material used at other Lab floor locations.~~ Deleted per CX14 CCB direction 5/18/15

6.0 PDLI: Changes will make racks 3-6 and endcone resemble Columbus module configuration.

6.1 Re-label mockup standoffs to reflect Columbus labeling with respect to 4 rack locations closest to endcone (first two racks nearest entry will not represent flight racks).

6.2 Obtain 1 ea forward and aft endcone single pin rack supports and replace/retain existing low fidelity endcone supports (will support HRF racks after moves).

6.3 On the forward (port) side, reverse the locations of the Light-weight (LW) endcone rack and the HRF-1 rack with Z-panel.

6.4 On the aft (stbd) side, remove/retain the Light-weight (LW) endcone rack and relocate the HRF-2 rack with Z-panel and the European Physiology Module (EPM) racks one bay starboard. Relocate the LW endcone rack to the former EPM location.

6.5 Take 1 ea picture of the existing Columbus mockup fwd and stbd endcones (near port entrance). Obtain and install

1 ea photo facade of these pictures and install at their respective second rack bay location (better simulates Columbus entry configuration).

6.6 Install the GFE Portable Fire Extinguisher (PFE) bottle in the endcone area to match the current Columbus mockup placement.

6.7 Cut and install the GFE endcone facade (consult with Jim Searcy for specific installation instructions). As a minimum, provide cutouts for access to ATU, C&W panel, and PFE bottle.

6.8 Obtain and install 1 ea blank photo facade in the existing D1 and D2 locations (near entry which is not representing Columbus).

6.9 Obtain and install 1 ea photo façade of ETC in the current D6 location (reference p55 of 1.1 link).

6.10 Obtain and install 1 ea photo façade of System in the current D4 and D5 locations (reference p53 of 1.1 link).

6.11 Obtain and install 1 ea photo façade of System in the current D3 location (reference p52 of 1.1 link).

6.12 Create and install plexiglass or equivalent flooring (similar to what is in hi-fi Lab module) to cover D1-D6 facades.

7.0 Node1: Food pantry configuration changes frequently. Current on-orbit configuration is shown in NOD1 Food Pictures.

7.1 Relocate the existing cloth food pantry from stbd NOD1S1 to port wall, NOD1P1 (see temp file, NOD1 Food Pictures) and fill with existing food container mockups.

7.2 Obtain and install 1 ea photo facade of the lower port food configuration at NOD1P1 (see temp file, NOD1 Food Pictures).

7.3 Obtain and install 1 ea photo facade of the stbd food configuration at NOD1S1 (see temp file, NOD1 Food Pictures).

8.0 SUP/UOP: SUPs to be provided by GFE from HUNCH program.

8.1 Provide inspection of all 6 SUP panels and ensure workmanship meets electrical code (see Jim Searcy for receipt of GFE connector hardware).

8.2 Remove/retain existing PDLI UOPs from the following locations:

8.2.1 2 ea new style high fidelity units from current P2 (F2) and S2 (A2) overhead locations.

8.2.2 2 ea "flat" style high fidelity units from P2 (F2) deck and P4 (F4) overhead locations.

8.3 Install 1 ea GFE SUP in PDLI mockup at the COL1AD1, COL1FD2, COL1AD3, and COL1 FD4 locations. Provide existing 10 amp, 120 VDC power to connectors J01, J02 and J03 on each panel, giving priority to panels AD3 and FD4 (under EPM and HRF-1 racks). No data connection is required. Cut and/or replace standoff panels as required.

8.4 Install 1 ea non-powered SUP in the Columbus module to replace the facades at the COL1AD3 and COL1FD4 locations.

8.5 Replace/retain the existing "flat" style UOP in the Node 1 Galley rack with a new style high fidelity UOP (removed from PDL1 in requirement 8.2.1) and reconnect power and data, as available.
8.6 Install 1 ea new style high fidelity UOP at the Node3 stbd endcone location to replace current facade (UOP removed from PDL1 in requirement 8.2.1) and connect existing 10 amp, 120 VDC power to connectors J3 and J4 and connect other data lines, as available.

8.7 Install 1 ea "flat" style high fidelity UOP (removed from PDLI in requirement 8.2.2) at the NOD3FD5 location to replace current facade and connect existing 10 amp, 120 VDC power to connectors J3 and J4 and connect other data lines as available.

8.8 Update PDL1, PDLII, Node1 (as needed for Galley rack), Node3 and Columbus mockup drawings to reflect new SUP/UOP additions.

Additional facade images located here \\jsc-mod-svmf3\data\SVMF Ops\Projects Info\CR's\2737\11-Working_files\Reference_drawings\images

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A	Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	N/A	Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A	Inspection	Label requirement satisfied.		
1.1	Verify that all photo facades requested by this CR are IIIC fidelity	N/A	Inspection	All facades are photos and are IIIC by definition		
1.2	Verify that the ISS mockups are configured according to the new draft ISS Default Configuration file (see temp folder)	draft ISS Default Configuration file	Inspection	SVMF ISS mockups are configured according to the new draft ISS Default Configuration file		
1.3	Verify that the updated versions of the ISS Default Configuration, Mockup Rack Layout, and PDL Rack Layout files were posted on the CX14 home page.	ISS Default Configuration, Mock up Rack Layout, and PDL Rack Layout files	Inspection	The updated versions of the ISS Default Configuration, Mockup Rack Layout, and PDL Rack Layout files were posted on the CX14 home page.		
1.4	Verify that the ISS mockups have been reconfigured according to final ISS Default Configuration file if changes were needed based on findings from requirements 1.2 and 1.3	ISS Default Configuration	Inspection	The ISS mockups are reconfigured according to the final ISS Default Configuration		
2.1	**Verify that** the ZSR rack has been removed from P1 and retained in B59 for future use.	N/A	Inspection	The ZSR rack has been removed from P1 and placed in B59.		
2.2	Verify that the EXPRESS rack (GFE from B5) has been installed into the P1 location in the PDLII.	N/A	Inspection	The EXPRESS rack (GFE from B5) has been installed into the P1 location in the PDLII.		
2.3	**Verify that** a shelf has been installed in the existing PDLII P2 rack to hold a future GFE computer	N/A	Inspection	A shelf has been installed in the existing PDLII P2 rack.		
2.4	Verify that a frame and attachment mechanism, has been instlled in the S3 and P6 locations of the PDLII to provide a backing for installing rack photo façades	N/A	Inspection	A frame and attachment mechanism, has been installed in the S3 and P6 locations of the PDL		
2.5	**Verify that** a photo façade of EXPR-2 (ARIS) has been installed in the O1 location of the PDLII (see temp file, ER2_O1)	ER2_O1	Inspection	A photo façade of EXPR-2 (ARIS) has been installed in the O1 location of the PDLII		

2.6	Verify that a photo façade of EXPR-1 has been installed in the O2 location of the PDLII (relocate from O3, see temp file, ER1_O2).	ER1_O2	Inspection	A photo façade of EXPR-1 has been installed in the O2 location of the PDLII		
2.7	Verify that a photo façade of MSRR-1 has been installed in the O3 location of the PDLII (see temp file, MSRR_O3).	MSRR_O3	Inspection	A photo façade of MSRR-1 has been installed in the O3 location of the PDLII		
2.8	Verify that a photo façade of EXPR - 6 has been installed in the O4 location of the PDLII (see temp file, ER6_O4).	ER6_O4	Inspection	A photo façade of EXPR - 6 has been installed in the O4 location of the PDLII		
2.9	Verify that a photo façade of a ZSR has been installed in the O5 location of the PDLII (reference p68 of 1.1 link).	p68 of 1.1 link	Inspection	A photo façade of a ZSR has been installed in the O5 location of the PDLII		
2.10	Verify that a photo façade of DDCU-2 has been installed in the O6 location of the PDLII (reference p34 of 1.1 link).	p34 of 1.1 link	Inspection	A photo façade of DDCU-2 has been installed in the O6 location of the PDLII		
2.11	Verify that a photo façade of Avionics-2 has been installed in the D1 location of the PDLII (reference p24 of 1.1 link).	p24 of 1.1 link	Inspection	A photo façade of Avionics-2 has been installed in the D1 location of the PDLII		
2.12	Verify that a photo façade of Avionics-3 has been installed in the D2 location of the PDLII (need picture, see temp file).	picture, see temp file	Inspection	A photo façade of Avionics-3 has been installed in the D2 location of the PDLII.		
2.13	Verify that a photo façade of WORF has been installed in the D3 location of the PDLII (see temp file, WORF).	temp file, WORF	Inspection	A photo façade of WORF has been installed in the D3 location of the PDLII		
2.14	Verify that a photo façade of RSR has been installed in the D4 location of the PDLII (reference p33 of 1.1 link).	p33 of 1.1 link	Inspection	A photo façade of RSR has been installed in the D4 location of the PDLII		
2.15	Verify that a photo façade of Avionics-1 has been installed in the D5 location of the PDLII (reference p27 of 1.1 link).	p27 of 1.1 link	Inspection	A photo façade of Avionics-1 has been installed in the D5 location of the PDLII		
2.16	Verify that a photo façade of ARS has been installed in the D6 location of the PDLII (see temp file, ARS_D6).	ARS_D6	Inspection	A photo façade of ARS has been installed in the D6 location of the PDLII		
2.17	Verify that the MELFI facade has been installed on the LW rack in the S1 location of the PDLII	N/A	Inspection	The MELFI rack facade has been installed on the LW rack in the S1 location of the PDLII		
2.18	Verify that a photo façade of the MSG rack has been installed in the S3 location of the PDLII (needs removable frame, see temp file, MSG_S2).	MSG_S2	Inspection	A photo façade of the MSG rack has been installed in the S3 location of the PDLII		

2.19	Verify that a photo façade of TCS has been installed in the S6 location of the PDLII (see temp file, TCS_P6).	TCS_P6	Inspection	A photo façade of TCS has been installed in the S6 location of the PDLII		
2.20	Verify that a photo façade of the Robonaut has been installed in the P2 location of the PDLII (see temp file, Robonaut_P2).	Robonaut_P2	Inspection	A photo façade of the Robonaut has been installed in the P2 location of the PDLII		
2.21	Verify that a photo façade of the DDCU-1 has been installed in the P3 location of the PDLII (see temp file, DDCU_1_P3)	DDCU_1_P3	Inspection	A photo façade of the DDCU-1 has been installed in the P3 location of the PDLII		
2.22	Verify that a photo façade of the TCS has been installed in the P6 location of the PDLII (needs removable frame, reference p40 of 1.1 link).	p40 of 1.1 link	Inspection	A photo façade of the TCS has been installed in the P6 location of the PDLII		
2.23 a	Verify that a photo façade of the Forward and Aft Endcones has been installed in the PDLII.	N/A	Inspection	A photo façade of the Forward and Aft Endcones has been installed in the PDLII.		
2.23 b	Verify that a cutout has been provided in the Forward Endcone closeout to allow access to the existing ATU panel.	N/A	Inspection	A cutout has been provided in the Forward Endcone closeout to allow access to the existing ATU panel		
2.23 c	Verify that a cutout has been provided in the Aft Endcone closeout to allow access to the existing C&W panel.	N/A	Inspection	A cutout has been provided in the Aft Endcone closeout to allow access to the existing C&W panel.		
2.24	Verify that plexiglass or equivalent flooring (similar to what is in Lab module) has been installed to cover D6 - D1 facades in the PDLII	N/A	Inspection	A Lexan floor cover has been installed to cover D6 - D1 facades in the PDLII		
2.25 a	Verify that a powered UOP ("flat" design) has been installed at P2 overhead standoff of the PDLII	N/A	Inspection	A powered UOP ("flat" design) has been installed at P2 overhead standoff of the PDLII		
2.25 b	Verify that existing 10 amp, 120 VDC power has been connected to connectors J3 and J4 of the UOP.	N/A	Demonstration	10 amp, 120 VDC power has been connected to connectors J3 and J4 of the UOP.		
3.1 JEM	Verify that a photo facade of the Multi-purpose Small Payload Rack (MSPR2, launched on HTV5) has been installed at the JPM1F2 location with rack location code label and fire port decals, as representative offlight configuration. (see temp file).	Temp file	Inspection	A photo facade of the Multi-purpose Small Payload Rack (MSPR2) has been installed at the JPM1F2 location with rack location code label and fire port decals in flight locations		
3.2	Verify that a photo facade of the CTB stowage rack has been installed at the JPM1O3 location (see temp file, JPM_O3).	JPM_O3	Inspection	A photo facade of the CTB stowage rack has been installed at the JPM1O3 location		
4.1	Verify that new rack labels have been installed in the PMM (see temp file, PMM new Rack Labels).	PMM new Rack Labels	Inspection	New rack labels have been installed in the PMM per the file PMM new Rack Labels		

4.2	Verify that new orientation labels have been installed in the PMM port encone to reflect STBD, DECK, PORT, and OVHD according to 4.0. (Aft becomes Stbd, Port becomes Deck, Fwd becomes Port, and Stbd becomes Ovhd)	N/A	Inspection	Orientation labels have been installed in the port encone to reflect the new configuration . (Aft labeled as Stbd, Port labeled as Deck, Fwd labeled as Port, and Stbd labeled as Ovhd)		
4.3	Verify that a removable "false floor" has been installed in the PMM port endcone that is flush with existing floor level and extends fully East to West, allowing clearance for the existing ducting.	N/A	Inspection	A removable "false floor" has been installed in the port endcone that is flush with existing floor level and extends fully East to West, allowing clearance for the existing ducting.		
4.4	Verify that the PMM endcone space behind the bungee jail has been filled to closely match the provided Endcone stowage picture (see temp file, PMM Endcone).	PMM Endcone	Inspection	The PMM endcone space behind the bungee jail has been filled to closely match the Endcone stowage picture (PMM Endcone).		
4.4.1a	Verify that tight webbing or an equivalent facade has been installed in the PMM endcone to create a barrier "wall" to protect the existing ducting and thermostat from being crushed or knocked loose by bag loading.	N/A	Inspection	Tight webbing or an equivalent facade has been installed in the PMM endcone to create a barrier "wall" to protect the existing ducting and thermostat from being crushed or knocked loose by bag loading.		
4.4.1b	Verify that a "wall" cutout, or equivalent has been included in the PMM endcone ducting facade to allow access for thermostat adjustments	N/A	Inspection	A "wall" cutout, or equivalent has been included in the PMM endcone ducting facade to allow access for thermostat adjustments		
4.4.2	Verify that the PMM endcone is filled with low fidelity stuffed bags as follows: 4 ea MO-2 bags, 1 ea 5 MLE bag, 1 ea 3.0 CTB, 2 ea 2 0 CTB, 3 ea blocks of Nomex covered foam, 3 ea Mesh Bags, 10 JSBs, 1 ea off-white JSB (simulates Russian bag), 2 ATV bags (to be used to help with packing, but not be in the viewing area)	N/A	Inspection	The PMM endcone is filled with low fidelity stuffed bags as follows: 4 ea MO-2 bags, 1 ea 5 MLE bag, 1 ea 3 0 CTB, 2 ea 2.0 CTB, 3 ea blocks of Nomex covered foam, 3 ea Mesh Bags, 10 JSBs, 1 ea off-white JSB (simulates Russian bag), 2 ATV bags		
5.1 LAB	Verify that a photo facade of the MELFI3 has been installed at the Lab1S1 position with rack location code and fire port decals as representative offlight configuration. (see temp file).	Temp file	Inspection	A photo facade of the MELFI3 has been installed at the Lab1S1 position with rack location code and fire port decals as representative offlight configuration		
	Verify that a photo facade of the MSG has been installed in the Lab at the 1S2 position with rack location code and fire port decals as representative offlight configuration (see temp		Inspection	A photo facade of the MSG has been installed in the Lab at the 1S2 position with rack location code and fire port decals as representative offlight		

5.2	file, MSG_S2).	MSG_S2		configuration		
6.1 PDL	Verify that the PDL standoffs have been relabeled to reflect Columbus labeling with respect to the 4 rack locations closest to the endcone (first two racks nearest entry will not represent flight racks).	N/A	Inspection	The PDL standoffs have been relabeled to reflect Columbus labeling with respect to the 4 rack locations closest to the endcone		
6 2a	Verify that one forward and one aft endcone single pin rack support have been installed to replace existing low fidelity endcone supports (will support HRF racks after moves).	N/A	Inspection	One forward and one aft endcone single pin rack support have been installed to replace existing low fidelity endcone supports to support HRF racks		
6.2b	Verify that the low fidelity rack supports that were removed in 6.2a have been retained			The low fidelity rack supports that were removed in 6 2a have been retained		
6.3	Verify that, on the forward (port) side of the PDL, the locations of the Light-weight (LW) endcone rack and the HRF-1 rack with Z-panel have been reversed	N/A	Inspection			
6.4a	Verify that on the aft (stbd) side of the PDL, the Light-weight (LW) endcone rack has been removed	N/A	Inspection	The Light-weight (LW) endcone rack has been removed from the aft (stbd) side of the PDL		
6.4b	Verify that the HRF-2 rack with Z-panel and the European Physiology Module (EPM) racks have been relocated one bay starboard.	N/A		The HRF-2 rack with Z-panel and the European Physiology Module (EPM) racks have been relocated one bay starboard.		
6.4c	Verify that the LW endcone rack has been relocated to the former EPM location	N/A	Inspection	The LW endcone rack has been relocated to the former EPM location		
6.5	Verify that one photo facade of the existing Columbus mockup fwd and one of the stbd endcones (near port entrance) have been installed at their respective second rack bay location in the PDL	N/A	Inspection	One photo facade of the existing Columbus mockup fwd endcone and one of the stbd endcone (near port entrance) have been installed at their respective second rack bay locations		
6.6	Verify that the GFE Portable Fire Extinguisher (PFE) bottle has been installed in the PDL endcone area to match the current Columbus mockup placement	N/A	Inspection	The GFE Portable Fire Extinguisher (PFE) bottle has been installed in the endcone area to match the current Columbus mockup placement		
6.7a	Verify that the GFE endcone facade for the PDL(consult with Jim Searcy for specific installation instructions) has been cut and installed.	N/A	Inspection	The GFE endcone facade has been cut and installed per instructions from Jim Searcy.		
6.7b	Verify that cutouts for access to ATU, C&W panel, and PFE bottle have been provided in the PDL endcone facade	N/A	Inspection	Cutouts for access to ATU, C&W panel, and PFE bottle have been provided in the PDL endcone facade		
	Verify that a blank photo facade has been installed in the existing D1 and D2 locations of the PDL (near entry which is not		Inspection	A blank photo facade has been installed in the		

6.8	representing Columbus).	N/A		existing D1 and D2 locations of the PDL		
6.9	Verify that a photo façade of ETC has been installed in the current D6 location of the PDL (reference p55 of 1.1 link).	p55 of 1.1 link	Inspection	A photo façade of the ETC has been installed in the current D6 location of the PDL		
6.10	Verify that a photo façade of System has been installed in each of the current D4 and D5 locations of the PDL (reference p53 of 1.1 link).	p53 of 1.1 link	Inspection	A photo façade of the System rack has been installed in each of the D4 and D5 locations of the PDL		
6.11	Verify that a photo façade of System has been installed in the current D3 location of the PDL (reference p52 of 1.1 link).	N/A	Inspection	A photo façade of the System rack has been installed in the D3 location of the PDL		
6.12	Verify that plexiglass or equivalent flooring (similar to what is in hi-fi Lab module) has been installed to cover D1-D6 facades.	N/A	Inspection	Lexan panels have been installed to cover D1-D6 facades		
7.1	Verify that the existing cloth food pantry has been relocated from stbd NOD1S1 to port wall, NOD1P1 in the Node 1 (see temp file, NOD1 Food Pictures) and fill with existing food container mockups	NOD1 Food Pictures	Inspection	The existing cloth food pantry has been relocated from stbd NOD1S1 to port wall, NOD1P1 in the Node 1 and filled with existing food container mockups		
7.2	Verify that a photo facade of the lower port food configuration has been installed at NOD1P1 (see temp file, NOD1 Food Pictures)	NOD1 Food Pictures	Inspection	A photo facade of the lower port food configuration has been installed at NOD1P1		
7.3	Verify that a photo facade of the stbd food configuration has been installed at NOD1S1 of the Node 1 (see temp file, NOD1 Food Pictures).	see temp file, NOD1 Food Pictures	Inspection	A photo facade of the stbd food configuration has been installed at NOD1S1 of the Node 1		
8.1	Verify that all 6 SUP panels have been inspected to ensure workmanship meets electrical code	N/A	Inspection	All 6 SUP panels have been inspected and reworked as required to ensure workmanship meets electrical code		
8 2. 1	Verify that existing PDL UOPs have been removed from the following locations: 2 ea new style high fidelity units from current P2 (F2) and S2 (A2) overhead locations	N/A	Inspection	There are no new style high fidelity units in the P2 (F2) and S2 (A2) overhead locations of the PDL		
8 2. 2	Verify that 2 ea "flat" style high fidelity UOP units have been removed from P2 (F2) deck and P4 (F4) overhead locations in the PDL	N/A	Inspection	There are no "flat" style high fidelity UOP units in P2 (F2) deck and P4 (F4) overhead locations in the PDL		
8 3a	Verify that one GFE SUP has been installed in the PDL mockup at each of the COL1AD1, COL1FD2, COL1AD3 and COL1FD4 locations.	N/A	Inspection	One GFE SUP has been installed in the PDL mockup at each of the COL1AD1, COL1FD2, COL1AD3 and COL1FD4 locations.		
	Verify that existing 10		Inspection			

8.3b	amp, 120 VDC power has been connected to connectors J01, J02 and J03 on each panel in the PDL COL1AD1, COL1FD2, COL1AD3 and COL1FD4 locations , giving priority to panels AD3 and FD4 (under EPM and HRF-1 racks).	N/A		10 amp, 120 VDC power has been connected to connectors J01, J02 and J03 on each panel in the PDL COL1AD1, COL1FD2, COL1AD3 and COL1FD4 locations, giving priority to panels AD3 and FD4 (under EPM and HRF-1 racks).		
8.4	Verify that one non-powered SUP has been installed in each of the Columbus module COL1AD3 and COL1FD4 locations to replace existing facades	N/A	Inspection	One non-powered SUP has been installed in each of the Columbus module COL1AD3 and COL1FD4 locations		
8 5a	Verify that the existing "flat" style UOP in the Node 1 Galley rack has been replaced with a new style high fidelity UOP (removed from PDL in requirement 8.2.1)	N/A	Inspection	A new style high fidelity UOP has been installed in the Node 1 Galley rack.		
8.5b	Verify that power and data have been reconnected to the new style UOP as available.	N/A	Inspection	Power and data have been reconnected to the new style UOP as available		
8.6a	Verify that a new style high fidelity UOP has been installed at the Node3 stbd endcone location to replace the current facade (UOP removed from PDL in requirement 8.2.1)	N/A	Inspection	A new style high fidelity UOP has been installed at the Node3 stbd endcone location.		
8.6b	Verify that existing 10 amp, 120 VDC power has been connected to connectors J3 and J4 of the Node 3 starboard endcone UOP and other data lines have been connected as available.	N/A	Inspection	Existing 10 amp, 120 VDC power has been connected to connectors J3 and J4 of the Node 3 starboard endcone UOP and other data lines have been connected as available		
8.7a	Verify that a "flat" style high fidelity UOP (removed from PDL in requirement 8.2.2) has been installed at the NOD3FD5 location in Node 3 to replace current facade	N/A	Inspection	A "flat" style high fidelity has been installed at the NOD3FD5 location in Node 3.		
8.7b	Verify that existing 10 amp, 120 VDC power has been connected to connectors J3 and J4 and other data lines have been connected as available.	N/A	Inspection	10 amp, 120 VDC power has been connected to connectors J3 and J4 and other data lines have been connected as available.		
8.8	Verify that PDL, PDLII, Node1 (as needed for Galley rack), Node3 and Colum bus mockup drawings have been updated to reflect new SUP/UOP additions.	N/A	Inspection	Drawings have been updated for PDL, PDLII, Node1 (as needed for Galley rack), Node3 and Colum bus to reflect new SUP/UOP additions		

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Task Number	Task Name	Early Start	July 1	August 1	September 1	October 1
				6/21 7/5 7/19	8/2 8/16	8/30 9/13	9/27 10/11

(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO900,RevA	09/06/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO900,RevA

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 31, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO900,RevA

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO900, Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 9/6/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 900, Rev A is to: 1) Extend the period of performance from March 31, 2011 to May 31, 2011. 2) Increasing the amount of hours necessary to provide additional technical support for Alpha-Magnetic Spectrometer. The estimated cost (b) (4) The estimated awa The estimated ince The total value of this Delivery Order is (b) (4) Work is to be completed by May 31, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

CR-2323A Alpha-Magnetic Spectrometer Support

31 August 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

CR-2323A Level of Effort (LOE) for Alpha-Magnetic Spectrometer Support

Agenda

- Requirements/Derived Requirements
- Proposed Solution
- Schedule
- Risks and Potential Impacts
- Deliverables (HW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CR-2323A Alpha-Magnetic Spectrometer LOE support Background

Requirements:

- Provide a support technician who has experience with AMS and with the AMS team.
- Provide continuous support for the payload at KSC until the launch.

Derived Requirements:

- None

Revision A extends support to coincide with STS-134 launch date slips

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CR-2323 Alpha-Magnetic Spectrometer Support – Proposed Solution

- Utilize experienced RTE engineer to support the request

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CR-2323A Alpha-Magnetic Spectrometer Support - Risks

Risk#	Risk Description	Impact	Probability	Consequence	Control
(b) (4)					

CR-2323A Alpha-Magnetic Spectrometer Support Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None identified				

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CR-2323A Alpha-Magnetic Spectrometer Support - Deliverables

- **LOE Support thru May 2011**

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CR-2323A Alpha-Magnetic Spectrometer Support
Schedule Milestones

SCHEDULE MILESTONES:

(b) (4)

CR-2323A Alpha-Magnetic Spectrometer Support - Acceptance Criteria

- Completion of LOE support in May 2011 after STS-134 Launch

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CR-2323A Alpha-Magnetic Spectrometer LOE support
Material Matrix

(b) (4)

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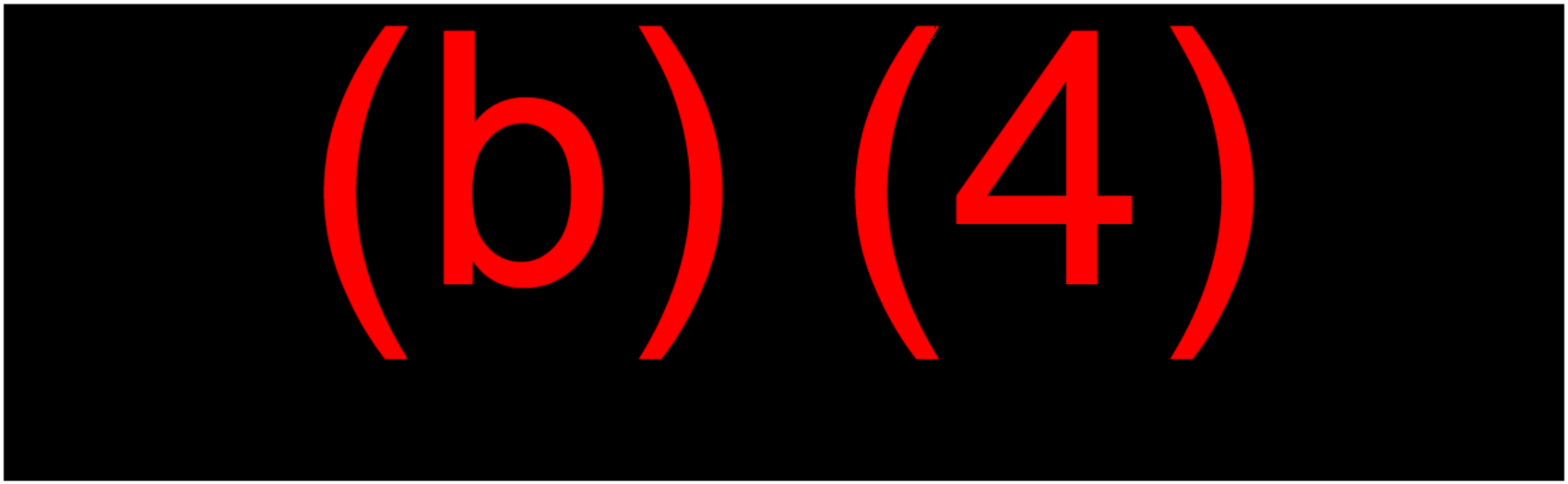
CR-2323A Alpha-Magnetic Spectrometer LOE support
Travel Detail



"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CR-2323A Alpha-Magnetic Spectrometer LOE support
Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

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CR-2323A Alpha-Magnetic Spectrometer LOE support
Basis of Estimate Summary and Assumptions

Tasks	Hours	Resource	Description/Basis of Estimate
(b) (4)	(b) (4)		
Grand Total			

CR-2323A Alpha-Magnetic Spectrometer LOE support
Basis of Estimate (FY11)

Tasks	Hours	Resource	Company
(b) (4)			(b) (4)
Grand Total			

(cont.)

CR-2323 Alpha-Magnetic Spectrometer Support Cost Summary (Total Cost) Action Items/Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

Page 1 of

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO900	10/07/10	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO900

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 31, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO900

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO900

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia W. Maclean 10/7/10
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 900 is to: Provide technical support for Alpha-Magnetic Spectrometer. The estimated cost is (b) (4) The estimated award f The estimated incenti The total value of this Delivery Order is (b) (4) Work is to be completed by March 31, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2323	DX CHANGE REQUEST

CR TITLE: AMS Integration Activities LOE Support for FY11

1. REQUESTOR: Trent Martin	2. PHONE: x 33296	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: _____

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
The Alpha Magnetic Spectrometer (AMS) requires continuation of technician support began in FY10 until the planned launch in March 2011.

7. RATIONALE
Technician support was started at KSC in FY10 with a planned launch date of Nov 2010. That has moved to March 2011 and support is required until the launch.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Provide a support technician who has experience with AMS and with the AMS team.
2. Provide continuous support for the payload at KSC until the launch.

9. NEED DATE: (support date in block 7 rationale) 03/30/11	10. CR SUBMISSION DATE: 09/20/10

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 09/20/10

12. NASA POC: Allison McIntyre	13. PHONE: x47115	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: (b) (4)	20. NEGOTIATED DELIVERY DATE: 03/30/11

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2323	DX CHANGE REQUEST

CR TITLE: AMS Integration Activities LOE Support for FY11

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

CR shall be deemed complete and accepted upon either the COB 03/30/11 or the launch of the AMS payload to the ISS.

SCHEDULE MILESTONES: (complete or reference separate project plan)

N/A – LOE support for the defined period.

CR NO.: 2323	DX CHANGE REQUEST

CR TITLE: AMS Integration Activities LOE Support for FY11

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

Air travel and per diem as per quotes and standard rates.

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

None identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

N/A

CR NO.: 2323	DX CHANGE REQUEST
CR TITLE: AMS Integration Activities LOE Support for FY11	

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

CR-2323 for Alpha-Magnetic Spectrometer
Support Cost Summary (Total Cost)
Signature Page

(b) (4) 10/04/10
Date
SVMF Mockup Engineering Lead

(b) (4) 10/4/10
Date
SVMF Operations Manager

Larry Chase 10/5/10
Larry Chase Date
NSOC Program Manager

LA Ward 10.5.10
Lee Anne Ward Date
Contracts Administrator

10/4/10
Ronald Lee Date
Chief, Space Vehicle Mockup Facility

Susan Sinclair 10/4/10
Susan Sinclair Date
Contracting Officer
Technical Representative

10/4/10
Mike Hess Date
Chief, EVA, Robotics, and Crew Systems
Operations Division

Cindy Maclean 10/6/10
~~John R. Carpentier~~ Date
Contracting Officer
Cindy Maclean

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Release 6

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO901	10/25/10	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO901

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
February 15, 2011
F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO901

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO900

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia W. Maclean 11/1/10
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 901 is to: Build a Reconfigurable HTV EP-MP Mockup to be used for training and to support developmental testing. The estimated cost i (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $162,422.52. Work is to be completed by February 15, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	162,422.52	162,422.52	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 162,422.52

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

Raytheon

Raytheon Technical Services Company LLC
555 Forge River Road, Suite 120
Webster, Texas 77598
281-488-5510 (Phone)
(b) (4) (Fax)

NSOC-LAW-187

25 October 2010

Lyndon B. Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas 77058

Attention: Cindy Maclean, NASA JSC Contracting Officer

Subject: IDIQ Delivery Order under Neutral Buoyancy Laboratory (NBL)/Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC2) – NNJ10HD35C

Reference: NASA CR-2260 - Build a Reconfigurable HTV EP-MP Mockup

Enclosure: RTSC Delivery Order Proposal, dated 10/21/10

Dear Ms. Maclean:

Raytheon Technical Services Company LLC (RTSC) is pleased to forward the attached delivery order (DO) proposal in response to the referenced NASA CR-2260. This proposal is submitted pursuant to the subject contract number, provision B.6 "Estimate Cost and Fee for the IDIQ Requirements of the Contract" and in accordance with Attachment J-08 "IDIQ Pre-Established Loaded Labor Rates (IDIQ)".

Total CPAF/IF Estimate = $162,423

This proposal shall remain valid for 30 days from the date of this letter. In the event RTSC receives further scope changes to the requirements that are the basis for this revised proposal, RTSC shall first assess the impact of the change to the cost or schedule. Before implementing a change, RTSC shall notify NASA of the estimated cost or schedule relief associated with implementing the change.

Should you have any questions or need clarification with regard to this submittal, please contact Contracts Administrator Lee Anne Ward at (b) (4) or Larry Chase NSOC Program Manager at (b) (4).

Sincerely,

RAYTHEON TECHNICAL SERVICES COMPANY LLC

LAWard

Lee Anne Ward
Contracts Administrator

Enclosure: RTSC Proposal CR-2260 - Build a Reconfigurable HTV EP-MP Mockup

Build a Reconfigurable HTV EP-MP Mockup
CR-2260 NASA Delivery Order Signature Page

(b) (4)

10-22-10
Date

Delivery Order Proposal Manager

(b) (4)

10-22-10
Date

Engineering Management Office Mgr

(b) (4)

22 OCT 2010
Date

NBL Operations Manager

Larry Chase 10-22-10
Larry Chase Date
NSOC Program Manager

10-25-10
Lee Anne Ward Date
Contracts Administrator

John Haas 10-22-10
John Haas Date
NBL Chief Engineer

M. S. Patel 10-22-10
Munish Patel Date
EVA Operations Branch Chief

Susan V. Sinclair
Susan Sinclair Date
Contracting Officer
Technical Representative

10/22/10
Mike Hess Date
Chief, EVA, Robotics, and Crew Systems
Operations Division

Cynthia W. Maclean 10/26/10
Cynthia Maclean Date
Contracting Officer

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO902,Rev1	03/31/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO902,Rev1

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 9, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO902,Rev1

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO902, Rev 1

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 3/31/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 902, Rev 1 is to: Revise the Estimate at Completion to Reactivate development on PORT II Crew Module Systems The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Revision 1 is $21,686. The total value of this Delivery Order is $613,237 Work is to be completed by June 9, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	21,686.00	21,686.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 21,686.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

Reactivate Development of PORT II: CR-2320, Revision A

Mar. 23, 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

Reactivate Development of PORT II: CR-2320, Revision A

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

PORT-II CMUS Operations CR-2320 Revision A Requirements Overview

Proposed changes to the baseline requirements are described by the following Scope Change Impact Form summaries:

- **Scope Change Summary 1**
- **(a) Delete Console Fabrication**
- **(b) Delete Trampoline Attachment**
- **(c) Delete Critical System Installation**

Scope Change Summary 2

(a) Add Modified and New Mortars
(b) Add Dewater Components
(c) Defer Raft/Floatation Collar Attachment Installation
(d) Defer Bay C Locker Door
(e) Add New Second Closeout CAR Date

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

PORT-II CMUS Operations CR-2320 Revision A Requirements Overview

Proposed changes to the baseline requirements are described by the following Scope Change Impact Form summaries (Continued):

- **Scope Change Summary 3**
- **(a) Delete side mounted lifting points**

Scope Change Summary 4

(a) Increase Floating Dock size

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II Crew Module Systems CR-2320 Rev A Deliverables

PORT II capsule and the following <u>hardware/tests</u> will be delivered to DX12 as defined by CR-2320 Revision A Section 8 Requirements:

NOTE: Item numbers refer to CR-2320 Table entries

Item #	Deliverable Description	PRIMARY DATA REFERENCE
4	~~Vol. F (trmpln. attach)~~ (Rev A)	~~CDR 05/12/10~~
11	~~Console~~ Use JNEOM (Rev A)	~~CDR 05/12/10~~
17	Floating Dock (Rev A)	CDR 05/12/10
18	Dewater system (Rev A)	CDR 5/12/10
19	Mortar Cans (Rev A)	CDR 12/16/10

Item #	Deliverable Description	PRIMARY DATA REFERENCE
7	~~Audio outfitting (CS) install(Rev A)~~	~~CDRs 03/08/10 & 05/12/10~~
13	~~CS Lights install (Rev A)~~	~~CDRs 03/08/10 & 05/12/10~~
15	~~CS Window lights instl (Rev A)~~	~~CDRs 03/08/10 & 05/12/10~~
16	~~Critical System Audio instl (Rev A)~~	~~CDRs 03/08/10 & 05/12/10~~
17	~~Critical System Video instl (Rev A~~	~~CDRs 03/08/10 & 05/12/10~~
18	~~CS Water/UIP install (Rev A)~~	~~CDRs 03/08/10 & 05/12/10~~

Item #	Deliverable Description	PRIMARY DATA REFERENCE
12	Negotiated Delivery 1 (Rev A)	N/A
13	Negotiated Delivery 2 (Rev A)	N/A

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II CR-2320 Rev A Deliverables

The following Documentation will be updated to changes due to SCIFs and will be delivered to DX12 as defined by CR-2320, Revision A:

1	Perform Delivery 1 and Delivery 1-G CAR
2	Perform Delivery 1 and Delivery 2 In-water CAR

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR-2320 Schedule

ID	WBS	Task Name	Duration

Nov '10 | Dec '10 | Jan '11 | Feb '11 | Mar '11 | Apr '11 | May '11 | Jun '11 | Jul '11

(b) (4)

Reactivate Development of PORT II
CR-2320 Revision A Deliverable Schedule

Schedule	
Date	

(b) (4)

Systems Engineering and Analysis Documentation	
Date	

(b) (4)

Reactivate Development of PORT II : CR-2320, Revision A Acceptance Criteria

Physical configuration inspection of the finished PORT II Mockup against the data provided and the defined requirements.

If the fabricated mockups fail to meet the requirements, then Team Raytheon will correct the problem and resubmit the items for acceptance.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II : CR-2320, Revision A Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II : CR-2320, Revision A Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None identified				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR-2320 Revision A Material Matrix

SCIF -01 Deletes Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
1	**Raw Material**					
	Console size angle 1/4 x 2 x 2 316L angle	(b) (4)	(b) (4)	(b) (4)		
	Console size plate 1/4 x 4 ft x 8 ft UHMW					
	Trampoline Brackets 316L bar stock					
	Subtotal Raw Material					

SCIF -02 Adds Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
1	**Raw Material**					
	1/8 x 4' x 8' 304L	(b) (4)	(b) (4)	(b) (4)		
	1/4 x 4' x 8' 304L					
	Subtotal Raw Material					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR-2320 Revision A Material Matrix

SCIF -03 Deletes Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
2	Miscellaneous Materials					
	NBL Swivel Hoist eyes	(b) (4)	(b) (4)	(b) (4)		
	Subtotal Raw Material					

Design Change Adds Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
2	Miscellaneous Materials					
	Dock Section	(b) (4)	(b) (4)	(b) (4)		
	Subtotal Raw Material					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II : CR-2320, Revision A Travel Detail

There has been no Travel identified for these tasks.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR-2320 Rev A Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR-2320 Basis of Estimate Summary

SCIF-01 Deletes Scope

Revision Work Split		Hours	SLC
(b) (4)			

(cont.)

Reactivate Development of PORT II
CR-2320 Basis of Estimate Summary

SCIF-02 Adds Scope

Revision A Work Split		Hours	SLC

Revision A Work Split		Hours	SLC

(b) (4)

(cont.)

Reactivate Development of PORT II
CR-2320 Basis of Estimate Summary

SCIF-03 Deletes Scope

Revision Work Split		Hours	SLC
(b) (4)			

(cont.)

Reactivate Development of PORT II Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

- **These requirement modifications requests will be documented via the Scope Change Impact Form to capture the verbiage, cost and schedule impacts as they are presented. This will allow rapid approval and implementation of the pending request(s) individually until a revision can be processed.**

- **Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.**

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

Page 1 of

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO902 Rev2	07/13/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO902 Rev2

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 15, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO902 Rev2

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO902 Rev 2

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

Cynthia Maclean 7/13/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 902, Rev 2 is to: Update to include revisions to DO 902 for PORT activities. Reactivate development on PORT II Crew Module Systems The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $20,112. Work is to be completed by August 15, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	20,112.00	20,112.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 20,112.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

Reactivate Development of PORT II:
CR-2320, Revision B
CR-2348, Revision A
CR-2349, Revision A

July 6, 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

Reactivate Development of PORT II: CR-2320B, CR-2348A, CR2349A

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

PORT-II CMUS Operations CR2320B, 2348A, 2349A Requirements Overview

Proposed changes to the baseline requirements are described by the following Scope Change Impact Form summaries:

- **CR2320B Scope Change Summary**
- **(a) Add Outer Mold Line access ladder to aid access to CMUS equip**
- **(b) Add funding for personnel to support Strobe Light Test (2 ea)**

CR2348A Scope Change Summary

(a) Add funding for personnel to support for CMUS Test on overtime

CR2349A Scope Change Summary

(a) Add funding for personnel to support set-up of wave mitigation equip

(b) Add funding for personnel to modify CMUS lift and rotate procedure on an overtime basis

(c) Add funding for personnel to support Incline Test

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II Crew Module Systems CR-2320 Rev B Deliverables

PORT II capsule and the following hardware/tests will be delivered to DX12 as defined by CR-2320 Revision A Section 8 Requirements:

NOTE: Item numbers refer to CR-2320 Table entries

I. **Design, develop, fabricate, and assemble the following hardware items:**

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	COMMENTS	Rev B Status
21	External Ladder for Ops (Rev B)	Ops TIM 02/10/11	CMDM	1	(b) (4)	Complete

III. **Develop, and implement the following documents/processes:**

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	COMMENTS	Rev B Status
14	Support Strobe Tests (Rev B)	N/A	N/A	2	(b) (4)	Complete

Note - No changes to the Requirements/Deliverables section of CRs 2348A or 2349A due to their revisions.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR-2320B Schedule

ID	WBS	Task Name	Sep '10	Oct '10	Nov '10	Dec '10	Jan '11	Feb '11	Mar '11	Apr '11	May '11	Jun '11	Jul '11	Aug '11	Sep '11

(b) (4)

Reactivate Development of PORT II
CR-2320 Revision B Deliverable Schedule

Schedule	
Date	
(b) (4)	

Systems Engineering and Analysis Documentation	
Date	
(b) (4)	

Reactivate Development of PORT II : CR2320B, CR2348A, CR2349A Acceptance Criteria

Physical configuration inspection of the finished PORT II Mockup against the data provided and the defined requirements for final delivery of content; this revision extends the delivery date of CR2320B to Aug 15, 2011.

Items described in Scope Change Summary have already been delivered and accepted.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II : CR-2320B, CR2348A, CR2349A Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II : CR2320B, CR2348A, CR2349A Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II Material Matrix

CR2320B – Scope Change: Adds Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
	Raw Material					
1	Delrin, White, Rect Bar, .25" thk x 1.00" wide x 12" Lg (6 ea)	(b) (4)	(b) (4)	(b) (4)	2/28/2011	
	Stainless Steel, 304L, 6" x 6" x .25" thk. (1 ea)				2/28/2011	
	Stainless Steel Angle, 304L, 1" x 1" x .125"thk (36" Lg- 1pc)				2/28/2011	
	Subtotal Raw Material					
	Miscellaneous Materials					
2	Four Step (60") Dock Ladder, Galvanized (2 ea)				2/28/2011	
	Subtotal Misc Material					
	Outsourcing					
3						
	Subtotal Outsourcing					
	Total					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II : CR-2320B, CR2348A, CR2349A Travel Detail

There has been no Travel identified for these tasks.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR2320B, CR2348A, CR2349A
Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
CR-2320B Basis of Estimate Summary

SCIF-01: Adds Scope – (b) (4)

(b) (4)

Revision Work Split		Hours	SLC

(b) (4)

SCIF-02 Adds Scope – (b) (4)

(b) (4)

Revision Work Split		Hours	SLC

(b) (4)

SCIF-03 Adds Scope – Provide support for Strobe Test (#2). Duplicate of above.

Revision Work Split		Hours	SLC

(b) (4)

Reactivate Development of PORT II
CR-2348A Basis of Estimate Summary

SCIF-01: Adds Scope – (b) (4)

(b) (4)

Revision Work Split		Hours (OT)	SLC

(b) (4)

Reactivate Development of PORT II
CR-2349A Basis of Estimate Summary

SCIF-01: Adds Scope – (b) (4)

(b) (4)

SCIF-02 Adds Scope – (b) (4)

(b) (4)

Revision Work Split		Hours	SLC

Revision Work Split		Hours (OT)	SLC

(b) (4)

(cont.)

Reactivate Development of PORT II
CR-2349A Basis of Estimate Summary

SCIF-03 Adds Scope – (b) (4)

(b) (4)

Revision Work Split		Hours	SLC

(b) (4)

Reactivate Development of PORT II
CR2320B, CR2348A, CR2349A - Summary

Work split	Hours	SLC
(b) (4)		

Work split Continued	Hours	SLC
(b) (4)		

Reactivate Development of PORT II Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

- **These requirement modifications requests will be documented via the Scope Change Impact Form to capture the verbiage, cost and schedule impacts as they are presented. This will allow rapid approval and implementation of the pending request(s) individually until a revision can be processed.**

- **Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.**

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Reactivate Development of PORT II
Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO902	11/04/10	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Michael Duckworth
Tel. No.: (281) 483-0937 Fax:
E-mail: michael.w.duckworth@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO902

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 20, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO902

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO900

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia W Maclean 11/4/10
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 902 is to: Reactivate development on PORT II Crew Module Systems The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $591,551. Work is to be completed by March 20, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	591,551.00	591,551.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 591,551.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Raytheon

Raytheon Technical Services Company LLC
555 Forge River Road, Suite 120
Webster, Texas 77598
281-488-5510 (Phone)
(b) (4)

NSOC2-LAW-188

4 November 2010

Lyndon B. Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas 77058

Attention: Cindy Maclean, NASA JSC Contracting Officer

Subject: IDIQ Delivery Order under Neutral Buoyancy Laboratory (NBL)/Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC2) – NNJ10HD35C

Reference: NASA CR-2320. 2348 and 2349 – Reactivation Development of PORT II
Request for IDIQ Proposal received 10/29/10.

Enclosure: RTSC Delivery Order Proposal, dated 11/03/10

Dear Ms. Maclean:

Raytheon Technical Services Company LLC (RTSC) is pleased to forward the attached delivery order (DO) proposal in response to the referenced NASA CR-2320, 2348 and 2349. Follow-up emails with the discussion with the COTR, Susan Sinclair, determined that CR 2336 be removed from our IDIQ proposal submit. This proposal is submitted pursuant to the subject contract number, provision B.6 "Estimate Cost and Fee for the IDIQ Requirements of the Contract" and in accordance with Attachment J-08 "IDIQ Pre-Established Loaded Labor Rates (IDIQ)".

Total CPAF/IF Estimate = $591,551

This proposal shall remain valid for 30 days from the date of this letter. In the event RTSC receives further scope changes to the requirements that are the basis for this revised proposal, RTSC shall first assess the impact of the change to the cost or schedule. Before implementing a change, RTSC shall notify NASA of the estimated cost or schedule relief associated with implementing the change.

Should you have any questions or need clarification with regard to this submittal, please contact Contracts Administrator Lee Anne Ward at (b) (4) or Larry Chase NSOC Program Manager at (b) (4)

Sincerely,

RAYTHEON TECHNICAL SERVICES COMPANY LLC

LAWard

Lee Anne Ward
Contracts Administrator

Enclosure: RTSC Proposal CR- CR-2320. 2348 and 2349 – Reactivation Development of PORT II

Reactivate Development of PORT II: CR-2320, CR-2348 and CR-2349 NASA Delivery Order Signature Page

(b) (4)

11/3/10
Date

Delivery Order Proposal Manager

(b) (4)

11/3/10
Date

Engineering Management Office Mgr

(b) (4)

11/3/10
Date

NBL Operations Manager

11/3/10
Date

Larry Chase
NSOC Program Manager

11.3.10
Date

Lee Anne Ward
Contracts Administrator

11-3-2010
Date

John Haas
NBL Chief Engineer

11/3/2010
Date

Robert Durkin
NBL Chief

11/3/10
Date

Susan Sinclair
Contracting Officer
Technical Representative

11/3/10
Date

Mike Hess
Chief, EVA, Robotics, and Crew Systems
Operations Division

11/4/10
Date

Cindy Maclean
Contracting Officer

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Release 13

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.: NNJ10HD35C DO903
2. Date of Order: 02/17/10

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Peter Hollis
Tel. No.: (281) 792-7510 Fax:
E-mail: Peter.S.Hollis@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO903

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 15, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO903

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO903

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia W. Maclean 2/17/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 903 is to: Provide Neutral Body Position Study Support The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $12,250 Work is to be completed by March 15, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	12,250.00	12,250.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total: 12,250.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

Neutral Body Position (NBP) Study

(b) (4)

16 February 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

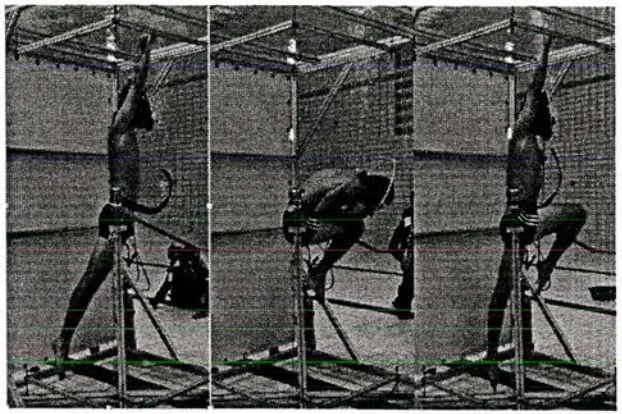
Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Neutral Body Position (NBP) Study Background

- **Background**
  - Based on past NBP investigations (Skylab, STS-57, EuroMIR95), a study at Technical University at Munich (TUM) within a simulated microgravity environment (under water) was conducted to raise the sample size and minimize errors due to unnecessary interaction with the environment, such as human touching and visual orientation. Subjects without any markers were placed inside an under water test rig only attached by a free rotating hip fixture. A stereo-metric camera system was used to record the postures of the subjects on video. After post processing, the posture was analyzed by the anthropometric software PCMAN. This software enables one to create a digitalized anthropometric model with its specific joint coordinates of any individual human posture based solely on the recorded picture data.
- **Task Description**
  - SCUBA test subjects are secured to a customer provided test stand at a low under water depth. Subjects will be video taped during a first under water session. A sub-group of the initial subjects will be selected for the second part of the study. This sub-group will sleep for 8 hours in the NBL facility and then re-peat the under water evaluation after waking.



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Neutral Body Position (NBP) Study Requirements Overview

The following requirements were conveyed by SOW dated 2/9/11:

- Raytheon provided operational support:
- Hardware integration of test stand, camera brackets and SCUBA tank restraint to existing stainless steel NBL platform
- Pre-test Execution support - Safety Review, Pre-TRR, TRR
- (b) (4) divers for test parts 1 and 2 (b) (4) alternate divers will be indentified for backup in case of other diver unavailability)
- Three dives for test part 3
- Test parts 2 and 3 require support staff for configured SCUBA event (b) (4)
  (b) (4)
- Crane operator and lift operations before and after test parts 2 and 3
- Post test de-integration of test stand and camera brackets
-
- Materials supplied by Raytheon:
- Video cameras
- Sleep area for part 3 of test
- 15' low pressure dive hose (2)
- Breathing air SCUBA tanks and regulators
- Gurney

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Neutral Body Position (NBP) Study
Acceptance Overview

I. Acceptance Criteria Definition:

- Support for the following Tests as specified in the SOW:
  1. Test Part 1 - subjects have body measurements and weight taken as well as complete a questionnaire.
  2. Test Part 2 - subjects are secured to an underwater test stand for the evaluation and viewed via underwater video.
  3. Test Part 3 - subjects sleep for eight hours and then repeat Part 2 without any vertical body loading between the end of the sleep cycle to the water evaluation.

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Neutral Body Position (NBP) Study
Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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Neutral Body Position (NBP) Study Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None identified				

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Neutral Body Position (NBP) Study Deliverables

The following hardware/tests will be delivered to SF:

Item #	Deliverable Description	PRIMARY DATA REFERENCE
1	Integrated test stand	SOW
2	Test Part 1	SOW
3	Test Part 2	SOW
4	Test Part 3	SOW

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Neutral Body Position (NBP) Study Deliverables

The following Documentation will be delivered:

1	none

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Neutral Body Position (NBP) Study
Schedule Milestones

SCHEDULE MILESTONES:

Neutral Body Position (NBP) Study
Acceptance Criteria

Acceptance criteria is completion of three test parts as defined in the SOW

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO904	02/24/10	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Peter Hollis
Tel. No.: (281) 792-7510 Fax:
E-mail: Peter.S.Hollis@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO904

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 25, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO904

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO904

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 2/25/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 904 is to: Provide NEEMO 15 Support The estimated cost is $(b) (4) The estimated award fee is $(b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $16,011.22 Work is to be completed by March 25, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	16,011.22	16,011.22	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 16,011.22

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

NEEMO 15 Support

[redacted]

21 February 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

NEEMO 15 Support Background

- Background
  - **The LMF and The NBL Have supported the NEEMO for the past 3 missions. These projects are developmental in nature and therefore are best handled in house where Engineering and Manufacturing can stay in constant communication**

- Task Description
  - **Support EC division with manufacturing of development hardware for NEEMO 15. This activity will utilize the LMF Manufacturing department's knowledge of mockup manufacturing to support underwater process development and training to help ensure cost effectiveness and equipment development of test hardware. EC will have engineering support for manufacturing throughout the life of this project. All direction for design and manufacturing activity will come through the EC project engineering**
    1. Manufacture 20 Auger Anchors per development design requirements
    2. Modify early BRRM mockup to simulate "Drill" per development design requirements
    3. Modify MBSU and small boxes to simulate "Geotechnical Instruments" per development design requirements
    4. Modify and rigidize OTD Boom per development design requirements
    5. Manufacture APFR plate with adaptor pin

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NEEMO 15 Support Requirements Overview

The following requirements were conveyed by SOW dated 2/9/11:

- **Hardware to be manufactured/modified:**
  - Manufacture 20 Auger Anchors per development design requirements
  - Augers will have multiple tips which are interchangeable
  - Aluminum plates with tether rings bolted to a Stainless steel main body
- **Modify early BRRM mockup to simulate "Drill" per development design requirements**
  - Additional hand rails and tethers will be added
  - Assist in identification of existing hardware
- **Modify MBSU and small boxes to simulate "Geotechnical Instruments" per development design requirements**
  - Will include 4 sup boxes with cabling at a minimum of 10 ft long
  - 4 sub boxes should be Attached to main box (MBSU)
  - 2 handrails will be added
  - Assist in identification of existing hardware
- **Modify and rigidize OTD Boom per development design requirements**
  - Attach Auger mount pin to base of UHMW OTD Boom
  - Boom Extensions will need to be affixed to support multiple extension position
  - Assist in identification of existing hardware
- **Manufacture APFR plate with adaptor pin**
  - Attach Auger adapter pin
  - APFR plate, adapted to "Ski Boot" dimensions
- **Softgoods Tethers for 'Spiderweb' concept**

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NEEMO 15 Support
Acceptance Overview

I. Acceptance Criteria Definition:
   - As EC is completely responsible for the completion and we are support
   - Acceptance will be upon completion.

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NEEMO 15 Support
Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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NEEMO 15 Support Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None identified				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NEEMO 15 Support Deliverables

The following hardware/tests will be delivered to :

Item #	Deliverable Description	PRIMARY DATA REFERENCE
1	20 Auger Anchors	Developmental
2	BRRM mockup to simulate "Drill"	Developmental
3	MBSU and small boxes to simulate "Geotechnical Instruments"	Developmental
4	OTD Boom	Developmental
5	APFR plate	Developmental
6	Softgoods Tethers for 'Spiderweb'	Developmental

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NEEMO 15 Support Deliverables

The following Documentation will be delivered:

1	none

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NEEMO 15 Support
Schedule Milestones

SCHEDULE MILESTONES:

(b) (4)

NEEMO 15 Support
Acceptance Criteria

I. Acceptance Criteria Definition:

- As EC is completely responsible for the completion and we are support. Acceptance will be upon completion.

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NEEMO 15 Support
Travel Detail

No travel will be conducted

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NEEMO 15 Support
Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the project progresses

- These requirement modifications requests will be documented via the Scope Change Impact Form to capture the verbiage, cost and schedule impacts as they are presented. This will allow rapid approval and implementation of the pending request(s) individually until a revision can be processed.

- Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO904 Rev B	09/02/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Kathryn McLaurin
Tel. No.: (281) 244-6963 Fax:
E-mail: Kathryn.McLaurin@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO904Rev B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 19,2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO904Rev B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO904 Rev B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

Cynthia Maclean — Contracting Officer — 9/2/11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 904 Rev B is to: Provide NEEMO 15 Support The estimated cost is $(b) (4) The estimated award fee is $(b) (4) The estimated incentive fee i The total value of this Delivery Order is $11,427 Work is to be completed by September 19, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	11,427.00	11,427.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 11,427.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC) NEEMO 15 Support: CR-2463 CR-2467

August 31, 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

NEEMO 15 Support
CR-2463 & 2467

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

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NEEMO 15 Support: CRs 2463 & 2467 Requirements Overview

Proposed changes to the baseline requirements are described by the following summaries:

CR2463 Scope Change Summary:

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Paint the Tile Repair Trainer tile surfaces (20 ea) light brown or tan to simulate an asteroid surface	NBL-CTSD-D5366	na	20	III-D	(b) (4)
2	Install hook Velcro to the Tile Repair Trainer – 2" dia strips approximately 60 locations		rock wall velcro.pptx	60	III-D	
3	Manufacture simulated rocks of sizes, shapes, using high density foam. COTS rock climbing rocks are acceptable, color is not important. Mount pile Velcro to rock bottom to allow mounting to rock wall Velcro.	This CR.	This CR.	60 (min)	III-D	

1. Item 2 – Velcro may be mounted to backer board if required to expedite installation and future change-out.
2. Item 3 – Bottom of rocks shall be relatively flat to allow mounting of pile Velcro and installation onto rock wall Velcro.

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CR2467 Scope Change Summary

Approximately 3000 lbs of septic rock are required. The amount of rocks required is based on the following calculation:

- Fill 4 boxes to a depth of approximately 6 inches
- Each box 48"X45"X6"=7.5 cu ft
- 4 boxes = 30 cu ft or 0.85 cu m
- Assume rock density of 1538 kg/cu m
- Rock weight = 1307 kg or 2881 lbs = 3000 lbs after rounding up

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	3000 lbs of septic rock similar to that previously purchased	N/A	See sample	1	IIID	(b) (4)

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NEEMO 15 Support: CRs 2463 & 2467
Total Cost

		Approved 5/20/11 DO 904			Rev A - GFY 11							TOTAL DO 904 REV A								TOTAL DO 904 REV B			
	H060 NEEMO	CR-412 GFY11			CR-412A GFY11			TOTAL CR-412	CR 2461 GFY11			CR-412A plus CR-2461		CR 2463 GFY11			CR 2467GFY11			CR-2463 plus CR-2467		TOTAL IDIQ	
		GFY 11	GFY11	GFY11	GFY11	GFY11	GFY11		GFY1 1	GFY11	GFY11			GFY1 1	GFY11	GFY11	GFY11	GFY11	GFY11				
SLC	Labor Category	Hours	Rate	Total	Hours	Rate	Total		Hours	Rate	Total			Hours	Rate	Total	Hours	Rate	Total				

[redacted]

Material

Material Handling

G&A

Subtotal Material

Travel

TravelHandling

Non Labor G&A

Subtotal Travel

Total Estimated Cost

Total Available Fee

Award Fee [redacted]

Target Incentive Fee [redacted]

Max Incentive Fee

Total Cost Plus Fee

[redacted]

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NEEMO 15 Support: CRs 2463 & 2467 Deliverables

CR2463 Deliverables:

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	Tile Repair Trainer tile surface is painted brown or tan to simulate an asteroid surface	20	III-D	
2	Hook Velcro is installed on the Tile Repair Trainer – 2" dia tabs randomly placed (min 3 per section)	60	III-D	
3	60 simulated rocks of various sizes and shapes are manufactured using high density foam. Pile Velcro is attached to rock bottom to allow mounting to rock wall hook Velcro.	60	III-D	

CR2467 Deliverables:

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	3000 lbs of septic rock similar to that previously purchased	1	N/A	

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NEEMO 15 Support: CRs 2463 & 2467
Risk Cost Assessment

CR2463

(b) (4)

CR2467

(b) (4)

NEEMO 15 Support: CRs 2463 & 2467 Schedule

CR2463 Schedule:

(b) (4)

CR 2467 Schedule:

(b) (4)

NEEMO 15 Support: CRs 2463 & 2467
Acceptance Criteria

Physical configuration inspection of the modified Tile Repair board and specified items against the data provided and the defined requirements.

If the items fail to meet the requirements, then Team Raytheon will correct the problem and resubmit for acceptance.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NEEMO 15 Support: CRs 2463 & 2467
Material Matrix

CR2463 - Adds Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
	Raw Material					
1						
	Subtotal Raw Material		(b) (4)			
	Miscellaneous Materials					
2	Rock Climbing Handholds, 2 units	(b) (4)		(b) (4)	9/2/2011	
	Stainless Steel #14 Screw, 3pkg				9/2/2011	
	Stainless Steel Fender Washers, 12pkg				9/2/2011	
	Paint, tan, 1pkg				9/2/2011	
	Velcro, adhesive backs, 2"wide, 1pkg				9/2/2011	
	Subtotal Misc Material					
	Outsourcing					
3						
	Subtotal Outsourcing					
	Total					

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NEEMO 15 Support: CRs 2463 & 2467
Material Matrix

CR2467 - Adds Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
	Raw Material					
1	Rock, 30 cu ft	(b) (4)	(b) (4)	(b) (4)	9/13/2011	
	Subtotal Raw Material					
	Miscellaneous Materials					
2	Delivery, cleaning, misc				9/13/2011	
	Subtotal Misc Material					
	Outsourcing					
3						
	Subtotal Outsourcing					
	Total					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NEEMO 15 Support: CRs 2463 & 2467
Travel Detail

There has been no Travel identified for these tasks.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NEEMO 15 Support: CRs 2463 & 2467
Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

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NEEMO 15 Support: CRs 2463 & 2467
Basis of Estimate Summary

CR 2463:

Project Management

Tasks	Hours	Resource	Description / Basis Of Estimate
Mission Assurance	(b) (4)		(b) (4)
Engineering, Project Lead			
Engineering, Safety			
Contracts			
Subcontracts			
Finance			
Supply Chain			
Configuration Data Management			
Total			

Design

Tasks	Resource
Design	
Total	

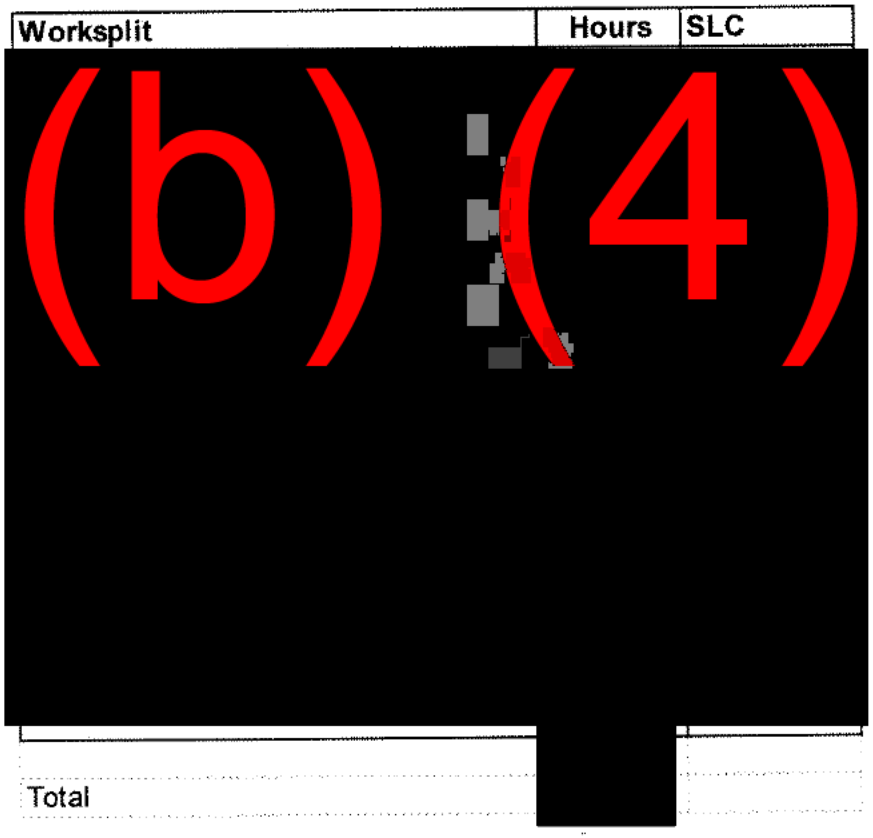
Fabrication

Tasks	Resource
Production Support - Shop Supv/Schec	
Manufacturing - Assembly Technician	
Dive Operations	
Total	

Grand Total

NEEMO 15 Support: CRs 2463 & 2467
Basis of Estimate Summary

CR 2463:



NEEMO 15 Support: CRs 2463 & 2467
Basis of Estimate Summary

CR 2467:

Project Management

Tasks	Hours	Resource	Description / Basis Of Estimate
Mission Assurance	(b) (4)		(b) (4)
Engineering			
Contracts			
Subcontracts			
Finance			
Supply Chain			
Total			

Fabrication

Tasks	Resource
Production Support - Shop Supv/Sched	
Manufacturing - Assembly Tech	
Dive Operations - Maint	
Total	

Grand Total

NEEMO 15 Support: CRs 2463 & 2467
Basis of Estimate Summary

CR 2467:

Worksplit	Hours	SLC
(b) (4)		
Total		

NEEMO 15 Support: CRs 2463 & 2467
Basis of Estimate Summary

Combined Work Split:

Worksplit	Hours	SLC
(b) (4)		
Total		

NEEMO 15 Support: CRs 2463 & 2467
Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.

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NEEMO 15 Support: CRs 2463 & 2467
Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO905	04/21/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Peter Hollis
Tel. No.: (281) 792-7510 Fax:
E-mail: Peter.S.Hollis@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO905

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO905

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO905

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 4/21/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 905 is to: Provide CWG FY11 Support The estimated cost is $(b) (4) The estimated award fee is $ The estimated incentive fee $(b) (4) The total value of this Delivery Order is $89,056 Work is to be completed by September 30, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	89,056.00	89,056.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 89,056.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CWG IDIQ Support for FY11

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

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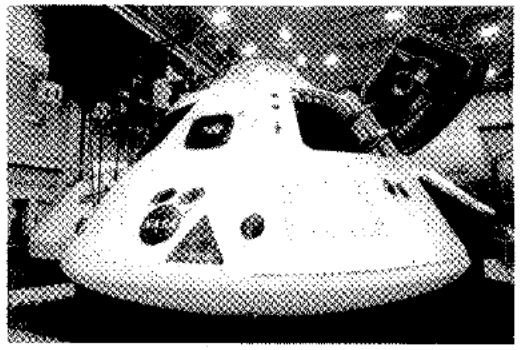
CWG IDIQ Support for FY11
CR-2375 Rev A Background

- This CR provides an avenue to support mockup and evaluation tasks for the Cockpit Working Group (CWG) to include :
  - Fabrication of docking light brackets and a temporary backbone structure for the Avionics and ECLS Bay Walls.
  - Installation of secondary structure and non-structural assemblies.
  - (b) (4) hours of general facility support per month.
  - [redacted] hours of technician event support per month.
  - (b) (4) [redacted] hours of engineering support to aid the Students Shaping America's Next Spacecraft (SSANS) program.



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CWG IDIQ Support for FY11
CR-2375 Rev A Requirements Overview

The following requirements were conveyed by CR-2375 Rev A:

- **Support requests for evaluation events will be conducted using the standard SVMF Facility Utilization Request process.**
- **Engineering support to SSANS will be varied and could consist of weekly telecons, development/definition of mockup requirements, engineering advice, drawing reviews and preparation of structural analyses, etc.**
- **Fabrication of the following:**
  - Temporary structure (does not have to look like backbone) beneath the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls to serve as a "partial temporary backbone" to mount only these walls until the backbone is ready, and
  - Mounting brackets for the docking light assembly, IIB fidelity (includes NSOC design support).

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CWG IDIQ Support for FY11
CR-2375 Rev A Requirements Overview Continued

The following requirements were conveyed by CR-2375 Rev A:

- **Installation of the following secondary structure:**
  - Temporary backbone structure
  - Pallet and struts
  - D&C console and struts
- **Installation of the following items/assemblies on the forward bulkhead:**
  - Auxiliary Bus Control Unit (ABCU)
  - Cabin air duct/diffuser
  - Contingency Gas Analyzer (CGA)
  - Contingency N2 valve
  - Contingency O2 port
  - Contingency O2 valves
  - Docking light power panel
  - HEPA filter
  - Negative pressure relief valve
  - Smoke detector
  - Snorkel fan/duct

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CWG IDIQ Support for FY11
CR-2375 Rev A Requirements Overview Continued

The following requirements were conveyed by CR-2375 Rev A:

- **Installation of the following items/assemblies on the Barrel Wall or Conical Side Wall:**
  - Lighting power/control panel (interior open for wiring)
  - Positive pressure relief valve
- **Installation of the following items/assemblies on the Tunnel Wall:**
  - Docking light mounting brackets and assembly (light bracket) – install at top of tunnel , outside hatch
  - Egress ladder
- **Installation of mounting holes for the following removable hardware:**
  - Docking hatch opening system
  - Umbilical interface fixtures (UIF) – quantity four
- **Following installation of the pallet and struts in the Medium Fidelity Mockup, the pallet struts shall be adjusted to demonstrate two to three "stroked" pallet configurations, as defined by the Cockpit Working Group. This will involve adjusting the lengths of the struts to adjust the placement and/or angle of the pallet in the capsule.**

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CWG IDIQ Support for FY11
CR-2375 Rev A Acceptance Overview

I. Acceptance Criteria/Deliverables Definition:

Acceptance of each installation task to be validated by inspection.

Required Safety Review (SR) for each installed item to be documented via individual SR Checklists

A log of requested task events shall be maintained showing:

- task submission date;
- task delivery date;
- date of Safety Review;
- notes on outcome of Safety Review;
- total expenditures to-date

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CWG IDIQ Support for FY11
CR-2375 Rev A Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL

(b)(4)

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CWG IDIQ Support for FY11
CR-2375 Rev A Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL

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CWG IDIQ Support for FY11
CR-2375 Rev A Deliverables

The following hardware/tests will be delivered to DX14/CWG as defined by CR-2375 Rev A:

Item #	Deliverable Description	PRIMARY DATA REFERENCE
1	Temporary structure has been fabricated for the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls	CR-2375A
2	Fidelity IIB mounting brackets for the docking light assembly	CR-2375A
3	D&C console and eight struts	CR-2375A
4	Auxiliary Bus Control Unit	CR-2375A
5	Cabin air duct/diffuser	CR-2375A
6	Contingency Gas Analyzer (CGA)	CR-2375A
7	Contingency N2 valve	CR-2375A
8	Contingency O2 port	CR-2375A
9	Contingency O2 valves	CR-2375A
10	Docking light power panel	CR-2375A
11	HEPA filter	CR-2375A
12	Negative pressure relief valve	CR-2375A
13	Smoke detector	CR-2375A
14	Four (4) Umbilical interface fixtures	CR-2375A
15	Seat pallet and eight struts have been installed	CR-2375A
16	Pallet and struts demonstration	CR-2375A
17	Log of requested task events	CR-2375A
18	Engineering support to aid the Students Shaping America's Next Spacecraft (SSANS)	CR-2375A
19		
20		
21		

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CWG IDIQ Support for FY11
CR-2375 Rev A Deliverables

The following Documentation will be delivered to DX/CWG as defined by CR-2375 Rev A:

1	Log of requested task events
2	Safety Review Checklists
3	
4	
5	
6	
7	
8	
9	
10	

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CWG IDIQ Support for FY11
CR-2375 Rev A Schedule

ID	Task Name	Duration

(b) (4)

CWG IDIQ Support for FY11
CR-2375 Rev A Schedule Milestones

SCHEDULE MILESTONES:

CWG IDIQ Support for FY11
CR-2375 Rev A Acceptance Criteria

Physical configuration inspection against the items identified in CR-2375 Rev A

If the fabricated mockups fail to meet the requirements, then Team Raytheon will correct the problem and resubmit the items for acceptance.

All operations and testing completed.

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CWG IDIQ Support for FY11
CR-2375 Travel Detail

There has been no Travel identified for these tasks.

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO905 B	05/20/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Peter Hollis
Tel. No.: (281) 792-7510 Fax:
E-mail: Peter.S.Hollis@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO905 B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO905 B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO905 Rev. B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: P. Lamar Mueller

P. Lamar Mueller — Contracting Officer
5-20-11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 905 Rev. B is to: Provide Travel for CWG FY11 Support The estimated cost is $(b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is (b) (4) Work is to be completed by September 30, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CWG IDIQ Support for FY11
CR-2375 Rev B Travel Detail

Per Cockpit Working Group (CWG) request of 05/19/11 Project Engineer support is requested for 05/22-23/11 trip to UT Tyler "to inspect the build of the pallet" under the SSANS

Proposed cost include:

- **air travel, hotel, and per diem;**
- **local transportation provided by CWG;**
- **Project Engineer hours to support travel and pallet review; and**
- **Logistical coordination support for Project Engineer travel arrangements.**

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO905,RevC	10/19/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO905,RevC

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO905,RevC

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO905, Rev C

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 10/19/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 905, SCIF-01 is to: Reduce unused hours originally approved to Provide CWG FY11 Support The estimated cost is The estimated award The estimated incenti The estimated total fo (b) (4) The total value of this Delivery Order is $83,853.29 Work is to be completed by September 30, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	83,853.29	83,853.29	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 83,853.29

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2375 Rev B	DX CHANGE REQUEST

CR TITLE: CWG IDIQ Support for FY11

1. REQUESTOR: Christie Sauers	2. PHONE: x45692	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☒ CONSTELLATION ☐ OTHER: _____

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides an avenue to support mockup and evaluation tasks for the Cockpit Working Group (CWG) to include :
- Fabrication of docking light brackets and a temporary backbone structure for the Avionics and ECLS Bay Walls.
- Installation of secondary structure and non-structural assemblies

(b) (4)

Rev A: CR revised to more specifically describe work to be performed.
Rev B: CR revised to reflect changes approved on SCIF 01 and requested travel support.

7. RATIONALE
Support for these changes is required for FY2011.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Safety Reviews shall be conducted for fabrication and installation tasks.
Create an IDIQ to support completion of the defined Orion mockup tasks.
Detailed fabrication and installation tasks are defined on Page 2.
Support requests for evaluation events will be conducted using the standard SVMF Facility Utilization Request process.
Engineering support to SSANS will be varied and could consist of weekly telecons, development/definition of mockup requirements, engineering advice, drawing reviews and preparation of structural analyses, etc,
Rev B: Travel to UT Tyler and support a review of the Seat Pallet being constructed under the SSANS activity; and reduce level of SSANS support to reflect actual number of events.

9. NEED DATE: (support date in block 7 rationale) 09/30/11	10. CR SUBMISSION DATE: ~~11/30/10~~ **Rev A:** 03/16/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 11/30/10

12. NASA POC: June Huhn	13. PHONE: x25837	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☒ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$70,000~~ ~~**Rev A:** $89,100~~ **Rev B:** $104,500	20. NEGOTIATED DELIVERY DATE: 09/30/11

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR TITLE: CWG IDIQ Support for FY11

REQUIREMENTS/REFERENCES (cont.):

Fabrication of the following:

- ~~temporary structure (does not have to look like backbone) beneath the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls to serve as a "partial temporary backbone" to mount only these walls until the backbone is ready, and~~ – **Deleted by Rev B**
- ~~mounting brackets for the docking light assembly, IIB fidelity (includes NSOC design support).~~ – **Deleted by Rev B**
- fabricate four seat pallet strut to forward bulkhead brackets – **Added by Rev B**

Cut to length the tubes for the D&C struts, and assemble the struts, and complete the assembly of the D&C panel – **Added by Rev B**

Installation of the following secondary structure:

- temporary backbone structure
- Pallet and struts
- D&C console and struts

Installation of the following items/assemblies on the forward bulkhead:

- Auxiliary Bus Control Unit (ABCU)
- Cabin air duct/diffuser
- Contingency Gas Analyzer (CGA)
- ~~Contingency N2 valve~~ – **Deleted by Rev B**
- Contingency O2 port
- Contingency O2 valves
- Docking light power panel
- HEPA filter
- ~~Negative pressure relief valve~~ – **Deleted by Rev B**
- ~~Smoke detector~~ – **Deleted by Rev B**
- Snorkel fan/duct
- install CGA display – **Added by Rev B**
- installation of the speaker box – **Added by Rev B**
- installation of mounting holes for NPRV, docking vestibule equalization valve, and the N2 valve assembly – **Added by Rev B**

Installation of the following items/assemblies on the Barrel Wall or Conical Side Wall:

- Lighting power/control panel (interior open for wiring)
- Positive pressure relief valve

Installation of the following items/assemblies on the Tunnel Wall:

- Docking light mounting brackets and assembly (light bracket) – install at top of tunnel , outside hatch
- Egress ladder

Installation of mounting holes for the following removable hardware:

- Docking hatch opening system
- Umbilical interface fixtures (UIF) – quantity ~~four~~ two - **Changed by Rev B**

Create installation drawings for D&C panel and struts – **Added by Rev B**

Rev B:

Procure the following items:

- a monitor and PC specified by CEV CWG
- three (3) Yellow Jacket Pro 5.8 diversity receivers and six (6) patch directional antennas as specified by CEV CWG

CR TITLE: CWG IDIQ Support for FY11

REQUIREMENTS/REFERENCES (cont.):

Following installation of the pallet and struts in the Medium Fidelity Mockup, the pallet struts shall be adjusted to demonstrate two to three "stroked" pallet configurations, as defined by the Cockpit Working Group. This will involve adjusting the lengths of the struts to adjust the placement and/or angle of the pallet in the capsule.

A log of requested task events shall be maintained showing:

- task submission date;
- task delivery date;
- date of Safety Review;
- notes on outcome of Safety Review;
- total expenditures to-date

CR NO.: 2375 Rev B	DX CHANGE REQUEST

CR TITLE: CWG IDIQ Support for FY11

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.			
2	Verify there are no unidentified pinch points.	Finished product is safe for use.			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.			
4	Verify that a Safety Review has been conducted for each fabrication and installation task	A number has been assigned to each safety review as it was conducted, and has been recorded in the "comments" section for each fabrication and installation task, and the safety reviews have been filed.			
~~5~~	~~Verify that a temporary structure has been fabricated for the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls to serve as a "partial temporary backbone" to mount these walls~~	~~A temporary structure has been fabricated for the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls to serve as a "partial temporary backbone" to mount these walls~~			
~~6~~	~~Verify that fidelity IIB mounting brackets for the docking light assembly have been fabricated (if they were required)~~	~~Fidelity IIB mounting brackets for the docking light assembly have been fabricated~~			
5	Verify four seat pallet strut to forward bulkhead brackets fabricated	Fidelity IIB mounting brackets fabricated			
6	Verify D&C Struts cut and assembled; and that D&C Panel assembly completed	D&C struts cut and assembled; and D&C panel assembled			

CR TITLE: CWG IDIQ Support for FY11

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
7	Verify that the "temporary backbone" structure has been installed to support the Avionics and ECLS Bay Walls	The "temporary backbone" structure has been installed and supports the Avionics and ECLS Bay Walls			
8	Verify that the seat pallet and eight struts have been installed	The seat pallet and eight struts have been installed			
9	Verify that the D&C console and eight struts have been installed	The D&C console and eight struts have been installed			
10	Verify that the Auxiliary Bus Control Unit has been installed	The Auxiliary Bus Control Unit has been installed			
11	Verify that the Cabin air duct/diffuser has been installed	The Cabin air duct/diffuser has been installed			
12	Verify that the Contingency Gas Analyzer (CGA) has been installed	The Contingency Gas Analyzer (CGA) has been installed			
~~13~~	~~Verify that the Contingency N2 valve has been installed~~	~~The Contingency N2 valve has been installed~~			
~~14~~ 13	Verify that the Contingency O2 port has been installed	The Contingency O2 port has been installed			
~~15~~ 14	Verify that the Contingency O2 valves have been installed	The Contingency O2 valves have been installed			
~~16~~ 15	Verify that the docking light power panel has been installed	The docking light power panel has been installed			
~~17~~ 16	Verify that the HEPA filter has been installed	The HEPA filter has been installed			
~~18~~	~~Verify that the negative pressure relief valve has been installed~~	~~The negative pressure relief valve has been installed~~			
~~19~~	~~Verify that the Smoke detector has been installed~~	~~The Smoke detector has been installed~~	-		-

CR TITLE: CWG IDIQ Support for FY11

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
17	Verify installation of CGA Display	CGA Display installed			
18	Verify installation of speaker box	Speaker box installed			
19	Verify installation of mounting holes for NPRV, docking vestibule equalization valve, and the N2 valve assembly	mounting holes for NPRV, docking vestibule equalization valve, and the N2 valve assembly installed			
20	Verify that ~~four~~ two Umbilical interface fixtures have been installed	~~Four~~ Two Umbilical interface fixtures have been installed			
21	Adjust the pallet and struts to demonstrate two to three "stroked" pallet configurations, as defined by the Cockpit Working Group.	Two to three CWG-defined "stroked" pallet configurations have been demonstrated.			
22	Verify that a log of requested task events has been maintained showing task submission date, task delivery date, date of Safety Review, notes on outcome of Safety Review, and total expenditures to-date	A log of requested task events exists showing task submission date, task delivery date, date of Safety Review, notes on outcome of Safety Review, and total expenditures to-date			
23	Verify that an IDIQ has been created to support completion of Orion mockup tasks defined in this CR	An IDIQ has been created to support completion of Orion mockup tasks defined in this CR			

CR NO.: 2375 Rev B	DX CHANGE REQUEST

CR TITLE: CWG IDIQ Support for FY11

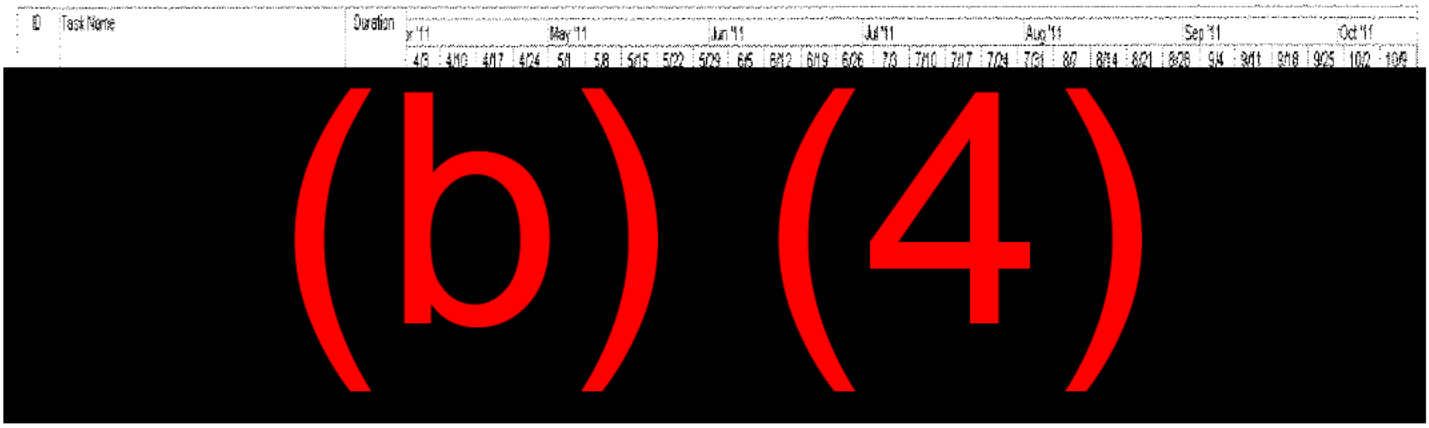
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
24	Verify that general facility support was provided to support requests for evaluation events that were scheduled through the SVMF Facility Utilization Request process	General facility support was provided to support requests for evaluation events that were scheduled through the SVMF Facility Utilization Request process			
25	Verify that technician event support was provided as required.	Technician event support was provided as required			
26	Verify that engineering support to aid the Students Shaping America's Next Spacecraft (SSANS) Program was provided as needed	Engineering support to aid the Students Shaping America's Next Spacecraft (SSANS) Program was provided as needed			
27	Verify installation drawings for D&C panel and struts submitted	Installation drawings submitted			
28	Verify receipt of the monitor and PC	Monitor and PC received			
29	Verify receipt of the Yellow Jacket Pro 5.8 diversity receivers and patch directional antennas	Receivers and Antennas received			

CR NO.: 2375 Rev B	DX CHANGE REQUEST

CR TITLE: CWG IDIQ Support for FY11

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Project Engineering	Management	Technicians	Material
~~Rev A~~					
Rev B	(b) (4)				

CR NO.: 2375 Rev B	DX CHANGE REQUEST
CR TITLE: CWG IDIQ Support for FY11	

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO906	05/19/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Peter Hollis
Tel. No.: (281) 792-7510 Fax:
E-mail: Peter.S.Hollis@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO906

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO906

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO906

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 5/20/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 906 is to: Provide CCT 1 Retirement Preparation Part 1 The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $43,981 Work is to be completed by September 30, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	43,981.00	43,981.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 43,981.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CCT 1 Retirement Preparation Part 1

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Background

- This CR provides technical and analysis support for the purpose of lifting the CCT 1 to determine as-built weight and the location of the Center of Gravity.
  - AFT Lifting Lugs must be fabricated to enable lift and eventual removal of the CCT 1 from the SVMF
  - A FWD lifting beam with restraining brackets will be installed to enable CCT 1 lift to support weight and CG determination
  - A FWD lifting beam will be provided on loan by JSC Transportation/Logistics
  - CCT 1 lift to be supported by JSC Riggers organization
  - Documentation Deliverables to include:
    - Lifting Diagram with weight and CG location
    - Logistics record of each item removed prior to CCT 1 lift
    - Lift hardware drawings (Lifting Lugs & restraining brackets)
    - Proof load certifications (Lift beam, Lugs & restraining brackets)

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Requirements Overview

The following requirements were conveyed by CR-2470 Rev B:

- Fabricate two lifting lugs per drawing (b)(4) [redacted]
- Have the lifting lugs certified by JSC Transportation
- Install the lifting lugs per drawing (b)(4) [redacted]
- Provide lifting diagram of the CCT to determine the Center of Gravity
- Provide Work Instructions for the disconnection of the CCT from the tilt stand
- Provide technical support to the JSC Riggers for the lifting of the CCT
- Provide Logistics support for property retirement through end of FY11
- Provide Lift Hazard Analysis to support the preliminary test lift for weight and CG location verification

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Acceptance Overview

Acceptance Criteria/Deliverables Definition:

I. Acceptance of the following tasks and Deliverables to be validated by inspection:
   - Calculations show that required factors of safety have been met for all SVMF furnished lifting hardware (beam, lugs, brackets, bolts)
   - AFT lifting lugs fabricated and delivered
   - AFT lifting lugs, beam, and restraining brackets proof load tested by JSC Transportation, and accompanied by appropriate certifications
   - Lifting diagram prepared and released
   - Lift Hazard Analysis prepared and released
   - Logistics checklist itemizing all items removed prior to lift, prepared and released

II. Acceptance of the following tasks and Deliverables to be validated by demonstration:
   - CCT 1 lift using JSC Riggers and SVMF IET/OMT support to verify the weight and CG location

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CCT 1 Retirement Preparation Part 1
CR-2407 Acceptance Overview

III. Safety Review (SR) and Test and Readiness Review (TRR):

- An SR was conducted on May 6, 2011
- Actions and pre-lift Deliverables requirements were noted on the SR checklist
- A TRR will be conducted prior to lift implementation
- The pre-lift TRR will verify that all SR actions and pre-lift Deliverables have been completed and accounted for

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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CCT 1 Retirement Preparation Part 1
CR-2407 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Deliverables

The following hardware/tests will be delivered to DX14 as defined by CR-2407:

Item #	Deliverable Description	PRIMARY DATA REFERENCE
1	(2) AFT Lifting Lugs	(b) (4)
2	CCT 1 Lifting Test to verify weight and center of gravity location	
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CCT 1 Retirement Preparation Part 1
CR-2407 Deliverables

The following Documentation will be delivered to DX as defined by CR-2407:

1	Safety Review Checklists
2	Test and Readiness Review Checklists
3	Post-test, updated CCT 1 System level weight and CG Lifting Diagram identifying weight and CG data
4	Proof Load certifications for SVMF provided lifting hardware
5	CCT 1 "Removed Items" list
6	CCT 1 Lift Hazard Analysis
7	AFT Lifting Lugs Drawings
8	
9	
10	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

CCT 1 Retirement Preparation Part 1
CR-2407 Schedule

ID	Task Name	Duration	Mar '11	Apr '11	May '11	Jun '11	Jul '11	Aug '11	Sep '11	Oct '11	Nov '11

(b) (4)

CCT 1 Retirement Preparation Part 1
CR-2407 Schedule Milestones

SCHEDULE MILESTONES:

(b) (4)

CCT 1 Retirement Preparation Part 1
CR-2407 Acceptance Criteria

Physical inspection against the items identified in CR-2407

If the document and hardware Deliverable items fail to meet the requirements, then Team Raytheon will correct the problem and resubmit the items for acceptance.

All lift testing operations and associated document Deliverables completed.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 906 Rev 1	07/22/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35CDO 906 Rev 1

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
October 31, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35CDO 906 Rev 1

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO906, Rev 1

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 7/22/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 906, Rev 1 is to: Provide CCT 1 Retirement Preparation Part 1 The estimated cost is $(b) (4) The estimated award fee is $(b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $110,400 Work is to be completed by October 31, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	110,400.00	110,400.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 110,400.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

CR-2439 "CCT 1 Forward Lifting Structure and Stand" Delivery Order 906 Rev 1

21 July 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

Delivery Order 906 Rev 1 – CCT 1 Retirement

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement CR-2439 Background

- This CR provides engineering, analysis, materials, fabrication and operations preparation support for the purpose of removing the CCT 1 from JSC Building 9.
  - The CCT 1 FWD Lifting Structure and Floor Stand must be designed and analyzed for compatibility with lifting and transportation loads; transportation load distribution requirements
  - Lifting diagrams, CG analyses and Hazard Analyses developed for CR 2407 will be updated to reflect CR 2439 hardware characteristics, and lifting/transportation requirements
  - Materials, fabrication and assembly effort will be provided to support delivery of the FWD Lifting Structure and the Floor Stand
  - CCT 1 preparation lift to be supported by JSC Riggers organization
  - Documentation Deliverables to include:
    - Updated Lifting Diagram with weight and CG location
    - Hardware drawings (FWD Lifting Structure & Floor Stand)

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Requirements Overview

The following requirements were conveyed by CR-2439, Rev - :

- Provide the design of the CCT forward lifting structure based on the Rockwell drawing (b) (4)
- Provide the analysis of the forward lifting structure based on (b) (4)
- Fabricate the CCT forward lifting structure per drawings (b) (4) (b) (4) and from step 1 (b) (4)
- Weigh the CCT forward lifting structure
- Install the CCT forward lifting structure
- Provide the design of the CCT floor stand to hold the CCT, FFT and CCT II
- Provide the analysis of the stand to support the weight of the CCT II, 4.5 G static down load

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Requirements Overview

The following requirements were conveyed by CR-2439 (cont'd):

- **The CCT floor stand shall meet the following requirements:**
  - The width of the stand shall be 104.5 inches wide
  - The height of the stand shall be 26 to 34 inches high depending on analysis
  - The length of the stand shall be 216 inches long
  - The weight of the stand and CCT II shall not exceed 1460 pounds/ft length
  - The stand shall be designed with to yield (SF 1.1) at 4.5 times the static load (26,000 pound) but not fail (SF 1.3 Ult.) in the vertical direction
- **Fabricate the CCT floor stand**
- **Weigh the CCT floor stand**
- **Deliver the CCT floor stand to Bldg. 9N high bay**
- **Place CCT on floor stand**
- **Remove CCT support structure from the building**
- **Remove CCT and floor stand from the building.**
  - Note: The video system will not be installed, it was removed for future program use

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Requirements Overview

The following tasks conveyed below are not included in CR 2439 baseline cost, but are possible additions reflected in the project schedule:

- ***Package all loose items for shipment, place in shipping crate***
- ***Shipping crates shall be contractor supplied/built***
- ***Package CCT power console and Audio and Video console for shipping, place in shipping crate***
- ***Provide documentation/Photo CD of all items being shipped with CCT***
- ***Provide assembly instructions/drawings for re-installing the CCT.***

  These instructions to include: Installing the CCT on the tilt base structure, re-installing the CMDR and Pilot seats on the flight deck, installing Mission Specialist seats, re-installing the lockers and other loose equipment items, electrical drawings to power the trainer and install the audio

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Acceptance Overview

Acceptance Criteria/Deliverables Definition:

I. Acceptance of the following tasks and Deliverables to be validated by Inspection:

- The FWD Lifting Extension drawing (b) (4) and associated subassembly drawings have been updated to reflect new CR 2439 features
- A strength analysis of the FWD Lifting Extension has been generated, demonstrating results consistent with safety factor requirements
- The FWD Lifting Extension has been fabricated, weighed, and installed to the CCT 1
- Drawings have been generated which reflect the configuration, and fabricated details of the floor stand
- A strength analysis of the floor stand has been generated, demonstrating results consistent with safety factor requirements
- The floor stand reflects general envelope dimension requirements, with consideration for variance agreements
- The floor stand has been fabricated, weighed, transferred to the B9N high bay, & is capable of accepting the CCT 1
- The AFT Lifting Lugs (b) (4) have been fabricated and weighed

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Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Acceptance Overview

I. Acceptance of the following tasks and Deliverables to be validated by Inspection (cont'd):
- The Tie-Down plates (b) (4) have been fabricated and weighed
- The lifting diagram has been updated to reflect weight and CG changes resulting from new Lifting Extension and floor stand features
- An updated Hazard Analysis has been generated and released prior to release and transport of the CCT 1

II. Acceptance of the following tasks and Deliverables to be validated by Demonstration:
- Auxiliary items (platform, stairs, AFT stands) have been removed from the building
- The CCT 1 and its floor stand have been removed from the building

III. Safety Review (SR) and Test and Readiness Review (TRR):
- An SR was conducted on July 7, 2011
- Actions and pre-lift Deliverables requirements were noted on the SR checklist
- A TRR will be conducted prior to lift implementation
- The pre-lift TRR will verify that all SR actions and pre-lift Deliverables have been completed and accounted for

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL

(b) (4)

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Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None identified				

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Deliverables

The following hardware and preparatory operations will be delivered to DX14 as defined by CR-2439 Rev - :

Item #	Deliverable Description	PRIMARY DATA REFERENCE
1	(1) CCT 1 Forward Lifting Extension Structure	(b) (4)
2	(2) AFT Lifting Lugs (Bent Style)	
3	(2) Tie-Down Plates	
4	(1) CCT 1 Floor Stand	
5	Preparatory lifting and staging of CCT 1 items near the hi-bay doors	N/A
6	Removal of the CCT 1, associated floor stand, structures, loose items from B9	N/A
7		
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14		
15		

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Deliverables

The following Documentation will be delivered to DX14 as defined by CR-2439:

1	Safety Review Checklists
2	Test and Readiness Review Checklists
3	Lifting Diagram identifying system weight and CG data
4	Updated Lift Hazard Analysis
5	Updated FWD Lifting Extension Structure drawings
6	Floor Stand drawings
7	
8	
9	
10	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Schedule (Pre-Fabrication)

ID	Task Name	Duration	'11	Jul '11	Aug '11	Sep '11	Oct '11	Nov '11	Dec

(b) (4)

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Schedule (Fabrication Thru CAR)

ID	Task Name	Duration	'11	Jul '11	Aug '11	Sep '11	Oct '11	Nov '11	Dec

(b) (4)

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Schedule Milestones

SCHEDULE MILESTONES:

(b) (4)

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Acceptance Criteria

Physical inspection against the items identified in CR-2439.

All associated document Deliverables completed.

All preparatory lifting, staging and removal from Building 9 operations completed.

If the document and hardware Deliverable items fail to meet the requirements, then Team Raytheon will correct the problem and resubmit the items for acceptance.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Material Matrix

Item No	Material Description	Vendor	Price	(BOE) Source	Need Date	Comments
1	**Raw Materials**	Multiple	(b) (4)	(b) (4)		FY11 only. No FY12 materials budgeted.
	Subtotal Raw Material					
2	**Miscellaneous Materials**					none planned
	Subtotal Misc Material					
3	**Outsourcing**					none planned
	Subtotal Outsourcing					
	Total (unloaded)					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Travel Detail

There has been no Travel identified for these tasks.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy (cont'd)

(b) (4)

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Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy (cont'd)

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Basis of Estimate Summary and Assumptions

Tasks (FY 2011)	Hours	Resource	Description/ Basis of Estimate
(b) (4)			

Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Basis of Estimate Summary and Assumptions

Tasks (FY 2012)	Hours	Resource	Description/ Basis of Estimate
(b) (4)			

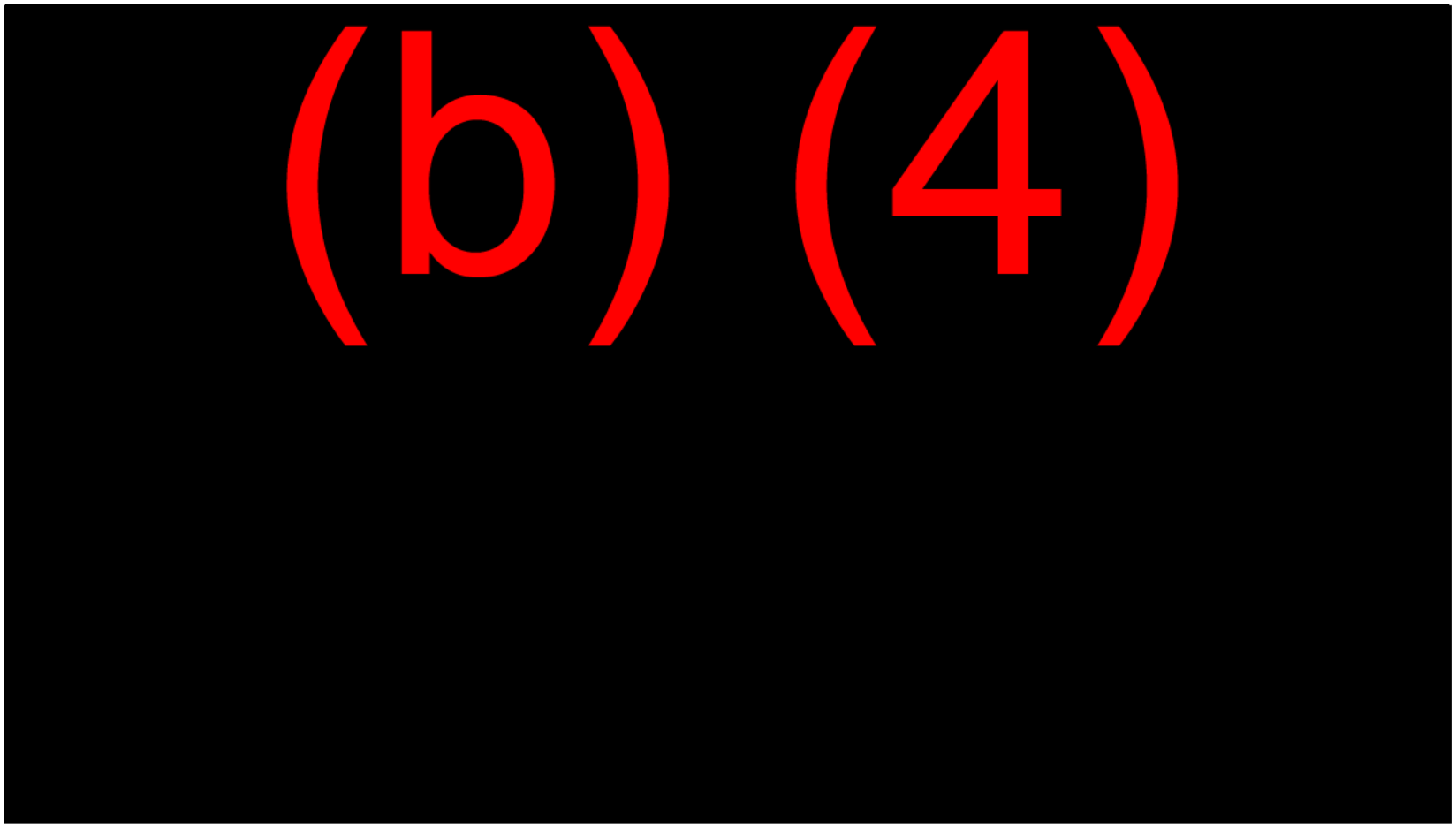
Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Basis of Estimate Summary and Assumptions

Assumptions:

(b) (4)

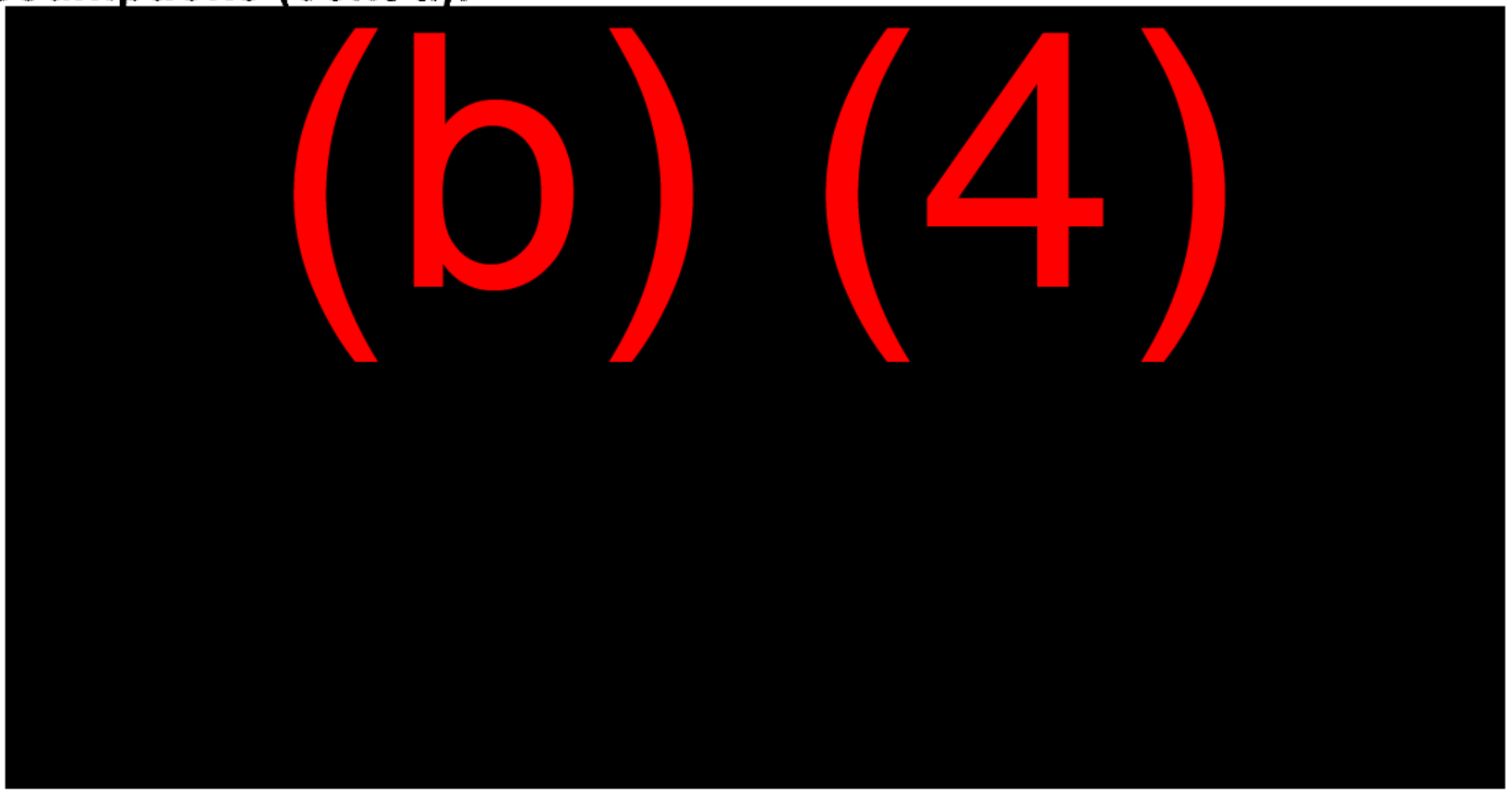
Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Basis of Estimate Summary and Assumptions

Assumptions (cont'd):



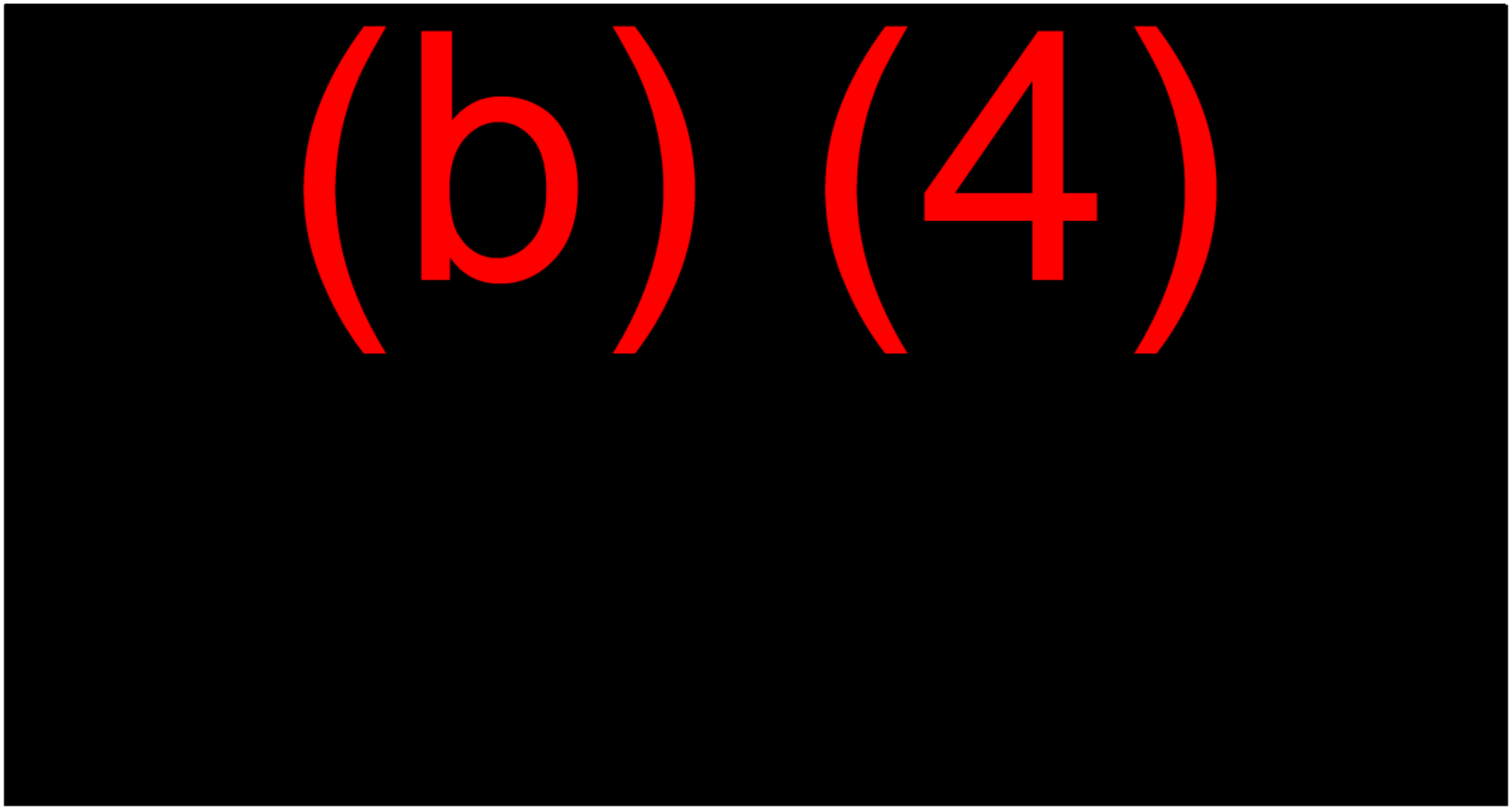
Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Basis of Estimate Summary and Assumptions

Assumptions (cont'd):



Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Basis of Estimate Summary and Assumptions

Assumptions (cont'd):



Delivery Order 906 Rev 1 – CCT 1 Retirement
CR-2439 Basis of Estimate Summary and Assumptions

Assumptions (cont'd):

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO907, RevA	12/21/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO907, RevA

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
July 02, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO907, RevA

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO907, Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

Cynthia Maclean — Contracting Officer — 12/21/11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 907, Rev A is to: Provide Node 3 Mockup CR-2424, Rev A The estimated cost is (b) (4) The estimated award fee is The estimated incentive fee (b) (4) The total value of this Delivery Order is $46,134.35. Work is to be completed by July 2, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	46,134.35	46,134.35	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 46,134.35

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2424 Rev A	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

1. REQUESTOR: S. Segadi	2. PHONE: 47264	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: _____

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE: Provide Node 3 mockup to support crew training and engineering evaluations in the SVMF.
Rev A: Incorporates SCIF 01 and SCIF 03 into the baseline.

7. RATIONALE
SVMF currently does not have Node 3 mockup, the Node 3 is required to provide emergency training, spatial awareness, functional equipment location, engineering evaluations and fit checks, depress procedures for Node 3 and Cupola. A Node 3 mockup will greatly improve crew training and safety.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Provide Node 3 mockup per MDRD-400 requirements, excluding the following sections:

- 6.5.2.8 – Extension hose and "t" fittings
- 6.5.12.1.2 – PBA Ports
- 6.5.12.1.3 – CO2 Vent Valves
- 6.5.12.1.4 – H2 Vent Valves
- 6.5.12.1.5 – PCA OIV / NIV
- 6.5.12.1.6 – O2 / N2 Induction Ports
- 6.5.12.1.7 – Loop Crossover Assembly
- 6.5.12.1.8 – System Flow Control Assembly
- 6.5.12.1.9 – 3-Way Mix Valves
- 6.5.12.1.10 – Pump Package Assemblies
- 6.5.16 – EDV
- 6.5.17 – KTO
- 6.5.19 – Light Weight Rack

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: ~~04/11/11~~
03/31/12	**Rev A:** 11/28/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 04/12/11

12. NASA POC:	13. PHONE:	14. E-MAIL:
~~John Foss~~ June Huhn / Ernie Prado	~~x34851~~ x25837 / x34902	global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$903,978 (FY11: $523,840; FY12: $380,138)~~ **Rev A:** $950,279 (**FY11:** $523,840; **FY12:** $426,439)	~~05/29/12~~ **Rev A:** 07/02/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2424 Rev A	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

REQUIREMENTS/REFERENCES (cont.):

Include use existing Light Weight Rack unit pulled from MPLM, and provide an OGS photo façade installed on the front of that unit

Note: Safety Review waived as section 11.9 requires a TRR prior to final acceptance, with documentation as noted throughout the MDRD.

Rev A:
SCIF 01: Fabrication of parts for five access platforms, welding and assembly of same; cutting, painting, and installation of plywood floor panels to platforms moved to CR-2446.

SCIF 03: Initial structural analysis found that the existing CAM structure and proposed longerons required reinforcement to handle expected loads (Risk 05), which also required purchase of additional material (Risk 07) to accommodate necessary reinforcement.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Acceptance of the mockup will be segmented as per the following to allow incremental acceptance.

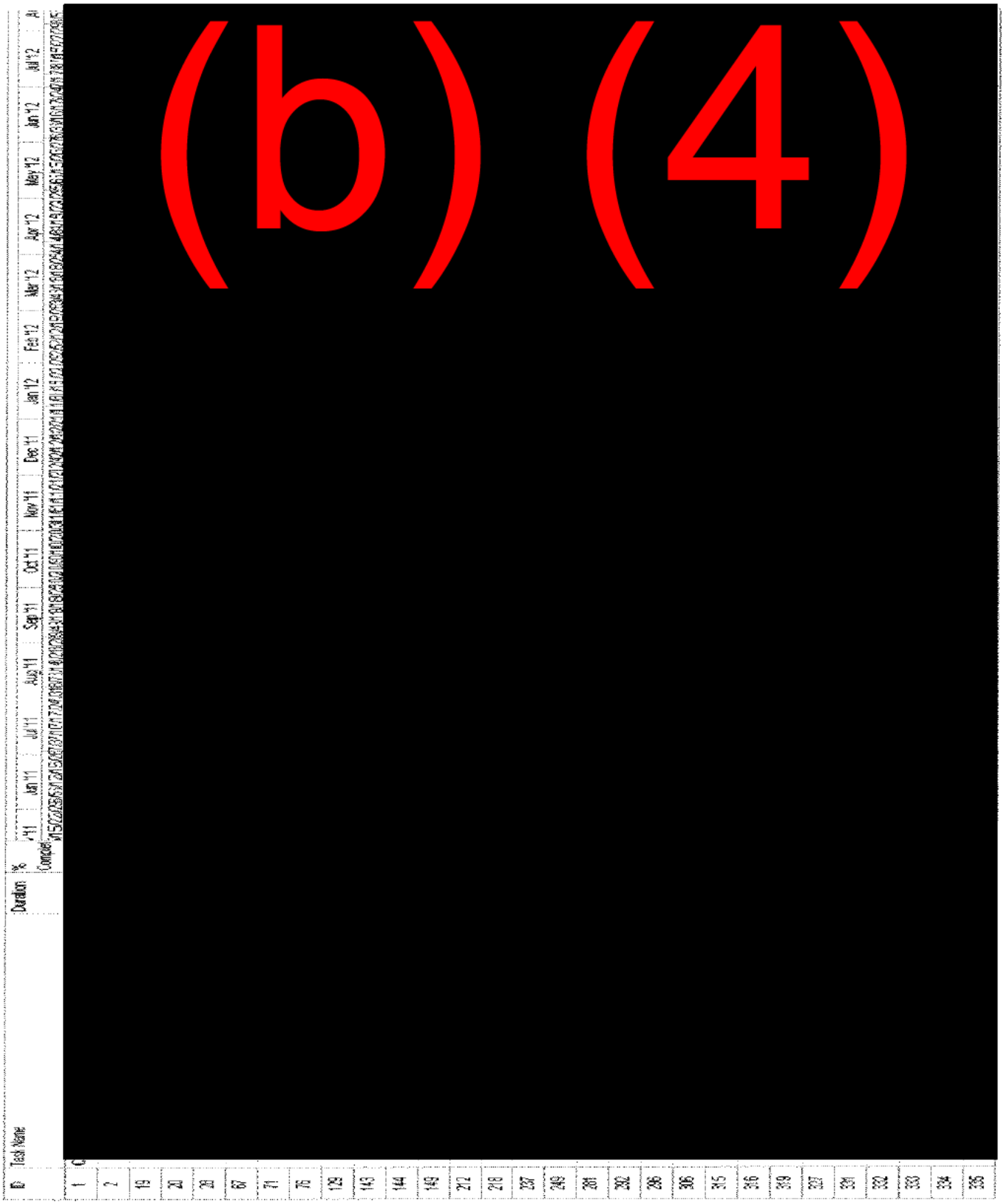
- Cradle, Shell and Primary Structure
- Secondary Structure
- Floor and Closeout Panels
- ARED / Compressor / T2 / TOCA / WHC / Lt Wt Rack / Lt Wt Hatch
- Emergency Equipment Lockers / QDM's / PFE
- Fire Port Labels / EEGS / Location Coding / Photo Facades / Rack Power Switches / CTB's / Access Platforms / Hurricane Cover (include confirmation of new locations for REGEN Racks, Chairs/ Tables, and cables)
- ATU's, C&W Panel, GLA's, Lipstick Camera / ICP, and UOP's (including regression testing)
- AC Electrical system, Ethernet Access Points, I/O Panels, and Air Conditioner
- ORU's and Outfitting Items, and Smoke Generator Access Points

A separate acceptance test plan will be submitted and executed for each of these identified groups.

CR NO.: 2424 Rev A	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

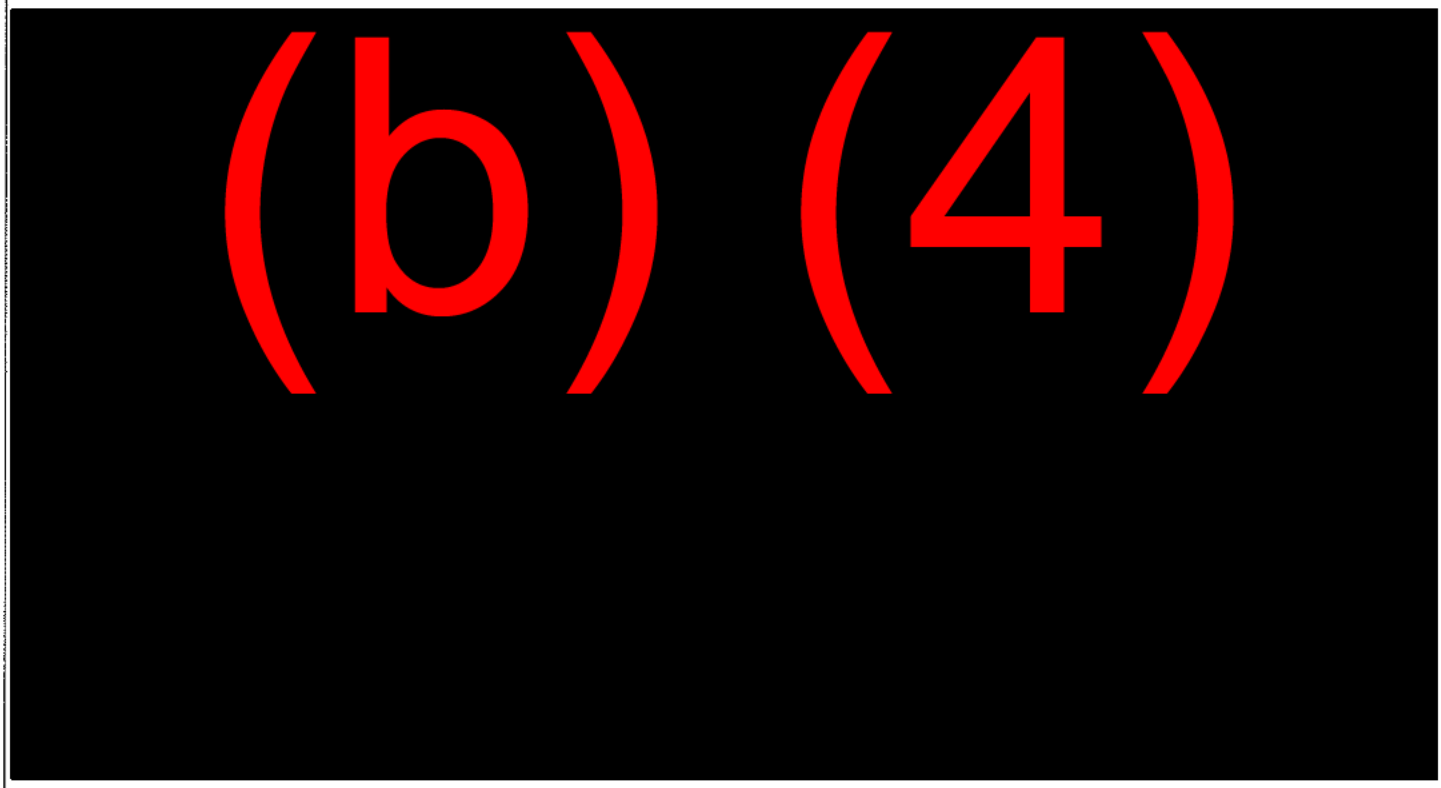
SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2424 Rev A	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



CR NO.: 2424 Rev A	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Project Engineering	Management and Support	Technicians	Material
FY11	(b) (4)				
FY12					
Rev A FY12					

Node 3
CR-2424 RevA Cost

	CR 2424 IDIQ Node 3 IDIQ	CR 2424 GFY11			CR 2424 GFY12			CR 2424 GFY12 REVA			TOTAL IDIQ VALUE
SLC	Labor Category	GFY11 Hours	GFY11 Rate	GFY11 Total	GFY12 Hours	GFY12 Rate	GFY12 Total	GFY12 Hours	GFY12 Rate	GFY12 Total	

(b) (4)

[redacted]

(b) (4)

Material	
Material Handling	
G&A	
Subtotal Material	
Travel	
TravelHandling	
Non Labor G&A	
Subtotal Travel	
Total Estimated Cost	
Total Available Fee	
Award Fee	(b) (4)
Target Incentive Fee	
Max Incentive Fee	
Total Cost Plus Fee	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO907	06/03/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Kathryn McLaurin
Tel. No.: (281) 244-6963 Fax:
E-mail: Kathryn.McLaurin@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO907

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 29, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO907

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO906

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 6/3/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 907 is to: Provide Node 3 Mockup CR-2424 The estimated cost is $(b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $903,874 Work is to be completed by May 29, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	903,874.00	903,874.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 903,874.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

Provide Node 3 Mockup
CR-2424

(b) (4)

1 Jun 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

Provide Node 3 Mockup

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Background

- This CR requests a medium fidelity mockup of the Node 3 module that may be:
  - …utilized to support mission development (procedure development and verification, operations assessments, stowage, etc.), crew, instructor and flight controller training, other engineering evaluations for long range planning, and Public Affairs Office (PAO) tours

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Background (continued)

- Major elements and considerations are:
  - Use of the existing Centrifuge Accommodations Module (CAM) mockup and cradle to provide outer shell and support at reduced cost
  - New primary and secondary structure will be designed and built
  - Closeout panels to represent interior volume per flight configuration with all appropriate labeling
  - Integration of active electrical systems similar to other ISS modules, i.e., Audio Terminal Units (ATU's), Caution and Warning (C&W) Panel, Utility Outlet Panels (UOP's), and General Luminary Assemblies (GLA's)
  - Limited additional low-fidelity outfitting items

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Provide Node 3 Mockup
CR-2424 Requirements Overview

The following selected requirements were conveyed by CR-2424 and MDRD-400:

- Mock-up shall provide representations of all Node 3 hardware within the pressurized volume, excluding flight crew equipment, to accurately model the net habitable volume and range of tasks to be performed in the module
- Mock-up shall provide the capability for assessment of hatch opening and stowing with one light-weight hatch with outfitting items installed in the starboard location and capable of opening in the flight unique horizontal orientation
- Mock-up shall provide access and close-out panels, if applicable, to the required bays within the pressurized volume of the Module for assessment of flight and ground operations and Stowage assessments
- Provide one active and one volumetric ATU
- Provide one active C&W Panel integrated with the audio system
- Provide one active UOP and wiring at three additional locations to support future installation of additional units
- Provide ten GLA's installed at flight locations

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Requirements Overview (continued)

The following selected requirements were conveyed by CR-2424 and MDRD-400:

- Emergency Equipment Lockers with Portable Fire Extinguisher (PFE) and Portable Breathing Apparatus (PBA) equipment
- Relocation of the existing Atmospheric Revitalization Systems and Waste Hygiene Compartment (WHC) racks from the US Lab mockup; and Light Weight Rack from MPLM mockup
- Integration of low-fidelity volumetric mockups of the ARED, TOCA, T2, and WHC Kabin provided as GFE;
- Design, fabrication, and integration of a low-fidelity volumetric mockup of the compressor; and 15 Crew Transfer Bags (CTB's)
- Fabrication and integration of requested photo facades and labeling
- II.B fidelity mockups of the Intra-Modular Ventilation Valve Overrides and SDS Sample Port

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Provide Node 3 Mockup
CR-2424 Acceptance Overview

I. Acceptance Criteria/Deliverables Definition:

Acceptance of the mockup will be segmented as per the following to allow incremental acceptance.

- Cradle, Shell and Primary Structure
- Secondary Structure
- Floor and Closeout Panels
- ARED / Compressor / T2 / TOCA / WHC / Lt Wt Rack / Lt Wt Hatch
- Emergency Equipment Lockers / QDM's / PFE
- Fire Port Labels / EEGS / Location Coding / Photo Facades / Rack Power Switches / CTB's / Access Platforms / Hurricane Cover (include confirmation of new locations for REGEN Racks, Chairs/ Tables, and cables)
- ATU's, C&W Panel, GLA's, Lipstick Camera / ICP, and UOP's (including regression testing)
- AC Electrical system, Ethernet Access Points, I/O Panels, and Air Conditioner
- ORU's and Outfitting Items, and Smoke Generator Access Points

A separate acceptance test plan will be submitted and executed for each of these identified groups

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Technical Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

Provide Node 3 Mockup
CR-2424 Technical Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

Provide Node 3 Mockup
CR-2424 Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL

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Provide Node 3 Mockup
CR-2424 Cost

	CR-2424 H060 Node 3 IDIQ	CR-2424 GFY11			CR 2424 GFY12			TOTAL IDIQ VALUE	
		GFY11	GFY11	GFY11	GFY12	GFY12	GFY12		
SLC	Labor Category	Hours	Rate	Total	Hours	Rate	Total		
[redacted]									

Material	[redacted]
Material Handling	
G&A	
Subtotal Material	
Travel	
TravelHandling	
Non Labor G&A	
Subtotal Travel	
Total Estimated Cost	
Total Available Fee	
Award Fee	
Target Incentive Fee	
Max Incentive Fee	
Total Cost Plus Fee	

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Provide Node 3 Mockup
CR-2424 Deliverables

The following hardware will be delivered to DX14 as defined by CR-2424 / MDRD-400:

Item #	Deliverable Description	PRIMARY DATA REFERENCE
1	Reconditioned CAM Shell and Cradle with Primary Structure installed	Node 3 Handbook
2	Secondary Structure installed	Node 3 Handbook
3	Closeout panels and deck floor	Node 3 Handbook
4	ARED, T2, TOCA, WHC Kabin GFE items installed	Node 3 Handbook
5	Photo facades (racks, UOP's, Rack Power Switches, Port and Axial Hatches)	Node 3 Handbook
6	Crew Transfer Bags	Node 3 Handbook
7	Interior Location Coding	Node 3 Handbook
8	Light Weight Hatch in starboard location	Node 3 Handbook
9	Emergency Equipment Lockers (with one PFE and two PBA's)	Node 3 Handbook
10	One functional and one volumetric ATU	Node 3 Handbook
11	One functional C&W Panel integrated to audio system	Node 3 Handbook
12	One functional UOP with wiring capable of supporting three additional units at flight locations	Node 3 Handbook
13	Ten functional GLA's installed at flight locations	Node 3 Handbook
14	"Lipstick" camera tied into existing SSMTF video system	Node 3 Handbook
15	Four Ethernet ports at flight location	Node 3 Handbook
16	Functional Wireless Point Access for SSC's	Node 3 Handbook
17	ARS And WHC racks relocated from US Lab Mockup	None required
18	Light Weight Rack relocated from MPLM Mockup	None required
19	Exterior Access Platforms	(b) (4)
20	I/O Connector Panels	Systems design
21	Smoke Generator Ports	None required
22	Relocation of REGEN racks, tables, wiring and misc. components	Customer direction

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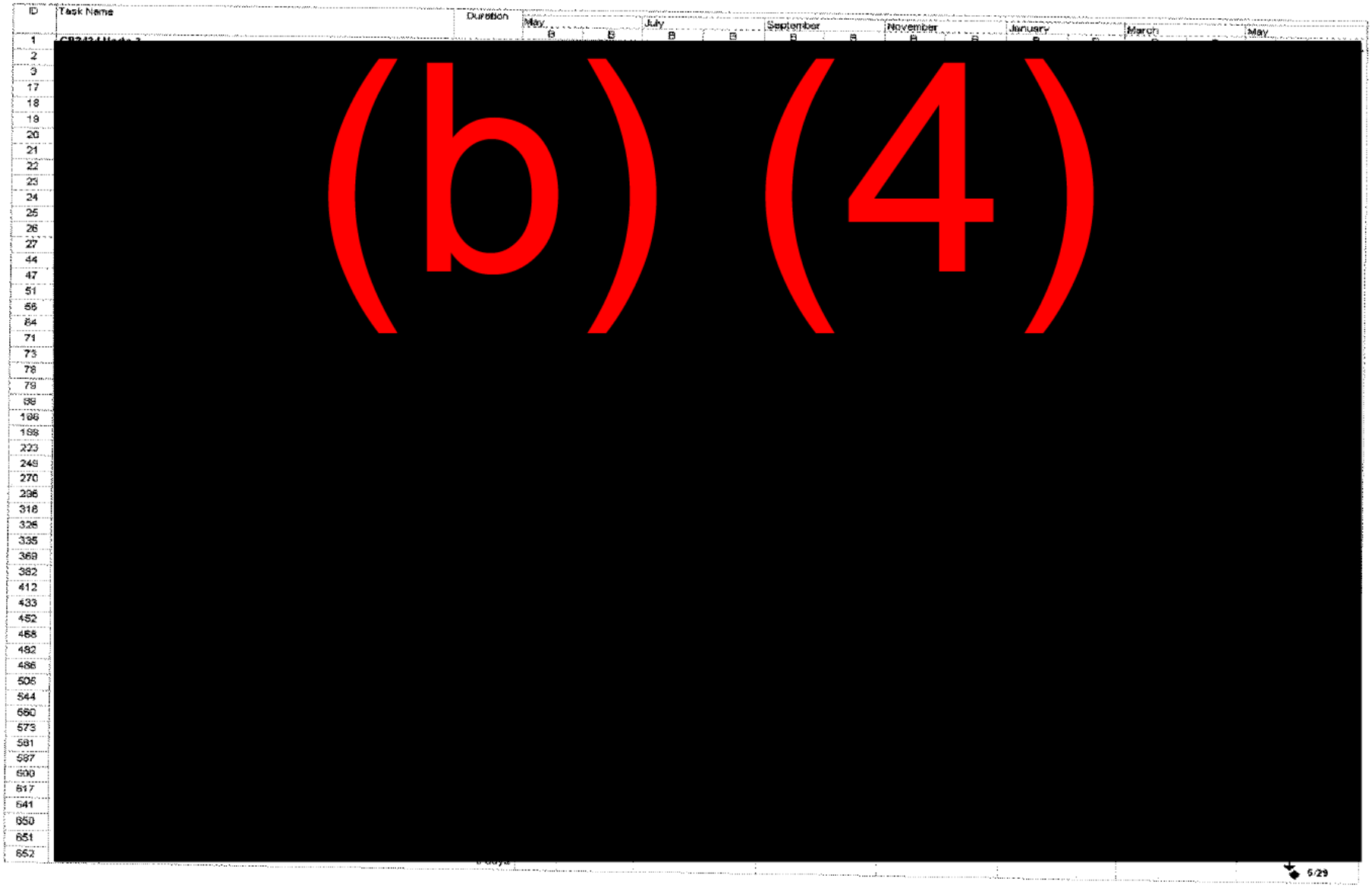
Provide Node 3 Mockup
CR-2424 Deliverables

The following Documentation will be delivered to DX as defined by CR-2424:

1	Structural Analysis Report
2	Hazard Analysis
3	Lifting Diagrams
4	Drawing Package
5	Acceptance Test Procedures
6	
7	
8	
9	
10	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Schedule



Provide Node 3 Mockup
CR-2424 Schedule Milestones

SCHEDULE MILESTONES:

(b) (4)

Provide Node 3 Mockup
CR-2424 Acceptance Criteria

Physical configuration inspection against the items identified in CR-2424

If the fabricated mockups fail to meet the requirements, then Team Raytheon will correct the problem and resubmit the items for acceptance.

All operations and testing completed.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Material Matrix

Item No	Material Description	Vendor	Price	(BOE) Source	Need Date	Comments
1	Raw Materials	(b) (4)	(b) (4)	(b) (4)		
	Subtotal Raw Material					
2	Miscellaneous Materials					none planned
	Subtotal Misc Material					
3	Outsourcing					none planned
	Subtotal Outsourcing					
	Total (unloaded)					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Travel Detail

There has been no Travel identified for these tasks.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
Basis of Estimate (BOE) Summary and Assumptions

Tasks	Hours	Resource	Description/ Basis of Estimate
(b) (4)			

Gate 4

Provide Node 3 Mockup
Basis of Estimate (BOE) Summary and Assumptions

Assumptions:

(b) (4)

Provide Node 3 Mockup
CR-2424 Basis of Estimate cont.

Work split	Hours	SLC
(b) (4)	(b) (4)	

Work split Continued	Hours	SLC
(b) (4)	(b) (4)	
Total Hrs:		

Provide Node 3 Mockup Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

- **These requirement modifications requests will be documented via the Scope Change Impact Form to capture the verbiage, cost and schedule impacts as they are presented. This will allow rapid approval and implementation of the pending request(s) individually until a revision can be processed.**

- **Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.**

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

Provide Node 3 Mockup
CR-2424 Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO908	07/05/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO908

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO908

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO908

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer
1/5/11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 908 is to: SVMF FY11 Reconfiguration, CR-2446 The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $189,365 Work is to be completed by September 30, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	189,365.00	189,365.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 189,365.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

FY11 SVMF Reconfig
CR-2446

[redacted]

1 Jul 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

FY11 SVMF Reconfig
CR-2446

Agenda

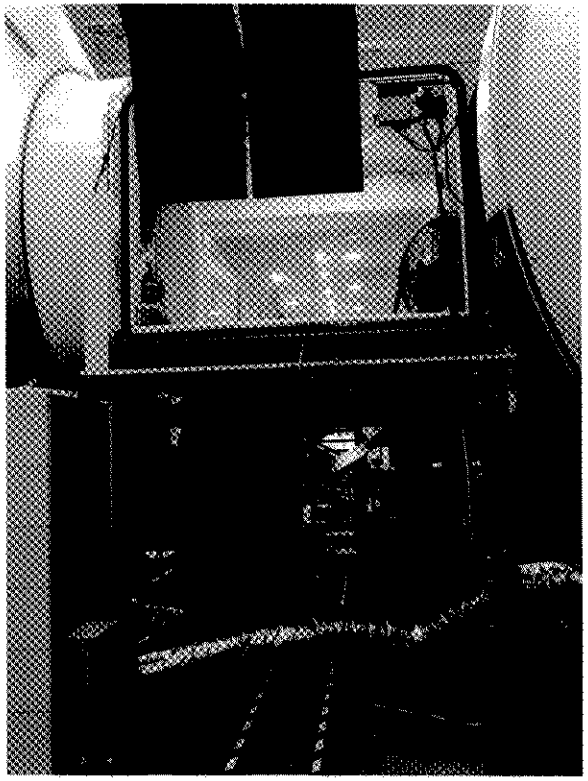
- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

FY11 SVMF Reconfig
CR-2446 Background

- **This CR requests COTS material, technician services, and custom design, analysis, and fabrication for FY11 tasks based on a reconfiguration of the facility planned for post shuttle retirement.**
  - **The COTS Material includes**
    - AC units
    - Comm system hardware
    - Carpeting materials
  - **Design, analysis, and Fabrication**

of mockup access platforms is required:



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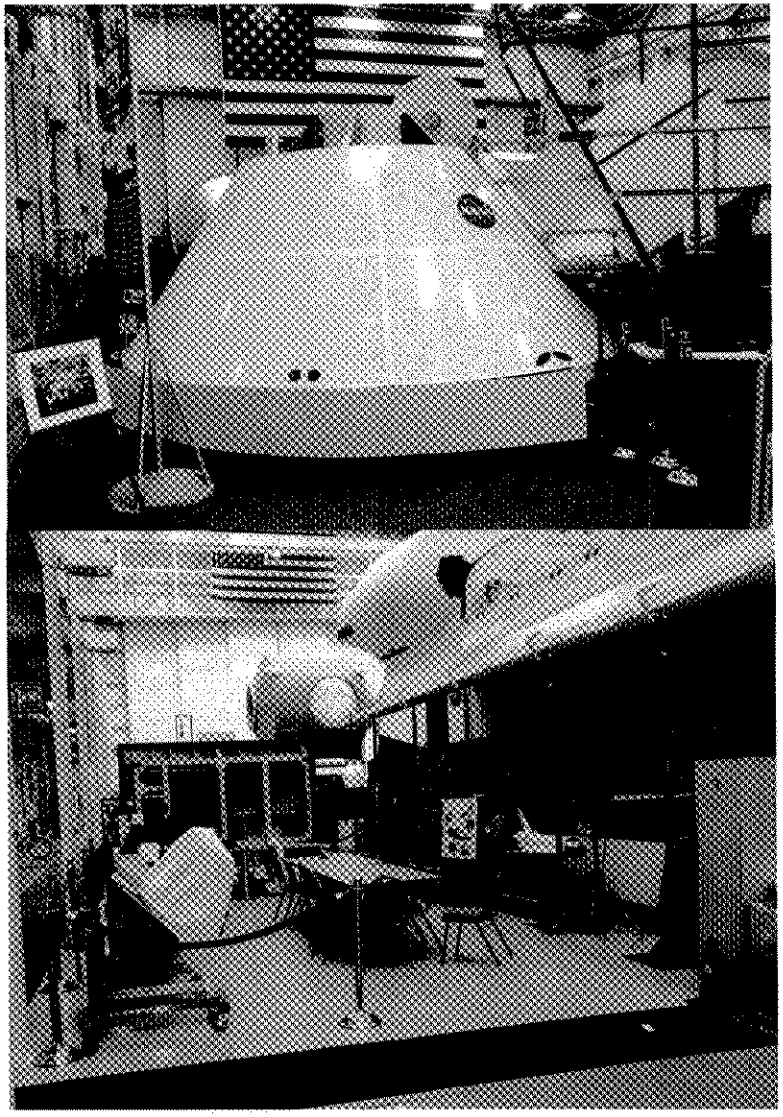
FY11 SVMF Reconfig
CR-2446 Background (continued)

- Also needed is technician services for moving the lofi CEV mockup to a new location

- And packaging and storing Thermal Protection System repair hardware to free up floor space



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FY11 SVMF Reconfig
CR-2446 Requirements Overview

The following selected requirements were conveyed by CR-2446 :

Item #	Deliverable Description	QTY
1	Provide 20 platforms similar to existing SVMF units. (Assembly, and Installation not included)	20 platforms
2	Provide copy of the commercial fabrication drawings used to build platforms	1 set
3	Provide 2 small package AC units (<1 ton each), (installation not included)	2 units
4	Provide Comm system hardware similar to Russian Nion comm. system, (programming and install not included)	1 system
5	Provide 3 pallets of carpet squares similar to existing SVMF carpet	3 pallets
6	Pack up TPS repair training area into a climate controlled storage after STS-135 wheel stop	svc
7	Relocate the Lofi CEV mockup to be installed in front of OCC, hatch facing east	svc
8	Provide between 500 to 1200 sq. ft of carpet similar to that used on other SVMF platforms	<1200sf

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FY11 SVMF Reconfig
CR-2446 Acceptance Criteria Overview

Item #	Deliverable Description	QTY
1	Verify by inspection of hardware - 20 unassembled platforms	20 platforms
2	Verify by inspection of drawing package hardcopy and files – complete drawing package for platforms in CDM	
3	Verify by inspection of hardware – 2 small AC units	2 units
4	Verify by inspection of hardware – 1 set of comm system hardware similar to Russian Nion system	1 system
5	Verify by inspection of invoice and one box of material- 3 pallets of carpet squares similar to current SVMF carpeting	3 pallets
6	Verify by inspection of storage area and TPS area– TPS repair floorspace area is cleared and TPS repair items stored in climate controlled storage.	
7	Verify by inspection of new mockup area– LoFi CEV is installed in front of OCC with hatch facing west	
8	Verify by inspection of invoice and roll of material – 500 to 1200 s.f. of platform carpet delivered	<1200sf
Note:	Verify that TRR package that reviewed the safe reassembly of the CEV is completed and signed	

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FY11 SVMF Reconfig
CR-2446 Technical Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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FY11 SVMF Reconfig
CR-2446 Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

(b) (4)

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FY11 SVMF Reconfig
CR-2446 Cost

	H060 CR 2446 Reconfig.			
		TOTAL		
		GFY 11	GFY 11	GFY 11
SLC	Labor Category	Hours	Rate	Total
[redacted]				
Material				[redacted]
Material Handling				
G&A				
Subtotal Material				
Travel				
TravelHandling				
Non Labor G&A				
Subtotal Travel				
Total Estimated Cost				
Total Available Fee				
Award Fee	[redacted]			
Target Incentive Fee				
Max Incentive Fee				
Total Cost Plus Fee				

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FY11 SVMF Reconfig
CR-2446 Deliverables

The following hardware will be delivered to DX14 as defined by CR-2446:

Item #	Deliverable Description
1	20 ISS platforms similar to existing units
2	1000 square feet of platform type carpet
3	2 small AC units
4	Comm system hardware similar to Russian comm system
5	3 pallets of carpet squares similar to existing carpet
6	Relocated CEV mockup (service)
7	Packaged and stored TPS repair equipment (service)

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FY11 SVMF Reconfig
CR-2446 Deliverables

The following Documentation will be delivered to DX as defined by CR-2446:

1	Commercial Drawing package for ISS platforms
2	Test Readiness Review package

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FY11 SVMF Reconfig
CR-2446 Schedule

ID	WBS	Task Name	Duration	% Complete	Early Start
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					

Jul '11 | Aug '11 | Sep '11 | Oct '11

6/19 | 6/26 | 7/3 | 7/10 | 7/17 | 7/24 | 7/31 | 8/7 | 8/14 | 8/21 | 8/28 | 9/4 | 9/11 | 9/18 | 9/25 | 10/2 | 10/9

(b) (4)

FY11 SVMF Reconfig
CR-2446 Acceptance Criteria

Physical configuration inspection against the items identified in CR-2446

TRR completed.

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FY11 SVMF Reconfig
CR-2446 Material Matrix

Item No	Material Description	Vendor	Price	(BOE) Source	Need Date	Comments
			(b) (4)			
1	Raw Materials					
	Subtotal Raw Material					
2	Miscellaneous Materials	(b) (4)		(b) (4)	8/1/11	
					9/26/11	
					9/26/11	
					9/26/11	
					9/26/11	
	Subtotal Misc Material					
3	Outsourcing					
	Subtotal Outsourcing					
	Total (unloaded)					

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FY11 SVMF Reconfig
CR-2446 Travel Detail

There has been no Travel identified for these tasks.

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FY11 SVMF Reconfig
CR-2446 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

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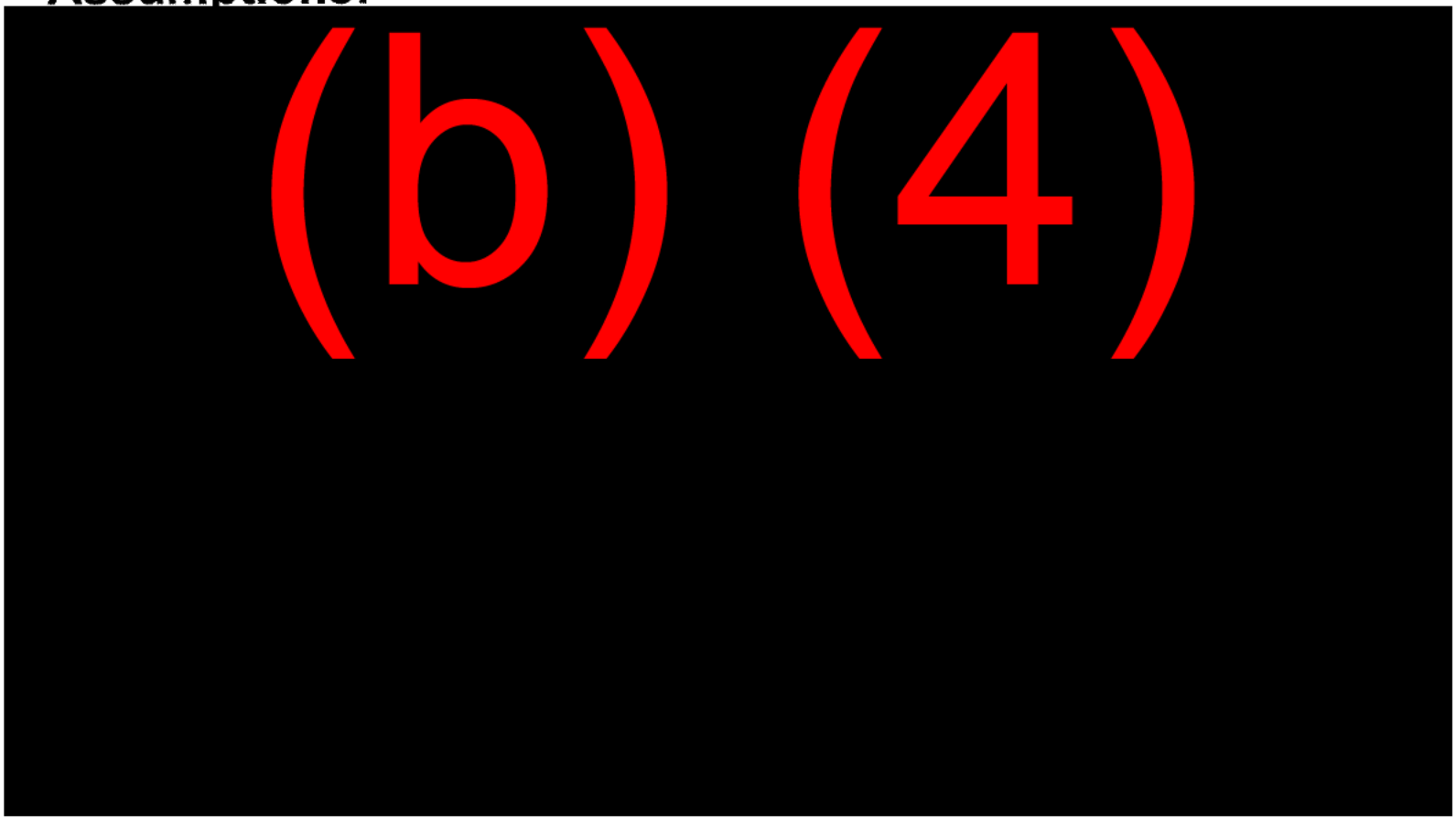
FY11 SVMF Reconfig
Basis of Estimate (BOE) Summary and Assumptions

Assumptions:



FY11 SVMF Reconfig
CR-2446 Basis of Estimate cont.

Work split	Hours	SLC
(b) (4)		

Work split Continued	Hours	SLC
(b) (4)		
Total Hrs:	(b) (4)	

FY11 SVMF Reconfig
Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

- **These requirement modifications requests will be documented via the Scope Change Impact Form to capture the verbiage, cost and schedule impacts as they are presented. This will allow rapid approval and implementation of the pending request(s) individually until a revision can be processed.**

- **Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.**

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO908, RevA	09/29/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO908, RevA

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO908, RevA

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO908, Rev A

9. Written acceptance of this order by contractor
is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 9/30/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 908, Rev A is to add riser platform per SCIF 2446.01. SVMF FY11 Reconfiguration CR-2446A The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $19,077 Work is to be completed by October 28, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	19,077.00	19,077.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 19,077.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2446 Rev A	DX CHANGE REQUEST

CR TITLE: FY11 SVMF Reconfig

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	QTY	TECHNICAL CONTACT
1	Provide 20 platforms similar to existing SVMF units. (Assembly, and Installation not included)	20 platforms	(b) (4)
2	Provide copy of the commercial fabrication drawings used to build platforms	1 set	
3	Provide 2 small package AC units (<1 ton each), (installation not included)	2 units	
4	Provide Comm system hardware similar to Russian Nion comm. system, (programming and install not included)	1 system	
5	Provide 3 pallets of carpet squares similar to existing SVMF carpet	3 pallets	
6	Pack up TPS repair training area into a climate controlled storage after STS-135 wheel stop		
7	Relocate the Lofi CEV mockup to be installed in front of OCC, hatch facing east		
8	Provide between 500 to 1200 sq. ft of carpet similar to that used on other SVMF platforms	<1200sf	
REV A 9	Provide 16.25" (tolerance +/- 5") high x 16 'x 20' COTS riser platform rated for 125 psf to raise the Lo-Fi CEV mockup so that the Lo-Fi CEV hatch bottom is approximately equal in height of the hatch bottom of the Med-Fi CEV. Assemble platform in front of OCC prior to relocating the Lofi CEV on top of it.	1	

Note: A safety review on 6/20/11 determined a TRR would be required

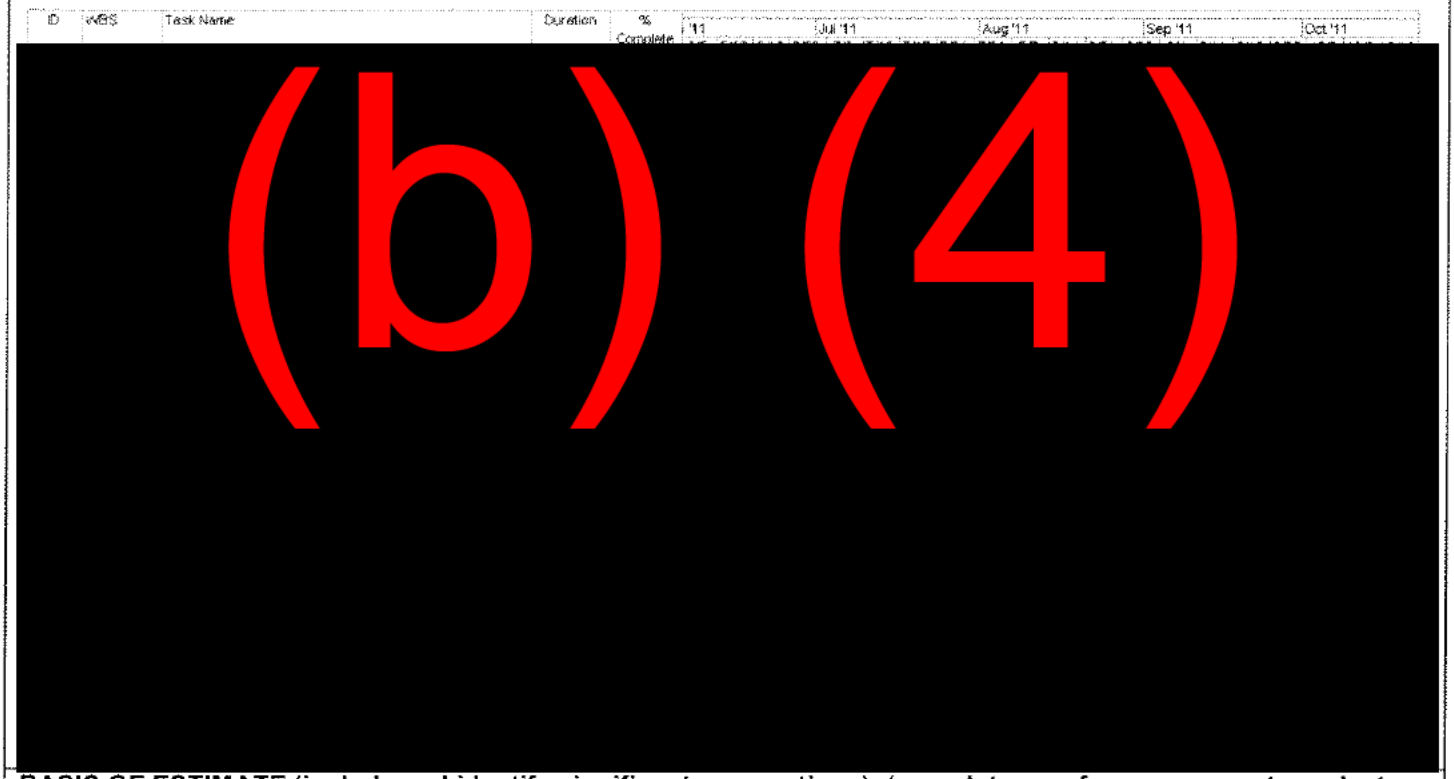
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	Verification
1	Verify by inspection - 20 unassembled platforms	20 platforms	
2	Verify by inspection – complete drawing package for platforms in CDM		
3	Verify by inspection – 2 small AC units	2 units	
4	Verify by inspection – 1 set of comm system hardware similar to Russian Nion system	1 system	
5	Verify by inspection - 3 pallets of carpet squares similar to current SVMF carpeting	3 pallets	
6	Verify by inspection – TPS repair floorspace area is cleared and TPS repair items stored in climate controlled storage.		
7	Verify by inspection – LoFi CEV is installed in front of OCC with hatch facing west		
8	Verify by inspection of invoice – 500 to 1200 s.f. of platform carpet delivered	<1200sf	
Note:	Verify that TRR package is completed and signed		
REV A 9	Verify Riser Platform height is between 11.25" and 21.25" Above floor, and that Lofi CEV is located atop it	1	

CR NO.: 2446 Rev A	DX CHANGE REQUEST

CR TITLE: FY11 SVMF Reconfig

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO909	07/21/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO909

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
July 31, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO909

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO909

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 7/21/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	manufacture hardware for MVR Project, CR-429 The estimated cost is $(b) (4) The estimated award fee is $(b) (4) The estimated incentive fee is $(b) (4) The total value of this Delivery Order is $14,200 Work is to be completed by July 31, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	14,200.00	14,200.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 14,200.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

MRV Project
NBL-CR-429

[redacted]

20 July 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

MRV Project
NBL-CR-429 Background

- NSOC received urgent request on 7/12 to Support ER division with manufacturing of hardware for MRV project, which must be completed by 7/31

- Hardware drawings, IGES files, and materials have been provided to the LMF.

- ATP from CO (b) (4) to begin fabrication using overtime resources starting 7/16 and to provide IDIQ proposal for full cost estimate

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MRV Project
NBL-CR-429 Requirements Overview

The following requirements were conveyed by NBL-CR-429

- Rotator Shear Pin per DWG# (b) (4) Qty 3
- Blind Connections Housing ASM per DWG# (b) (4) Qty 1
- Fluid Connector Capture Plate ASM per DWG# (b) (4) Qty1
- ELCON Mount Spacer per DWG# (b) (4) Qty 4
- Capacitor Bus Bar Washer per DWG# (b) (4) Qty 4
- Control Arm Harness Flange per DWG# (b) (4) Qty 1
- Shock Pin Spacer per DWG# (b) (4) Qty 4
- Steering Motor Driver Standoff per DWG# (b) (4) Qty 10
- S Cam Roller per DWG# (b) (4) Qty 2
- Thermal Systems Motor Driver Coldplate per DWG# (b) (4) Qty 1

Note: NASA/ER will provide engineering support for manufacturing throughout the life of this project. All direction for design and manufacturing activities will come through the ER project engineering.

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MRV Project
NBL-CR-429 Acceptance Overview

Acceptance Criteria/Deliverables Definition:

I. Acceptance of the following tasks and Deliverables to be validated by inspection:
   - Required parts have been fabricated and provided to NASA/ER

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MRV Project
NBL-CR-429 Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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MRV Project
NBL-CR-429 Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
None identified				

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MRV Project
NBL-CR-429 Deliverables

The following hardware/tests will be delivered to NASA/ER :

Item #	Deliverable Description	PRIMARY DATA REFERENCE
1	Rotator Shear Pin per DWG# (b) (4) Qty 3	PDF file
2	Blind Connections Housing ASM per DWG# (b) (4) Qty 1	PDF and IGS files
3	Fluid Connector Capture Plate ASM per DWG# (b) (4) Qty1	PDF and IGS files
4	ELCON Mount Spacer per DWG# (b) (4) Qty 4	PDF file
5	Capacitor Bus Bar Washer per DWG# (b) (4) Qty 4	PDF file
6	Control Arm Harness Flange per DWG# (b) (4) Qty 1	PDF and IGS files
7	Shock Pin Spacer per DWG# (b) (4) Qty 4	PDF file
8	Steering Motor Driver Standoff per DWG# (b) (4) Qty 10	PDF file
9	S Cam Roller per DWG# (b) (4) Qty 2	PDF file
10	Thermal Systems Motor Driver Coldplate per DWG# (b) (4) Qty 1	PDF and IGS files

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

MRV Project
NBL-CR429 Schedule

ID	WBS	Task Name	Duration	Start	Finish
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

June 11 | July 1 | July 21 | August 11 | September 1

6/19 6/26 7/3 7/10 7/17 7/24 7/31 8/7 8/14 8/21 8/28 9/4 9/11

(b) (4)

MRV Project
NBL-CR-429 Acceptance Criteria

Inspection of evidence that Required parts have been fabricated and provided to NASA/ER

If the document and hardware Deliverable items fail to meet the requirements, then Team Raytheon will correct the problem and resubmit the items for acceptance.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

MRV Project
CR-429 Material Matrix

Item No	Material Description	Vendor	Price	(BOE) Source	Need Date	Comments
1	**Raw Materials**		-			none planned Provided by requestor
	Subtotal Raw Material					
2	**Miscellaneous Materials**		-			none planned
	Subtotal Misc Material		-			
3	**Outsourcing**		-			none planned
	Subtotal Outsourcing		-			
	Total (unloaded)		-			none planned

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MRV Project
NBL-CR-429 Travel Detail

There has been no Travel identified for these tasks.

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MRV Project
NBL-CR-429 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

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MRV Project
Basis of Estimate (BOE) Summary and Assumptions

Tasks	Hours	Resource	Description/ Basis of Estimate
(b) (4)			
Total Hours	(b) (4)		

MRV Project
Basis of Estimate (BOE) Summary and Assumptions

Assumptions:

(b) (4)

MRV Project
NBL-CR-429 Basis of Estimate cont.

Work split	Hours	SLC
(b) (4)		
Total	(b) (4)	

(cont.)

MRV Project
NBL-CR-429 E Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO910 Rev1	08/23/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO910 Rev1

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 18, 2011

F.O.B. Point: on
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO910 Rev1

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO910 Rev 1

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia W Maclean — Contracting Officer
8/23/11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this revision is to update corrections to the initial proposal package on: slides 6 and 7 (prior slide 6) slide 10 (prior slide 9) and slide 11 (prior slide 10). These revisions result in no additional costs to the government. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB			

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

CR-2408
Build NORS Part Task Trainer and Lo-Fi Outfitting for SVMF Airlock

(b) (4)

18 August 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

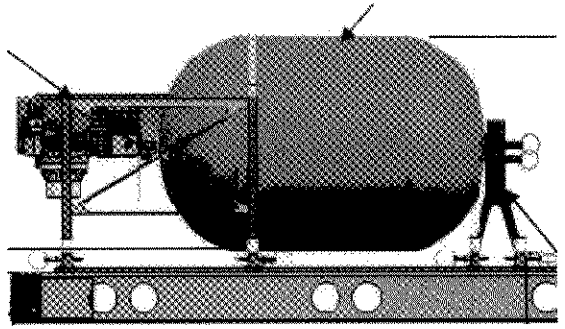
Agenda

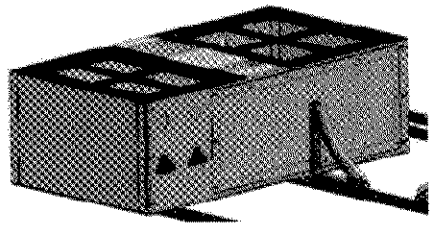
- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

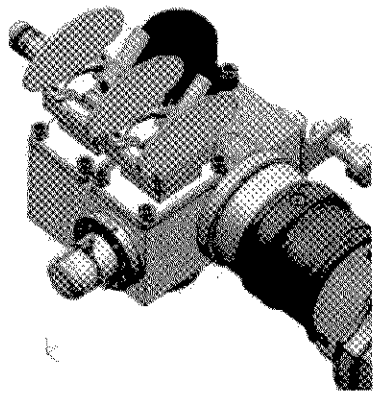
"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT CR-2408
Background

- This CR requests a standalone mockup of the overhead area of the Airlock, including the Overhead Aft Standoff rotated 90 degrees to aid in Nitrogen Oxygen Recharge System (NORS) engineering evaluations as well as flight controller and crew training. In addition to the standalone mockup, light weight, low fidelity, volumetric mockups of the NORS hardware are requested for installation in the current Airlock mockup.







"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Requirements Overview

The following selected requirements were conveyed by CR-2408 :

Item #	Deliverable Description	QTY
1	The mock-up will be oriented so that the overhead platform is in a vertical orientation, with the forward side of the platform (Avionics Rack side) at the floor.	N/a
2	Provide a stand or cradle to safely support the mock-up on the facility floor in the vertical orientation.	N/a
3	Provide floor space or floor platform to allow working room for accessing the trainer.	N/a
4	The mock-up will include the overhead platform, the surrounding inside closeouts cut off at approximately 36 inches from the overhead platform, and the module outer skins cut off at approximately 36 inches from the overhead platform.	N/a
5	UOP, GLA and air conditioning vents in the upper standoffs can be represented by decals, with a volumetric "bump-out" for the GLAs.	N/a
6	Provide one fidelity IIB connection at the standoff for the CCAA flex hose.	1
7	SVMF location shall provide adequate floor space to accommodate Part Task Trainer and access platform footprint plus clearance to accommodate repositioning of the access platform.	N/a
8	Closeouts are to be the correct color and have the correct decals. Closeout interior profiles shall emulate flight configuration. Closeout's outboard profiles and supports shall not interfere with volumes hosting training-related hardware and operations.	N/a

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NORS PTT
CR-2408 Requirements Overview

The following selected requirements were conveyed by CR-2408 :

Item #	Deliverable Description	QTY
9	Provide the aft overhead standoff with plumbing as follows a) Standoff structure with backplate b) N2 Flow restrictor with male Gamah fittings (fidelity IIB) c) Adjacent valve and regulator (fidelity IIIC) d) Volumetric representation (e.g. Fused Deposition Modelling0 FDM) of plumbing in areas which inhibit tool and manual access to "QD12" during N2 bypass hose installation" . Robust metallic representation of features of plumbing which must endure repeated FFTD-applied and manually applied loads during training. e) THC ducting { supply and Rack to standoff transition} (fidelity IIIC) f) QD, Tube, gamma for 683-42322-1 (fidelity IIB) g) Wire harnesses per photos near flow restrictor (fidelity IIIC)	N/A
10	Closeout panels for corner closeout near QD11 should be easily removable (attachment such as Velcro	N/A
11	Provide a mock-up lightweight RTA with IIB interfaces at support brackets and IIB interface for Boeing-provided spare valve assembly in the overhead quadrant of the existing SVMF airlock trainer. (Tank can be any materia	1
12	Provide fidelity IIB seat track in flight locations on the overhead platform for mounting the NORS equipment	N/A
13	Provide a fidelity IIIC representation of the crewlock hatch.	1
14	Volumetric fidelity IIIC mock-up of the RTA with valves, RTA support structure (need some detail),	1
15	Fidelity IIIC NMA mockup,	1
16	Volumetric mock-ups shall be mounted securely to the seat track of the overhead platform in the SSMTF Airlock trainer per their flight location.	N/A

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Acceptance Criteria will be successful inspection of all required content

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Technical Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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NORS PTT
CR-2408 Technical Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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NORS PTT
CR-2408 Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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NORS PTT
CR-2408 Deliverables

The following hardware will be delivered to DX14 as defined by CR-2408:

Item #	Deliverable Description
1	Stand-alone mockup
2	fidelity IIIC representation of the crewlock hatch.
3	Volumetric fidelity IIIC mock-up of the RTA with valves, RTA support structure
4	Fidelity IIIC NMA mockup,

The following hardware will be delivered by [redacted] and installed by Team Raytheon:

Item #	Deliverable Description
1	RTA with valve assembly
2	Spare valve assembly with QDs
3	RTA support structure
4	NORS Manifold Assembly
5	Fluid hoses
6	Electrical cables
7	Seat track anchors to mount NORS equipment
8	QD 12
9	N2 Flow Restrictor
10	Transverse beams to mount NORS hardware to airlock seat tracks

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Deliverables

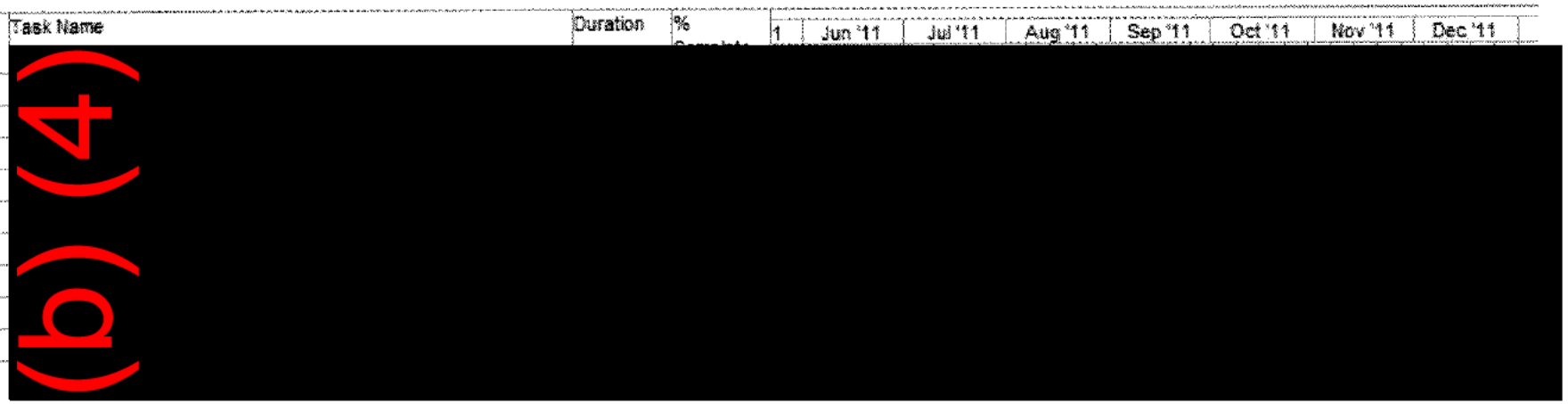
The following Documentation will be delivered to DX as defined by CR-2408:

1	Stress Analysis
2	Drawing Package

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Schedule

ID	Task Name	Duration	%
1	(b) (4)		
2			
3			
8			
22			
49			
91			
97			
118			
119			



NORS PTT
CR-2408 Acceptance Criteria

Physical configuration inspection against the items identified in CR-2408

TRR completed.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Material Matrix

Item No	Material Description	Vendor	Price	(BOE) Source	Need Date	Comments
1	**Raw Materials**					
	SS Tubing, Plate, Aluminum Angle , plate, and channel	(b) (4)	(b) (4)	(b) (4)	9/30/11	
	Plywood				9/30/11	
	Foam					
	Subtotal Raw Material					
2	**Miscellaneous Materials**					
	FDM cartridges				9/30/11	
	Fasteners				9/30/11	
	Subtotal Misc Material					
3	**Outsourcing**					
	Painting				10/30/11	Closeouts, hatch , and stand
	Subtotal Outsourcing					
	Total (unloaded)					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Travel Detail

There has been no Travel identified for these tasks.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

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NORS PTT CR-2408
Basis of Estimate (BOE) Summary and Assumptions

Tasks	Hours	Resource	Description/ Basis of Estimate
[redacted]			(b) (4)
Total Hours	(b)		

NORS PTT CR-2408
Basis of Estimate (BOE) Summary and Assumptions

Assumptions:

(b) (4)

available to help accelerate the design and fabrication phases.

NORS PTT
CR-2408 Basis of Estimate cont.

Work split	Hours	SLC
(b) (4)		

Work split Continued	Hours	SLC
(b) (4)		
Total Hrs:	(b) (4)	

NORS PTT CR-2408
Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

- **These requirement modifications requests will be documented via the Scope Change Impact Form to capture the verbiage, cost and schedule impacts as they are presented. This will allow rapid approval and implementation of the pending request(s) individually until a revision can be processed.**

- **Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.**

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NORS PTT
CR-2408 Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO910	08/17/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO910

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 23, 2011

F.O.B. Point: on
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO910

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO910

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 8/17/11
Contracting Officer Date

11. Schedule

ITEM NO	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	Build NORS Part Task Trainer and Lo-Fi Outfitting for SVMF Airlock, CR-2408 The estimated cost is $(b) (4) The estimated award fee is $(b) (4) The estimated incentive fee The total value of this Delivery Order is $107,141 Work is to be completed by November 23, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	107,141.00	107,141.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART PPC

13. Total 107,141.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC)

CR-2408
Build NORS Part Task Trainer and Lo-Fi Outfitting for SVMF Airlock

(b) (4)

15 August 2011

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NORS PTT CR-2408

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

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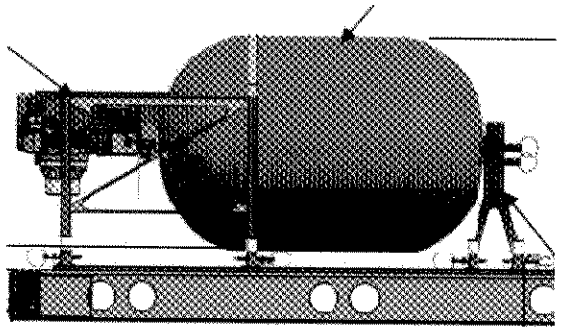
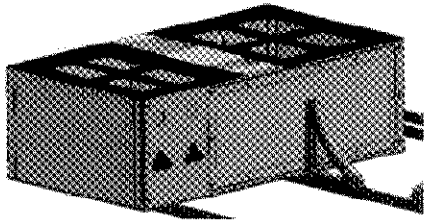
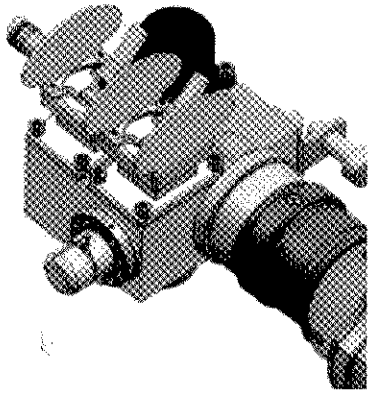
NORS PTT CR-2408
Background

- This CR requests a standalone mockup of the overhead area of the Airlock, including the Overhead Aft Standoff rotated 90 degrees to aid in Nitrogen Oxygen Recharge System (NORS) engineering evaluations as well as flight controller and crew training. In addition to the standalone mockup, light weight, low fidelity, volumetric mockups of the NORS hardware are requested for installation in the current Airlock mockup.







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NORS PTT
CR-2408 Requirements Overview

The following selected requirements were conveyed by CR-2408 :

Item #	Deliverable Description	QTY
1	The mock-up will be oriented so that the overhead platform is in a vertical orientation, with the forward side of the platform (Avionics Rack side) at the floor.	N/a
2	Provide a stand or cradle to safely support the mock-up on the facility floor in the vertical orientation.	N/a
3	Provide floor space or floor platform to allow working room for accessing the trainer.	N/a
4	The mock-up will include the overhead platform, the surrounding inside closeouts cut off at approximately 36 inches from the overhead platform, and the module outer skins cut off at approximately 36 inches from the overhead platform.	N/a
5	UOP, GLA and air conditioning vents in the upper standoffs can be represented by decals, with a volumetric "bump-out" for the GLAs.	N/a
6	Provide one fidelity IIB connection at the standoff for the CCAA flex hose.	1
7	SVMF location shall provide adequate floor space to accommodate Part Task Trainer and access platform footprint plus clearance to accommodate repositioning of the access platform.	N/a
8	Closeouts are to be the correct color and have the correct decals. Closeout interior profiles shall emulate flight configuration. Closeout's outboard profiles and supports shall not interfere with volumes hosting training-related hardware and operations.	N/a

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NORS PTT
CR-2408 Requirements Overview

The following selected requirements were conveyed by CR-2408 :

Item #	Deliverable Description	QTY
9	Provide the aft overhead standoff with plumbing as follows a) Standoff structure with backplate b) N2 Flow restrictor with male Gamah fittings (fidelity IIB) c) Adjacent valve and regulator (fidelity IIIC) d) Volumetric representation (e.g. Fused Deposition Modelling0 FDM) of plumbing in areas which inhibit tool and manual access to "QD12" during N2 bypass hose installation" . Robust metallic representation of features of plumbing which must endure repeated FFTD-applied and manually applied loads during training. e) THC ducting { supply and Rack to standoff transition} (fidelity IIIC) f) QD, Tube, gamma for 683-42322-1 (fidelity IIB) g) Wire harnesses per photos near flow restrictor (fidelity IIIC)	N/A
10	Closeout panels for corner closeout near QD11 should be easily removable (attachment such as Velcro	N/A
11	Provide a mock-up lightweight RTA with IIB interfaces at support brackets and IIB interface for Boeing-provided spare valve assembly in the overhead quadrant of the existing SVMF airlock trainer. (Tank can be any materia	1
12	Provide fidelity IIB seat track in flight locations on the overhead platform for mounting the NORS equipment	N/A
13	Provide a fidelity IIIC representation of the crewlock hatch.	1
14	Volumetric fidelity IIIC mock-up of the RTA with valves, RTA support structure (need some detail),	1
15	Fidelity IIIC NMA mockup,	1
16	Volumetric mock-ups shall be mounted securely to the seat track of the overhead platform in the SSMTF Airlock trainer per their flight location.	N/A

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Acceptance Criteria will be successful inspection of all required content

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Technical Risk

RISK	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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NORS PTT
CR-2408 Opportunity

OPPORTUNITY	IMPACT	PROBABILITY	CONSEQUENCE	CONTROL
(b) (4)				

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NORS PTT
CR-2408 Deliverables

The following hardware will be delivered to DX14 as defined by CR-2408:

Item #	Deliverable Description
1	Stand-alone mockup
2	fidelity IIIC representation of the crewlock hatch.
3	Volumetric fidelity IIIC mock-up of the RTA with valves, RTA support structure
4	Fidelity IIIC NMA mockup,

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NORS PTT
CR-2408 Deliverables

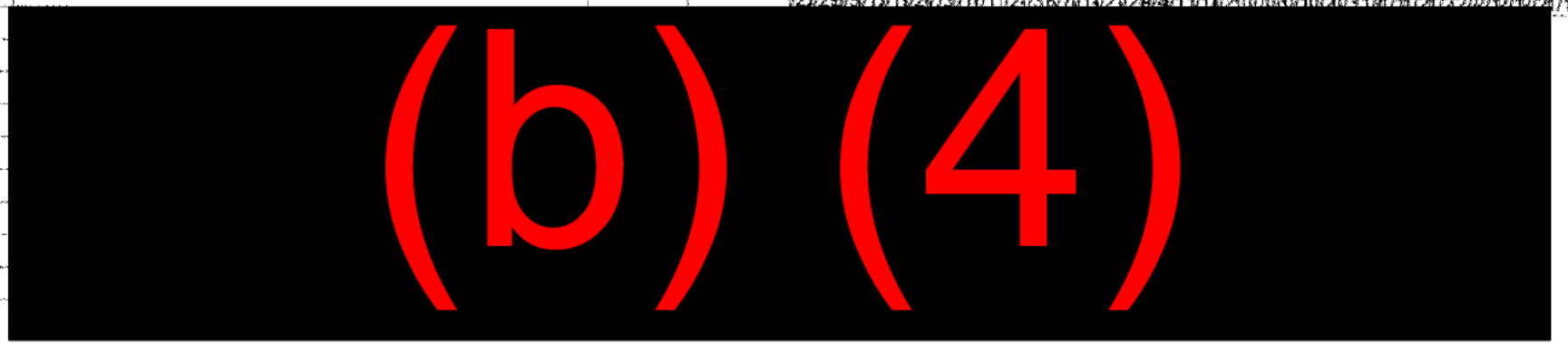
The following Documentation will be delivered to DX as defined by CR-2408:

1	None
2	

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Schedule

ID	Task Name	Duration	% Complete
1			
2			
3			
8			
22			
49			
91			
97			
118			
119			



NORS PTT
CR-2408 Acceptance Criteria

Physical configuration inspection against the items identified in CR-2408

TRR completed.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Material Matrix

Item No	Material Description	Vendor	Price	(BOE) Source	Need Date	Comments
1	**Raw Materials**					
	SS Tubing, Plate, Aluminum Angle , plate, and channel	(b) (4)	(b) (4)	(b) (4)	9/30/11	
	Plywood				9/30/11	
	Foam					
	Subtotal Raw Material					
2	**Miscellaneous Materials**					
	FDM cartridges				9/30/11	
	Fasteners				9/30/11	
	Subtotal Misc Material					
3	**Outsourcing**					
	Painting				10/30/11	Closeouts, hatch , and stand
	Subtotal Outsourcing					
	Total (unloaded)					

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NORS PTT
CR-2408 Travel Detail

There has been no Travel identified for these tasks.

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NORS PTT
CR-2408 Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

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NORS PTT CR-2408
Basis of Estimate (BOE) Summary and Assumptions

Tasks	Hours	Resource	Description/ Basis of Estimate
(b) (4)			
Total Hours	(b) (4)		

NORS PTT CR-2408
Basis of Estimate (BOE) Summary and Assumptions

Assumptions:

(b) (4)

NORS PTT
CR-2408 Basis of Estimate cont.

Work split	Hours	SLC
(b) (4)		

Work split Continued	Hours	SLC
(b) (4)		
Total Hrs:	(b) (4)	

NORS PTT CR-2408
Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

- **These requirement modifications requests will be documented via the Scope Change Impact Form to capture the verbiage, cost and schedule impacts as they are presented. This will allow rapid approval and implementation of the pending request(s) individually until a revision can be processed.**

- **Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.**

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NORS PTT
CR-2408 Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO911	08/18/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO911

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 19, 2011

F.O.B. Point: on
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO911

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO911

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 8/19/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	CR-412, Revision A - Support EC division w/ manufacturing of development hardware for NEEMO 15 & CR-2461 - Purchase rock boxes for Asteroid EVA development testing in the NBL. The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee The total value of this Delivery Order is $19,815 Work is to be completed by September 19, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	19,815.00	19,815.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 19,815.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

Neutral Buoyancy Laboratory (NBL) / Space Vehicle Mockup Facility (SVMF) Operations Contract (NSOC) NEEMO 15 Support: CR-412, Revision A CR-2461

August 18, 2011

"This request for the offer includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part – for any purpose other than to evaluate this proposal or quotation. If, however, a contract is awarded to the offeror or quoter as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use or disclose, the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (all)."

NEEMO 15 Support
CR-412A & 2461

Agenda

- Requirement Overview
- Deliverables (HW, SW, DRDs)
- Acceptance Criteria/Acceptance Test Plan
- Cost Summary
- Basis of Estimate

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

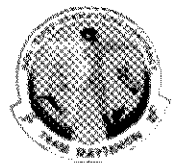
NEEMO 15 Support: CRs 412A & 2461 Requirements Overview

Proposed changes to the baseline requirements are described by the following summaries:

- **CR412A Scope Change Summary:**
- Provide shop labor resources to perform the following tasks by direction of NASA Project Engineering…..
- **1. Clean up line catches; replace components w/ stainless**
- **2. Aluminum or Stainless WIF sockets**
- **3. Build Adjustable Waist Tethers**
- **4. Procure Foot Restraint Heel Clips**
- **5. Procure Hard Sole SCUBA Booties**
- **6. Rebuild/upgrade Lightweight Boom:**
  - **Replace PIP pins w/ Cam Locks**
  - **Replace all carbon steel with either Stainless or Alum**
  - **Add Light Duty Foot restraint**
  - **Install two clamps to allow two axis rotation of boom**

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NEEMO 15 Support: CRs 412A & 2461
Requirements Overview



- <u>CR412A Scope Change Summary (cont)</u>
- 7. Upgrade straps that attach Sample Stowage Pocket to crew member.
- 8. Build Rock Chipping Sample Bag, 2ea.
  - Clear w/ elastic neck, shape like shower cap
  - Procure studs and mount on bags
  - Build interchangeable replacement stud heads
- 9. Flower Petal Sample Collector
  - Procure Flower Petal Collectors & Tethers
  - Mount tethers to Flower Petal collectors
  - Modify Replaceable bags to have Zip Tie closure.

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NEEMO 15 Support: CRs 412A & 2461 Requirements Overview

Proposed changes to the baseline requirements are described by the following summaries:

- **CR2461 Summary**
- **1. Procure Transport Tub, 48”x45”x12”, black, 5ea.**
  - **PN:** (b) (4) (b) (4)
- **2. Procure Transport Tub, 48”x45”x26”, black, 5ea.**
  - **PN:** (b) (4) (b) (4)
- **3. Procure Lids for 48” x 45” tubs, black, 10ea.**
  - **PN:** (b) (4) (b) (4)

“Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation.”

NEEMO 15 Support: CRs 412A & 2461 Deliverables

CR412A Deliverables:

Acceptance Criteria Definition:

- As EC is completely responsible for the completion and we are support
- Acceptance will be upon completion.

CR2461 Deliverables:

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	Transport Tubs delivered to NBL: 48X45X12, color - black	5	N/A	
2	Transport Tubs delivered to NBL: 48X45X26, color - black	5	N/A	
3	Lid for 48X45 Tubs delivered to NBL: 48X45X03, color black	10	N/A	

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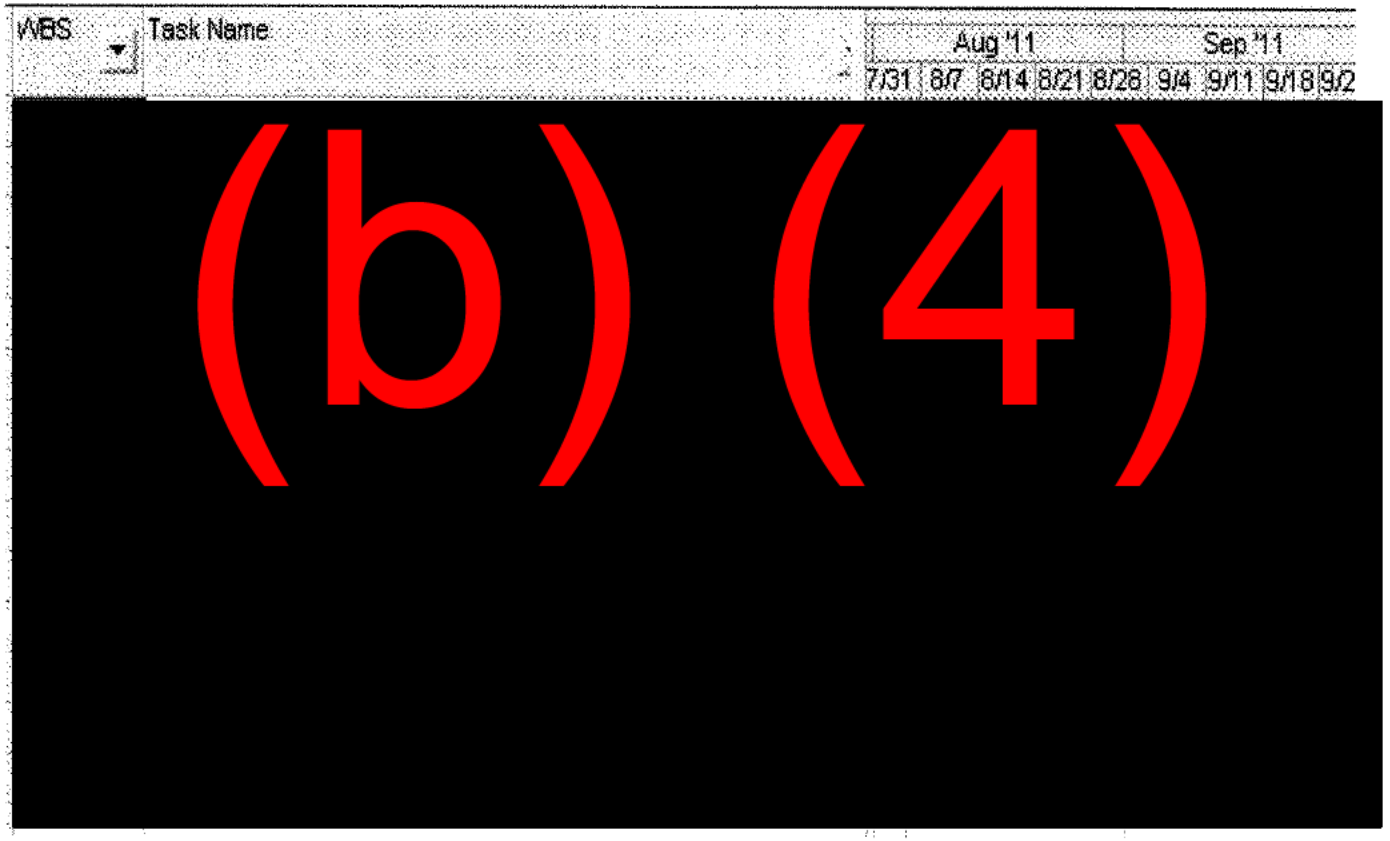
NEEMO 15 Support: CRs 412A & 2461 Schedule

CR412A Schedule:

NASA Project Engineering to provide interim delivery of items as needed. This support effort is planned to be completed by Sep 19, 2011

NEEMO 15 Support: CRs 412A & 2461 Schedule

CR 2461 Schedule:



NEEMO 15 Support: CRs 412A & 2461 Acceptance Criteria

CR 412A Acceptance Criteria Definition:

- As EC is completely responsible for the completion and we are support. Acceptance will be upon completion.

CR 2461 Acceptance Criteria Definition:

- Delivery of the ten boxes and lids specified in the deliverables section.

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NEEMO 15 Support: CRs 412A & 2461
Material Matrix

CR412A - Adds Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
	Raw Material					
1	PVC sheet, 3ea, 2'x3'	(b) (4)	(b) (4)	(b) (4)	9/1/2011	Raw Matl to fabricate heel clips
	Subtotal Raw Material					
	Miscellaneous Materials					
2	SCUBA Boots, 10pr				9/10/2011	
	Cam Locks, 10ea.				9/10/2011	
	Chipping Tools				9/10/2011	Various Hammers/chisels as selected by Project Office not to exceed ROM estimate
	"Rock" Sample collector, 30ea				9/10/2011	
	Subtotal Misc Material					
	Outsourcing					
3						
	Subtotal Outsourcing					
	Total					

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NEEMO 15 Support: CRs 412A & 2461
Material Matrix

CR2461 - Adds Material

Item No	Material Description	Vendor	Price	Source	Need Date	Comments
			(b) (4)			
	Raw Material					
1						
	Subtotal Raw Material					
	Miscellaneous Materials					
2	Transport Tub, 48x45x12, 5ea	(b) (4)		(b) (4)		
	Transport Tub, 48x45x26, 5ea					
	Transport Tub Lid, 48 x 45x3, 10ea				9/12/2011	
	Subtotal Misc Material					
	Outsourcing					
3						
	Subtotal Outsourcing					
	Total					

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NEEMO 15 Support: CRs 412A & 2461
Travel Detail

There has been no Travel identified for these tasks.

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NEEMO 15 Support: CRs 412A & 2461
Costing Methodology and Issues

Top-Level Basis of Estimate / Costing Strategy

(b) (4)

Costing Issues

Issues	Plan to Resolve
NONE	

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NEEMO 15 Support: CRs 412A & 2461
Basis of Estimate Summary

CR 412 Revision A:

Project Management

Tasks	Hours	Resource	Description / Basis Of Estimate
(b) (4)			
Total	(b) (4)		

Fabrication

Tasks	Hours	Resource	Description / Basis Of Estimate
(b) (4)			
Total	(b) (4)		

Worksplit	Hours	SLC
(b) (4)		

Worksplit	Hours	SLC
(b) (4)		
Total	(b) (4)	

NEEMO 15 Support: CRs 412A & 2461
Basis of Estimate Summary

CR 2416:

Project Management

Tasks	Hours	Resource	Description / Basis Of Estimate
(b) (4)			
Total	(b) (4)		

Worksplit	Hours	SLC
(b) (4)		
Total	(b) (4)	

NEEMO 15 Support: CRs 412A & 2461
Basis of Estimate Summary

Combined Work Split:

Worksplit	Hours	SL-C
(b) (4)		
Total	(b) (4)	

NEEMO 15 Support: CRs 412A & 2461
Risk/Opportunity Cost Assessment

Raytheon may receive additional requirements as the design progresses

AND/OR

Raytheon may receive changes to requirements as the design progresses

Upon agreement between NASA and Raytheon, the CR and Delivery Order will be modified as required to incorporate the Scope Changes.

"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

NEEMO 15 Support: CRs 412A & 2461
Action Items / Minutes

Action Items (from oral presentation)

Action	Actionee	Due Date	Status

Summary of Agreements/Decisions (from oral presentation)

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO912 A	09/17/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO912 A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 4, 2012

F.O.B. Point: on
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO912 A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO912A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 9/18/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	CR-2482A - The purpose of this delivery order is to fabricate a replacement high fidelity stainless steel Special Purpose Dexterous Manipulator (HIFI-SS-SPDM) mockup for use in NBL training runs. The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee The total value of this Revision is (b) (4) The total value of this Delivery Order is $551,567.47 Work is to be completed by September 4, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

1. REQUESTOR: DX/Randall McDaniel	2. PHONE: x32570	3. E-MAIL: randall.s.mcdaniel@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Using the development MDRD-401 defined under CR2448, fabricate a replacement high fidelity stainless steel Special Purpose Dexterous Manipulator (HIFI-SS-SPDM) mockup for use in NBL training runs.

Rev A: Incorporate SCIF-01, SCIF-02, and SCIF-03. Revise the schedule to complete work on the Cradle by the end of November 2012 in GFY 13.

7. RATIONALE
The existing HIFI-AL-SPDM NBL Mockup is primarily made of aluminum. After a decade of use in the pool, the aluminum material has significantly degraded and as a result limits training fidelity.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

A Hi-Fi Stainless Steel SPDM Mockup shall be provided per the requirements defined in MDRD-401, High Fidelity Stainless Steel Special Purpose Dexterous Manipulator (Hi-Fi SS SPDM).

TRR required as specified in MDRD-401.

9. NEED DATE: (support date in block 7 rationale) 9/4/12	10. CR SUBMISSION DATE: Sept. 22, 2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: s/ J Haas (in ICE) Date: 9/23/11

12. NASA POC: Frank Markle	13. PHONE: 281-483-0696	14. E-MAIL: franklin.s.markle@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$566,700~~ Total **$584,900** **GFY12 Total $562,100, GFY13 Total $22,800** **Rev A**	20. NEGOTIATED DELIVERY DATE: ~~Sept 4, 2012~~ November 30, 2012 **Rev A**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

REQUIREMENTS/REFERENCES (cont.):

SCIF 01 incorporated in Rev A. Risk 01 Activated. Additional design effort and stress analysis iterations were required to complete the design of the SPDM assembly to include the load alleviator feature (which was considered highly desirable over replaceable sheer pins). The additional analysis iterations were needed to be performed to address all load conditions and issues which in turn also drove additional designer support to incorporate modifications to the model.

SCIF 02 incorporated in Rev A. Risk 05 Activated. The current THA had several items that were not usable or did not meet the MDRD requirements as expected. This caused a redesign of several components as well as new ones; new models and drawings were required to be developed for manufacture of items.

SCIF-03 incorporated in Rev a. Risk 06 Activated. Additional design iterations were required to properly weigh out the arm segments (as modeled in Pro-E). The largest impact was due to the OTCM design. During Design reviews it was determined that all efforts be made to have each OTCM weighed out when not attached to the arm causing several iterations over the plan; additional arm design effort was generated to address several high stress areas.

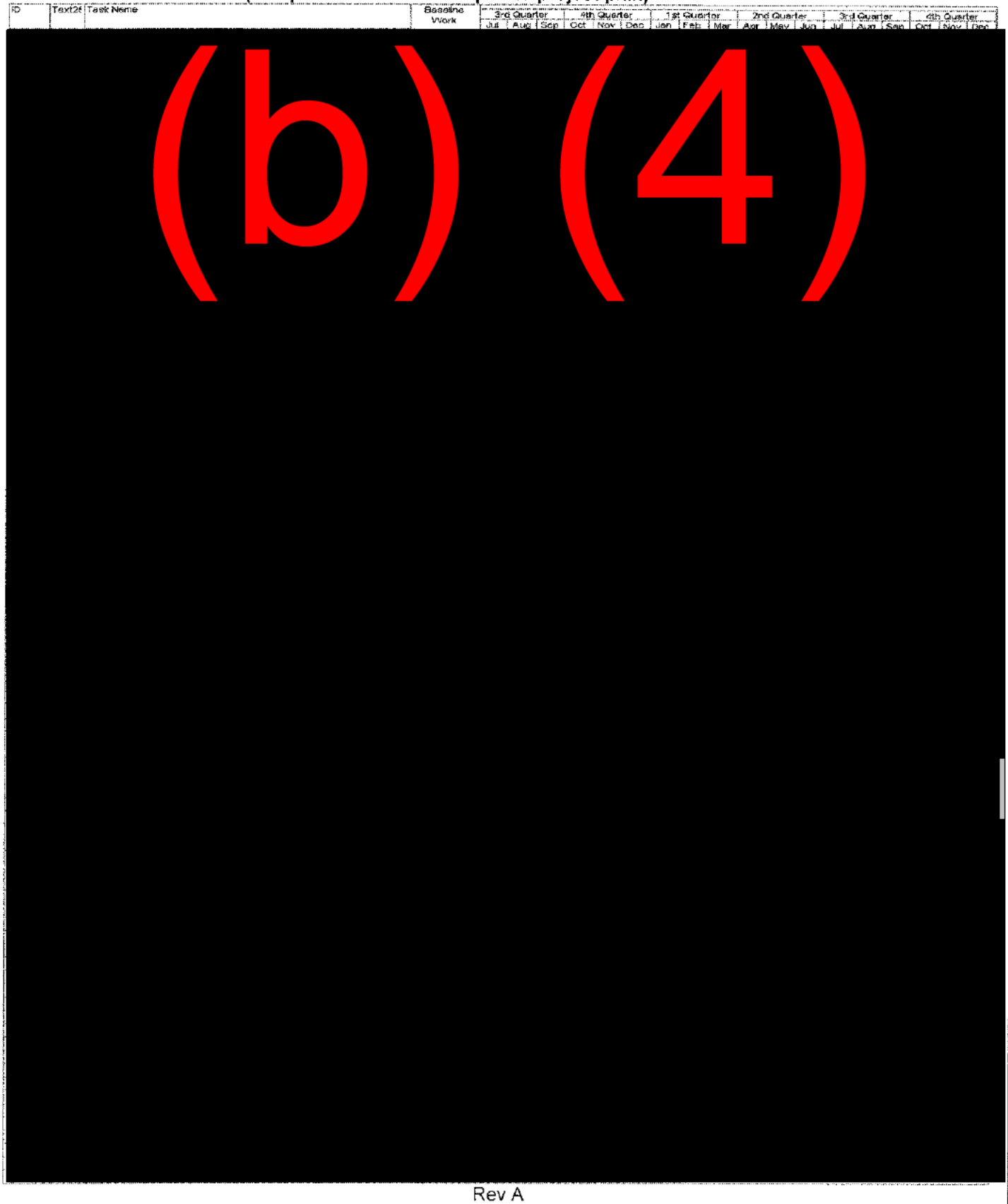
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

See MDRD-401 – Mockup Development Requirements Document for the Development of the HIFI-SS-SPDM, Section 10 – Requirements Verification Matrix (RVM), MDRD-401.

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

SCHEDULE MILESTONES: (complete or reference separate project plan)



Rev A

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO912	10/05/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO912

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 04, 2012

F.O.B. Point: on
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO912

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO912

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 10/5/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	CR-2482 - The purpose of this delivery order is to fabricate a replacement high fidelity stainless steel Special Purpose Dexterous Manipulator (HIFI-SS-SPDM) mockup for use in NBL training runs. The estimated cost is (b) (4) The estimated award fee is $ The estimated incentive fee (b) (4) The total value of this Delivery Order is $566,652 Work is to be completed by September 04, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	566,652.00	566,652.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 566,652.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2482	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

1. REQUESTOR: DX/Randall McDaniel	2. PHONE: x32570	3. E-MAIL: randall.s.mcdaniel@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: _____

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Using the development MDRD-401 defined under CR2448, fabricate a replacement high fidelity stainless steel Special Purpose Dexterous Manipulator (HIFI-SS-SPDM) mockup for use in NBL training runs.

7. RATIONALE
The existing HIFI-AL-SPDM NBL Mockup is primarily made of aluminum. After a decade of use in the pool, the aluminum material has significantly degraded and as a result limits training fidelity.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

A Hi-Fi Stainless Steel SPDM Mockup shall be provided per the requirements defined in MDRD-401, High Fidelity Stainless Steel Special Purpose Dexterous Manipulator (Hi-Fi SS SPDM).

TRR required as specified in MDRD-401.

9. NEED DATE: (support date in block 7 rationale) 9/4/12	10. CR SUBMISSION DATE: Sept. 22, 2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: s/ J Haas (in ICE) Date: 9/23/11

12. NASA POC: Frank Markle	13. PHONE: 281-483-0696	14. E-MAIL: franklin.s.markle@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4) [redacted]	16. PHONE: [redacted]	17. E-MAIL: (b) (4) [redacted]@nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $566,700	20. NEGOTIATED DELIVERY DATE: Sept 4, 2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2482	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

See MDRD-401 – Mockup Development Requirements Document for the Development of the HIFI-SS-SPDM, Section 10 – Requirements Verification Matrix (RVM), MDRD-401.

CR NO.: 2482	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

- **ENGINEERING & SUPPORT ESTIMATES** – (b) (4) [redacted]
- **DESIGN AND ANALYSIS ESTIMATES** – (b) (4) [redacted]
- **LABOR ESTIMATES** – (b) (4) [redacted]
- **MATERIAL ESTIMATES** – (b) (4) [redacted]

CR NO.: 2482	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY12: Total Cost $566,700

DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

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5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
October 19, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO913

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO913

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer
10/19/11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 913, SCIF-01 is to: Provide CWG Support The estimated cost is (b) (4) The estimated award fee is The estimated incentive fee (b) (4) The total value of this Delivery Order is $20,615.22 Work is to be completed by Octobrt 19, 2011 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	20,615.22	20,615.22	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 20,615.22

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2375 Rev B	DX CHANGE REQUEST

CR TITLE: CWG IDIQ Support for FY11

1. REQUESTOR: Christie Sauers	2. PHONE: x45692	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☒ CONSTELLATION ☐ OTHER: _____

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides an avenue to support mockup and evaluation tasks for the Cockpit Working Group (CWG) to include :
- Fabrication of docking light brackets and a temporary backbone structure for the Avionics and ECLS Bay Walls.
- Installation of secondary structure and non-structural assemblies.
- (b) (4) of general facility support per month.
- of technician event support per month.
- (b) (4) of engineering support to aid the Students Shaping America's Next Spacecraft (SSANS) program.

Rev A: CR revised to more specifically describe work to be performed.
Rev B: CR revised to reflect changes approved on SCIF 01 and requested travel support.

7. RATIONALE
Support for these changes is required for FY2011.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
[redacted]

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: ~~11/30/10~~
09/30/11	**Rev A:** 03/16/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 11/30/10

12. NASA POC:	13. PHONE:	14. E-MAIL:
June Huhn	x25837	global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** global

18. Formal Project Plan Required:
☒ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$70,000~~ **~~Rev A:~~** ~~$89,100~~ **Rev B:** $104,500	09/30/11

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____
Date: _____
CCB CHAIR: _____
Date: _____

COTR for CRs with Cost Impact Only
COTR: _____
Date: _____

Closed by: _____ **Date:** _____

CR TITLE: CWG IDIQ Support for FY11

REQUIREMENTS/REFERENCES (cont.):

Fabrication of the following:

- ~~temporary structure (does not have to look like backbone) beneath the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls to serve as a "partial temporary backbone" to mount only these walls until the backbone is ready, and~~ – **Deleted by Rev B**
- ~~mounting brackets for the docking light assembly, IIB fidelity (includes NSOC design support).~~ – **Deleted by Rev B**
- fabricate four seat pallet strut to forward bulkhead brackets – **Added by Rev B**

Cut to length the tubes for the D&C struts, and assemble the struts, and complete the assembly of the D&C panel – **Added by Rev B**

Installation of the following secondary structure:

- temporary backbone structure
- Pallet and struts
- D&C console and struts

Installation of the following items/assemblies on the forward bulkhead:

- Auxiliary Bus Control Unit (ABCU)
- Cabin air duct/diffuser
- Contingency Gas Analyzer (CGA)
- ~~Contingency N2 valve~~ – **Deleted by Rev B**
- Contingency O2 port
- Contingency O2 valves
- Docking light power panel
- HEPA filter
- ~~Negative pressure relief valve~~ – **Deleted by Rev B**
- ~~Smoke detector~~ – **Deleted by Rev B**
- Snorkel fan/duct
- install CGA display – **Added by Rev B**
- installation of the speaker box – **Added by Rev B**
- installation of mounting holes for NPRV, docking vestibule equalization valve, and the N2 valve assembly – **Added by Rev B**

Installation of the following items/assemblies on the Barrel Wall or Conical Side Wall:

- Lighting power/control panel (interior open for wiring)
- Positive pressure relief valve

Installation of the following items/assemblies on the Tunnel Wall:

- Docking light mounting brackets and assembly (light bracket) – install at top of tunnel , outside hatch
- Egress ladder

Installation of mounting holes for the following removable hardware:

- Docking hatch opening system
- Umbilical interface fixtures (UIF) – quantity ~~four~~ two - **Changed by Rev B**

Create installation drawings for D&C panel and struts – **Added by Rev B**

Rev B:

Procure the following items:

- a monitor and PC specified by CEV CWG
- three (3) Yellow Jacket Pro 5.8 diversity receivers and six (6) patch directional antennas as specified by CEV CWG

CR TITLE: CWG IDIQ Support for FY11

REQUIREMENTS/REFERENCES (cont.):

Following installation of the pallet and struts in the Medium Fidelity Mockup, the pallet struts shall be adjusted to demonstrate two to three "stroked" pallet configurations, as defined by the Cockpit Working Group. This will involve adjusting the lengths of the struts to adjust the placement and/or angle of the pallet in the capsule.

A log of requested task events shall be maintained showing:

- task submission date;
- task delivery date;
- date of Safety Review;
- notes on outcome of Safety Review;
- total expenditures to-date

CR TITLE: CWG IDIQ Support for FY11

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.			
2	Verify there are no unidentified pinch points.	Finished product is safe for use.			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.			
4	Verify that a Safety Review has been conducted for each fabrication and installation task	A number has been assigned to each safety review as it was conducted, and has been recorded in the "comments" section for each fabrication and installation task, and the safety reviews have been filed.			
5	~~Verify that a temporary structure has been fabricated for the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls to serve as a "partial temporary backbone" to mount these walls~~	~~A temporary structure has been fabricated for the Avionics Bay Walls (Gullwings) and ECLS Bay "Knee" Walls to serve as a "partial temporary backbone" to mount these walls~~			
6	~~Verify that fidelity IIB mounting brackets for the docking light assembly have been fabricated (if they were required)~~	~~Fidelity IIB mounting brackets for the docking light assembly have been fabricated~~			
5	Verify four seat pallet strut to forward bulkhead brackets fabricated	Fidelity IIB mounting brackets fabricated			
6	Verify D&C Struts cut and assembled; and that D&C Panel assembly completed	D&C struts cut and assembled; and D&C panel assembled			

CR TITLE: CWG IDIQ Support for FY11

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
7	Verify that the "temporary backbone" structure has been installed to support the Avionics and ECLS Bay Walls	The "temporary backbone" structure has been installed and supports the Avionics and ECLS Bay Walls			
8	Verify that the seat pallet and eight struts have been installed	The seat pallet and eight struts have been installed			
9	Verify that the D&C console and eight struts have been installed	The D&C console and eight struts have been installed			
10	Verify that the Auxiliary Bus Control Unit has been installed	The Auxiliary Bus Control Unit has been installed			
11	Verify that the Cabin air duct/diffuser has been installed	The Cabin air duct/diffuser has been installed			
12	Verify that the Contingency Gas Analyzer (CGA) has been installed	The Contingency Gas Analyzer (CGA) has been installed			
~~13~~	~~Verify that the Contingency N2 valve has been installed~~	~~The Contingency N2 valve has been installed~~			
~~14~~ 13	Verify that the Contingency O2 port has been installed	The Contingency O2 port has been installed			
~~15~~ 14	Verify that the Contingency O2 valves have been installed	The Contingency O2 valves have been installed			
~~16~~ 15	Verify that the docking light power panel has been installed	The docking light power panel has been installed			
~~17~~ 16	Verify that the HEPA filter has been installed	The HEPA filter has been installed			
~~18~~	~~Verify that the negative pressure relief valve has been installed~~	~~The negative pressure relief valve has been installed~~			
~~19~~	~~Verify that the Smoke detector has been installed~~	~~The Smoke detector has been installed~~	-		-

CR TITLE: CWG IDIQ Support for FY11

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
17	Verify installation of CGA Display	CGA Display installed			
18	Verify installation of speaker box	Speaker box installed			
19	Verify installation of mounting holes for NPRV, docking vestibule equalization valve, and the N2 valve assembly	mounting holes for NPRV, docking vestibule equalization valve, and the N2 valve assembly installed			
20	Verify that ~~four~~ two Umbilical interface fixtures have been installed	~~Four~~ Two Umbilical interface fixtures have been installed			
21	Adjust the pallet and struts to demonstrate two to three "stroked" pallet configurations, as defined by the Cockpit Working Group.	Two to three CWG-defined "stroked" pallet configurations have been demonstrated.			
22	Verify that a log of requested task events has been maintained showing task submission date, task delivery date, date of Safety Review, notes on outcome of Safety Review, and total expenditures to-date	A log of requested task events exists showing task submission date, task delivery date, date of Safety Review, notes on outcome of Safety Review, and total expenditures to-date			
23	Verify that an IDIQ has been created to support completion of Orion mockup tasks defined in this CR	An IDIQ has been created to support completion of Orion mockup tasks defined in this CR			

CR NO.: 2375 Rev B	DX CHANGE REQUEST

CR TITLE: CWG IDIQ Support for FY11

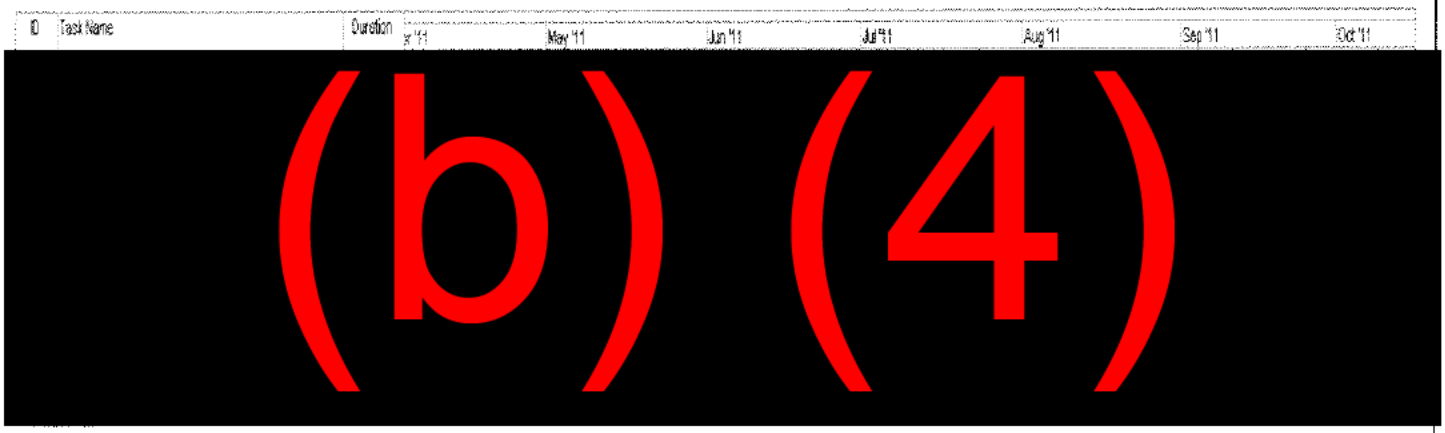
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
24	Verify that general facility support was provided to support requests for evaluation events that were scheduled through the SVMF Facility Utilization Request process	General facility support was provided to support requests for evaluation events that were scheduled through the SVMF Facility Utilization Request process			
25	Verify that technician event support was provided as required.	Technician event support was provided as required			
26	Verify that engineering support to aid the Students Shaping America's Next Spacecraft (SSANS) Program was provided as needed	Engineering support to aid the Students Shaping America's Next Spacecraft (SSANS) Program was provided as needed			
27	Verify installation drawings for D&C panel and struts submitted	Installation drawings submitted			
28	Verify receipt of the monitor and PC	Monitor and PC received			
29	Verify receipt of the Yellow Jacket Pro 5.8 diversity receivers and patch directional antennas	Receivers and Antennas received			

CR NO.: 2375 Rev B	DX CHANGE REQUEST

CR TITLE: CWG IDIQ Support for FY11

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Project Engineering	Management	Technicians	Material
Rev A	(b) (4)				
Rev B					

CR NO.: 2375 Rev B	DX CHANGE REQUEST
CR TITLE: CWG IDIQ Support for FY11	

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO914 Rev A	03/13/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO914 Rev A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 21, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO914 Rev A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO914 Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer L. Krause
Jennifer Krause — Contracting Officer — 3/13/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 914 Rev A is to: FY12 FFT Retirement The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is -$7,993.94 Work is to be completed by June 21, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	-7,993.94	-7,993.94	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total -7,993.94

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.1 (485310)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Disassemble the FFT and remove from Bldg. 9N. The tasks defined in this CR represent the tasks that NASA would under take to safely remove the Shuttle Artifact from Bldg. 9N for disposition. Project scheduling to incorporate all relevant tasks including recipient responsibilities. Project costs to include only NASA approved tasks.

Rev A: Updated to remove lifting system (moved to 2518), and disassembly of tail section from metal frame; add estimation development costs for CR-2518. Risk 08 and Risk 10 impacts also incorporated into cost and schedule.

7. RATIONALE
The FFT is being transitioned, and retired from training in Bldg. 9N. The floor space is required for future space exploration and training. The FFT is being removed from Bldg. 9N in accordance with NASA Headquarters, JSC Property and the Texas State Historical Preservation Office guidelines.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Develop list of non-NASA tagged hardware to be shipped with the FFT.
8.2 Develop list of NASA tagged hardware to be shipped with the FFT.
8.3 Develop list of items to remain installed and items to be removed from the FFT.
8.4 Remove items from the FFT and stage for disposition.
8.5 Disconnect Power, Video, Audio, and Air Conditioning from the FFT.
8.6 Support JSC Property with de-tagging process.
~~8.7 Design Lifting system for moving the sections from Bldg. 9N to loading area.~~ – **Moved to CR-2518 by Rev A**
(continued)

9. NEED DATE: (support date in block 7 rationale) 03/30/12	10. CR SUBMISSION DATE: 10/12/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 10/12/11

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: NASA Global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: NASA Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$279,900~~ **Rev A**: $271,800	20. NEGOTIATED DELIVERY DATE: ~~03/30/12~~ **Rev. A**: 06/21/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

REQUIREMENTS/REFERENCES (continued):

8.8 Fabricate Lifting Hardware for the FFT.

8.9 Separate the FFT into 4 main sections, crew compartment, two payload bay sections, and tail section. Provide HEPA filter vacuum cleaner, respirators and coveralls necessary to address lead and zinc chromate present in the paint. – **Modified by Rev A (SCIF-02)**

8.10 Disassemble tail section by removing the following: Vertical stabilizer, two OMS Pods, three engine bells.

8.11 Remove the following from the payload bay of the FFT: payload bay doors, airlock, tunnel adapter, RMS arm, Ku-Band antenna, cameras and pan and tilt units, and scaffold.

8.12 Disassemble the 1307 Bulkhead from the payload bay of the FFT to reduce the height.

8.13 Disassemble FFT crew compartment from tilt base.

~~8.14 Disassemble FFT Tail section from metal frame if required for lifting operations~~. – **Deleted by Rev A**

8.15 Install Lifting Hardware on the FFT sections.

8.16 Lift the FFT sections to the staging area.

8.17 Safety Review conducted on 10/06/11 identified the following documents as deliverables: Lift Package, Lift Hazard Analysis Report, and Stress Analysis Report.

8.18 NSOC shall provide the project plan and IDIQ proposal for the Seattle MOF RSAA project. – **Added by Rev A (SCIF-01)**

8.19 Touch up paint for FFT nose wheel well to cover up signatures and touch up paint under side hatch. – **Added by Rev A (SCIF-02)**

8.20 Move OMS PODS from current location to another location to provide floor space to work on the FFT dismantling. – **Added by Rev A (SCIF-03)**

8.21 Move FFT tail section to outside of Bldg 9NE. – **Added by Rev A (SCIF-03)**

SCIF-01: Added requirement 18.

SCIF-02: Revised requirement 9 to include PPE due to paint analysis finding lead and zinc chromate in the paint. Added requirement 19.

SCIF-03: Deleted requirement 14. Removed additional scope defined under the baseline CR related to the longeron support frame, payload bay, and top level drawing of the FFT mockup. Reduced related Logistics and Property Transfer paperwork. Added requirements 20 and 21. Noted occurrence of Risk 08 with associated cost impact.

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A			
2	Verify there are no unidentified pinch points.	N/A			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A			
4	Verify by inspection that the list of non-NASA tagged items and NASA tagged items is delivered to JSC property. The list includes items removed from the FFT and items installed.	Two lists of items (tagged/non-tagged) delivered to JSC property		**8.1** **8.2** **8.3**	
5	Verify by inspection that the items removed from the FFT are staged for disposition.	Compare items listed to items in staging area.		**8.4**	
6	Verify by visual inspection that the Power, Video, Audio, and Air Conditioning have been disconnected from the FFT.	The FFT is separated from Power, Video, Audio, and Air Conditioning		**8.5**	
7	Verify by inspection that SVMF Property and Logistics supported JSC Property with de-tagging process.	The NASA tagged items list has the property tags removed.		**8.6**	
8	Verify by inspection that the lifting hardware has been fabricated and is stamped by JSC riggers.	Lifting hardware has been stamped by JSC riggers.		~~**8.7**~~ **8.8**	**Modified by Rev A**

(continued)

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan) (continued)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
9	Verify by visual inspection that the FFT has been separated into 4 main sections, crew compartment, two payload bay sections, and tail section, and the following items have been removed from the FFT: External Airlock, Tunnel Adapter, RMS arm, Ku Band Antenna, Cameras and Pan and Tilt units, and scaffolding. The following items have been removed from the Tail Section: Vertical Stabilizer, two OMS Pods, and three Engine Bells.	Visual inspection of the FFT and components shows that the FFT is separated into 4 main sections and the large components have been removed per the requirements.		**8.9** **8.10** **8.11**	
10	Verify by inspection that the 1307 Bulkhead height has been reduced.	The 1307 Bulkhead should be lower in height than the sides of the payload bay.		**8.12**	
11	Verify by inspection that the FFT crew compartment has been removed from the tilt base and is installed on the floor stand.	The FFT crew compartment is installed on the floor stand.		**8.13**	
12	~~Verify by visual inspection that the FFT tail section has been removed from metal frame.~~	~~The FFT tail section is separated from the metal support frame.~~		**~~8.14~~**	**Deleted by Rev A**
13	Verify by visual inspection that the lifting hardware is installed on the FFT	The lifting hardware is installed on the FFT.		**8.15**	
14	Verify by visual inspection that the FFT sections have been moved to the staging area.	The FFT sections is moved to the staging area.		**8.16**	
15	Verify completion of project plan and IDIQ proposal	The project plan and IDIQ proposal was submitted.		**8.18**	

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

SCHEDULE MILESTONES: (complete or reference separate project plan)

Rev A Schedule

ID	Task Name	Duration

er 2011 November 201 December 201 January 2012 February 2012 March 2012 April 2012 May 2012 June 2012 July 201

(b) (4)

CR NO.: 2478 Rev A	DX CHANGE REQUEST

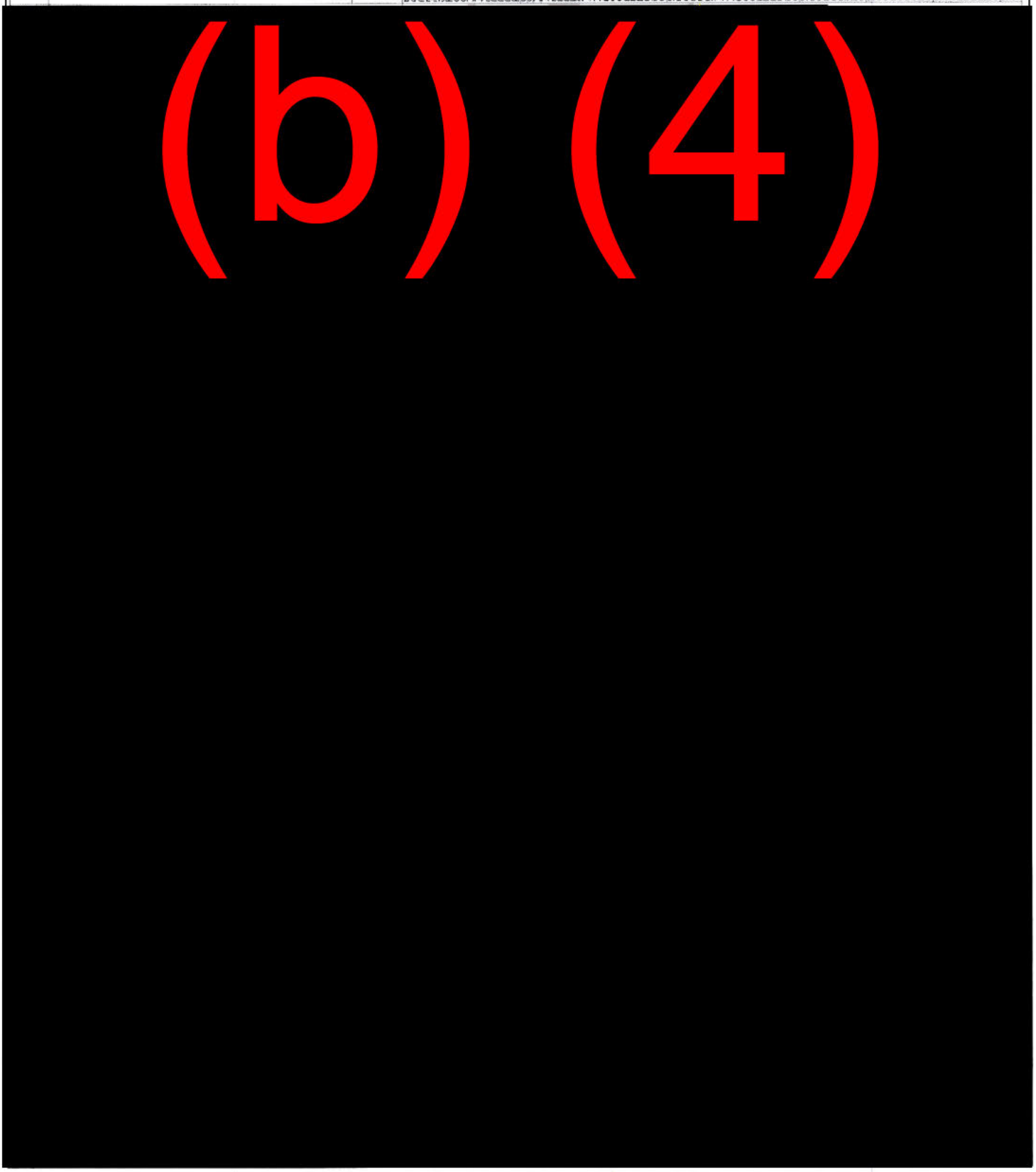
CR TITLE: FFT Transition and Retirement

SCHEDULE MILESTONES: (complete or reference separate project plan)

Rev A Schedule (continued)

ID	Task Name	Duration

er 2011 November 2011 December 2011 January 2012 February 2012 March 2012 April 2012 May 2012 June 2012 July 201



CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

ASSUMPTIONS:

(b) (4)

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years):

(b) (4)

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years):

(b) (4)

(continued)

CR NO.: 2478 Rev A	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

	Design	Project Engineering	Management and Support	Technicians	Material
Baseline		(b) (4)			
Rev A					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order
NNJ10HD35C DO914	10/27/11

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.

Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO914

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO914

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO914

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 10/27/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 914 is to: FFT Retirement CR-2478 Cost Disassemble the FFT and remove from Bldg. 9N. The estimated cost is (b) (4) The estimated award fee is The estimated incentive fe (b) (4) The total value of this Delivery Order is $279,814 Work is to be completed by March 30, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	279,814.00	279,814.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 279,814.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: Shuttle T/R

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Disassemble the FFT and remove from Bldg. 9N. The tasks defined in this CR represent the tasks that NASA would under take to safely remove the Shuttle Artifact from Bldg. 9N for disposition. Project scheduling to incorporate all relevant tasks including recipient responsibilities. Project costs to include only NASA approved tasks.

7. RATIONALE
The FFT is being transitioned, and retired from training in Bldg. 9N. The floor space is required for future space exploration and training. The FFT is being removed from Bldg. 9N in accordance with NASA Headquarters, JSC Property and the Texas State Historical Preservation Office guidelines.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Develop list of non-NASA tagged hardware to be shipped with the FFT.
8.2 Develop list of NASA tagged hardware to be shipped with the FFT.
8.3 Develop list of items to remain installed and items to be removed from the FFT.
8.4 Remove items from the FFT and stage for disposition.
8.5 Disconnect Power, Video, Audio, and Air Conditioning from the FFT.
8.6 Support JSC Property with de-tagging process.
8.7 Design Lifting system for moving the sections from Bldg. 9N to loading area.

9. NEED DATE: (support date in block 7 rationale) 03/30/12	10. CR SUBMISSION DATE: 10/12/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 10/12/11

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: NASA Global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: NASA Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $279,900	20. NEGOTIATED DELIVERY DATE: 03/30/11

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____
Date: _____
CCB CHAIR: _____
Date: _____

COTR for CRs with Cost Impact Only
COTR: _____
Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

REQUIREMENTS/REFERENCES (cont.):

8.8 Fabricate Lifting Hardware for the FFT.
8.9 Separate the FFT into 4 main sections, crew compartment, two payload bay sections, and tail section.
8.10 Disassemble tail section by removing the following: Vertical stabilizer, two OMS Pods, three engine bells.
8.11 Remove the following from the payload bay of the FFT: payload bay doors, airlock, tunnel adapter, RMS arm, Ku Band antenna, cameras and pan and tilt units, and scaffold.
8.12 Disassemble the 1307 Bulkhead from the payload bay of the FFT to reduce the height.
8.13 Disassemble FFT crew compartment from tilt base.
8.14 Disassemble FFT Tail section from metal frame if required for lifting operations.
8.15 Install Lifting Hardware on the FFT sections.
8.16 Lift the FFT sections to the staging area.
8.17 Safety Review conducted on 10/06/11 identified the following documents as deliverables: Lift Package, Lift Hazard Analysis Report, and Stress Analysis Report.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A			
2	Verify there are no unidentified pinch points.	N/A			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A			
4	Verify by inspection that the list of non-NASA tagged items and NASA tagged items is delivered to JSC property. The list includes items removed from the FFT and items installed.	Two lists of items (tagged/non-tagged) delivered to JSC property		**8.1** **8.2** **8.3**	
5	Verify by inspection that the items removed from the FFT are staged for disposition.	Compare items listed to items in staging area.		**8.4**	
6	Verify by visual inspection that the Power, Video, Audio, and Air Conditioning have been disconnected from the FFT.	The FFT is separated from Power, Video, Audio, and Air Conditioning		**8.5**	
7	Verify by inspection that SVMF Property and Logistics supported JSC Property with de-tagging process.	The NASA tagged items list has the property tags removed.		**8.6**	

CR TITLE: FFT Transition and Retirement

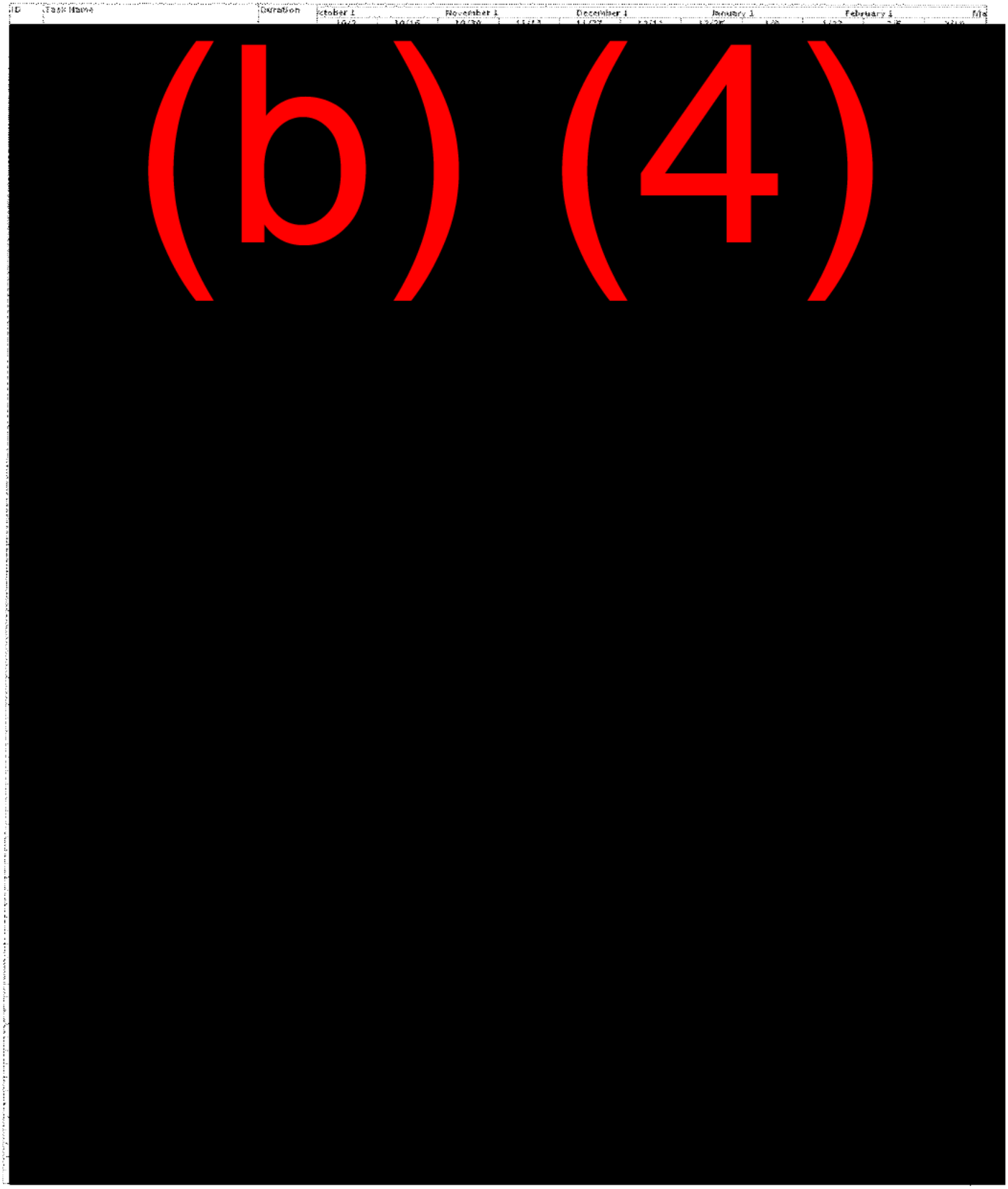
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan) cont.

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
8	Verify by inspection that the lifting hardware has been fabricated and is stamped by JSC riggers.	Lifting hardware has been stamped by JSC riggers.		**8.7 8.8**	
9	Verify by visual inspection that the FFT has been separated into 4 main sections, crew compartment, two payload bay sections, and tail section, and the following items have been removed from the FFT: External Airlock, Tunnel Adapter, RMS arm, Ku Band Antenna, Cameras and Pan and Tilt units, and scaffolding. The following items have been removed from the Tail Section: Vertical Stabilizer, two OMS Pods, and three Engine Bells.	Visual inspection of the FFT and components shows that the FFT is separated into 4 main sections and the large components have been removed per the requirements.		**8.9 8.10 8.11**	
10	Verify by inspection that the 1307 Bulkhead height has been reduced.	The 1307 Bulkhead should be lower in height than the sides of the payload bay.		**8.12**	
11	Verify by inspection that the FFT crew compartment has been removed from the tilt base and is installed on the floor stand.	The FFT crew compartment is installed on the floor stand.		**8.13**	
12	Verify by visual inspection that the FFT tail section has been removed from metal frame.	The FFT tail section is separated from the metal support frame.		**8.14**	
13	Verify by visual inspection that the lifting hardware is installed on the FFT	The lifting hardware is installed on the FFT.		**8.15**	
14	Verify by visual inspection that the FFT sections have been moved to the staging area.	The FFT sections is moved to the staging area.		**8.16**	

CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

SCHEDULE MILESTONES: (complete or reference separate project plan) (continued)

Schedule

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

ASSUMPTIONS

(b) (4)

CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2478	DX CHANGE REQUEST

CR TITLE: FFT Transition and Retirement

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

	Design	Project Engineering	Management and Support	Technicians	Material
Baseline FY12	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO915	11/01/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO915

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 1, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO915

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO915

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Contracting Officer — Date: 11/3/11

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 915 is to: Est. Baseline Projects CR-2485 Cost The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is (b) (4) Work is to be completed by August 1, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2485	DX CHANGE REQUEST

CR TITLE: NSOC Estimation of Above Baseline FY12 Projects

1. REQUESTOR: Jeff Musler	2. PHONE: 30720	3. E-MAIL: Jeffery.l.musler@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER:

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provides IDIQ funding for NSOC to provide estimates and ROMs above the FY 12 contract baseline.

7. RATIONALE
Protects baseline estimation for baseline projects and allows for planning for potential additional funds.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Provide estimates for the following:

1. ISS platforms, to be revised later to include CEV move and PDL moves
2. EVA hatch trainer
3. Regen ECLSS w/ARFTA
4. ISS Pantry
5. Flight article MPLM integration into SVMF ROM (FY13 imp)
6. PTT software Update
7. Quintron Repl. Study
8. One additional ISS pantry sized (medium) IDIQ estimate
9. One additional Regen ECLSS sized (large) IDIQ estimate
10. Additionally, provide 6 ROMS similar to ISS Program CR impacts as requested by SVMF management.

Note: TOM determined no TRR required on 10/12/11

9. NEED DATE: (support date in block 7 rationale) 01/30/12	10. CR SUBMISSION DATE: 09/29/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 10/06/11

12. NASA POC: Allison McIntyre	13. PHONE: x47115	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: (b) (4)	20. NEGOTIATED DELIVERY DATE: 08/01/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2485	DX CHANGE REQUEST

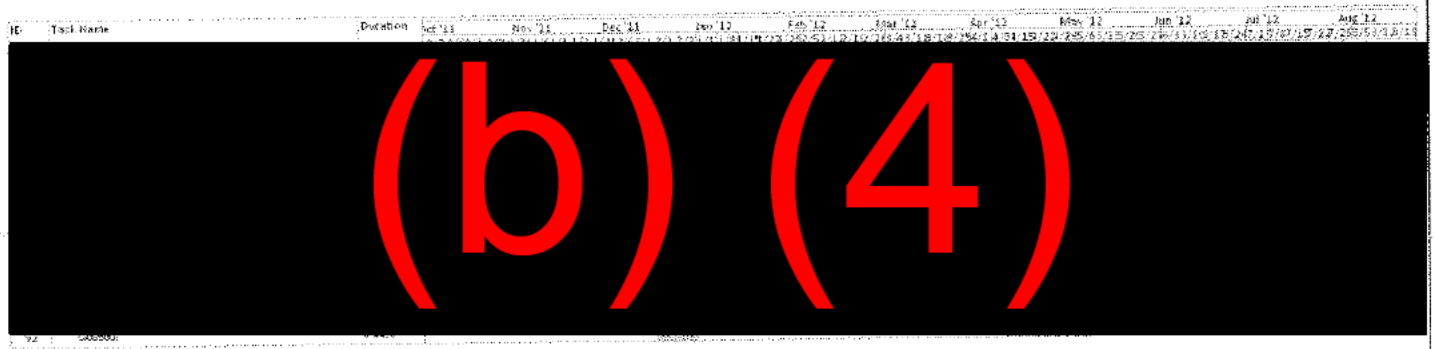
CR TITLE: NSOC Estimation of Above Baseline FY12 Projects

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Submittal of all requested ROM's / Estimates or expiration of planned duration.

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2485	DX CHANGE REQUEST

CR TITLE: NSOC Estimation of Above Baseline FY12 Projects

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

None identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technician Support	Material
(b) (4)	(b) (4)	(b) (4)	(b) (4)	(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 916B	09/13/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 916B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 916B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO916 B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 916B is to: Shuttle Loose Equipment Retirement CR-2497B The estimated cost is (b) (4) The estimated award fee is $ (b) (4) The estimeated incentive fee is (b) (4) The total value of this Revision is $82,345.62 The total value of this Delivery Order is $99,458.78 Work is to be completed by September 28, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	82,345.62	82,345.62	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 82,345.62

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2497 Rev. B	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 3.6.1 (485310)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
The Transition and Retirement of the Shuttle program includes the Loose Equipment items used to support Shuttle training. The Shuttle training hardware shall be dispositioned according to JSC property requirements and procedures.
Rev A: Reduced scope to reflect only those items already identified as being donated.
Rev B: Added SCIFs1-6

7. RATIONALE:
The Shuttle Loose Equipment includes many components of value to the ISS program and future NASA programs. Transfer the Shuttle Loose Equipment ~~per NASA direction to support other programs. The remaining items will be screened through GSA.~~ Museum Artifacts per NASA/GSA direction to recipients. The remaining items will be dispositioned separately under JSC N-Prop and SVMF operating procedures as part of the normal property operations.- **Rev A**

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
~~8.1 Separate the Shuttle Loose Equipment into three groups:~~ **- Rev A**
~~8.1.1 Prescreened Museum Artifacts.~~ **- Rev A**
~~8.1.2 NASA selected items for other NASA programs.~~ **- Rev A**
~~8.1.3 Items to be dispositioned through GSA screening.~~ **- Rev A**
8.2 Transfer the Museum Artifacts through JSC property.
8.3 Retain the NASA selected items in Loose Equipment.
8.4 ~~Transfer the items from group 8.1.3 through N-PROP for GSA screening.~~ **- Rev A**
8.5 Develop a spreadsheet of NASA tagged Museum Artifact items dispositioned through JSC property.
8.6 Develop a spreadsheet of non-tagged Museum Artifact items dispositioned through JSC property.
Note: Safety Review waived by TOM 10/31/11.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 10/11/11
9-28-2012	Rev. B 8-22-2012

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED Signature: _____
Date: 10/17/2012 Rev. B Review Date: 08/22/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ronny newman	281-483-1793	Ronny.l.newman@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
PROJECT ENGINEER: (b) (4)	(b) (4)	(b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$94,000~~ **Rev A:** ~~$17,100~~ **Rev B:** $99,500	~~09/28/12~~ **Rev A:** ~~08/03/2012~~ **Rev B:** 9/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____
Date: _____
CCB CHAIR: _____
Date: _____

COTR for CRs with Cost Impact Only
COTR: _____
Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2497 Rev. B	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment

REQUIREMENTS/REFERENCES (cont.):

The following are added by Rev. B

8.7 Process and excess the remaining Shuttle Loose Equipoment through JSC Property per JSC T&R form.
8.8 Clear out the kitting room including excessing Shuttle only items and moving ISS items to Loose Equipment.
8.9 Stamp and Box Shuttle Documentation stored behind room 3100 in Bldg. 9N.
8.10 Carpet Kitting Room
8.11 Purchase Carpet Squares 384 sq yards, Style 146710200, Color 9247.
8.12 Provide Shuttle Documentation Archive Support for DX3 to catalog binders.
8.13 Install Carpet Tile at former Shuttle Trainer CCT-1 location.
8.14 Provide NBL Shuttle Documentation Archive Support for DX12.
8.15 Provide Shuttle Documentation Archive Support for CCT-2.
8.16 Provide 4 specialty lifting slings, 12 inch wide, 45 ft long, 19,200 lbs. vertical lift rating, P/N EE1-0912 x 45
8.17 Provide two more pallets of carpet squares, 388 sq yards total, Earth II / Butte style number 1467102500, Color number 9247
8.16 Provide technicians and supplies for cleaning up the building during the weekend from all the Shuttle Retirement Activities.

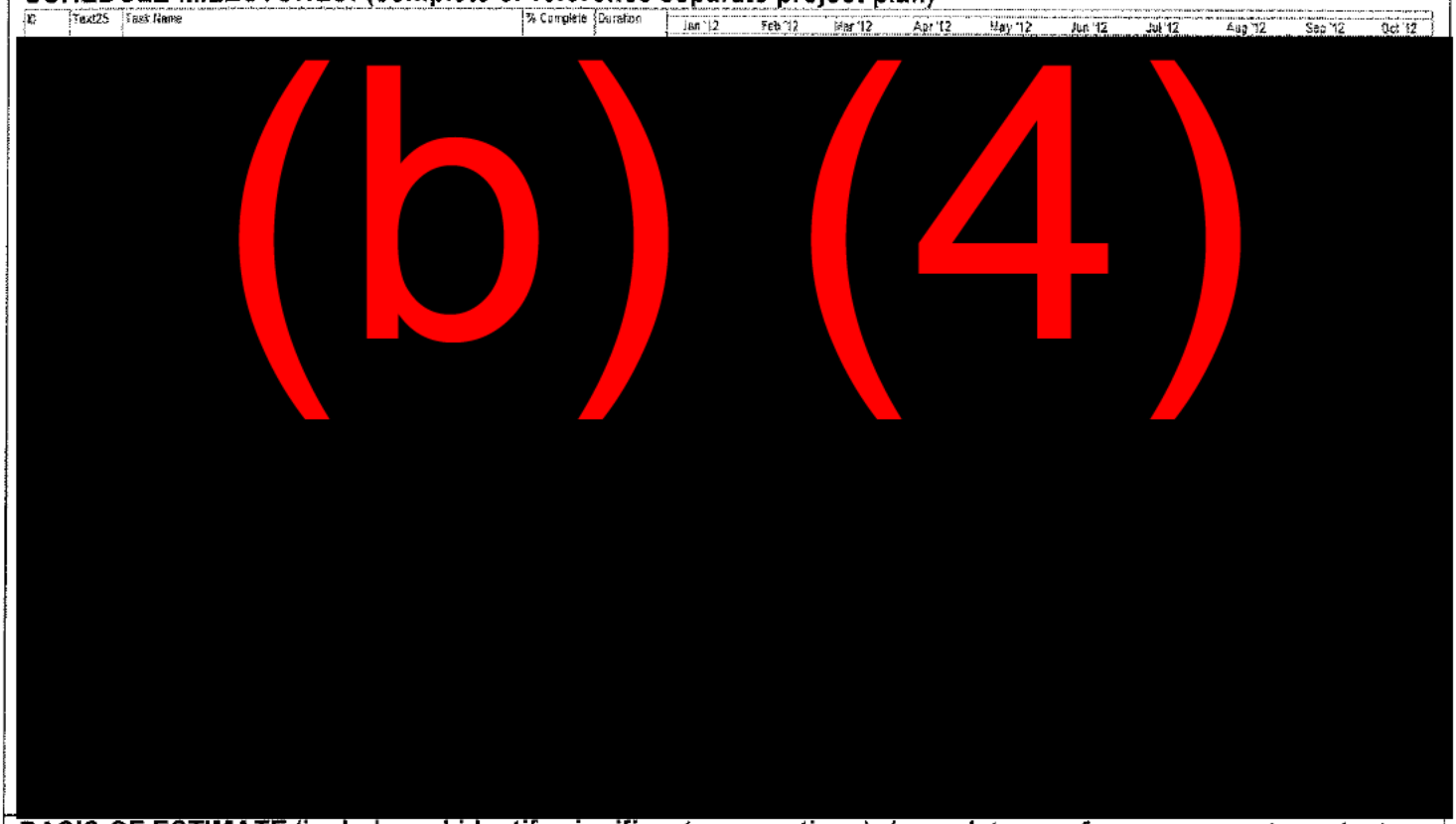
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

The CR will be closed and acceptad as complete with the disposition of Shuttle Loose Equipment listed through JSC Property.
Acceptance Criteria
8.1 Requirement Deleted by Rev. A
8.2 The Museum Artifiacts times have been transferred, verified by visual inspection of transfer documentation.
8.3 NASA selected items have been retained, verified by visual inspection of items in Loose Equipment.
8.4 Requirement Deleted by Rev. A
8.5 Develop spreadsheet of NASA tagged Musuem Artifacts dispositioned through JSC property, verified by visual inspection of spreadsheet.
8.6 Develop spreadsheet of Non-NASA tagged Museum Artifacts dispositioned through JSC property, verified by visual inspection of spreadsheet.
8.7 Process and excess remaining Shuttle Loose Equipment through JSC property, verified by visual inspection of transfer documentation.
8.8 Clear out the kitting room including Shuttle only items and moving ISS items to Loose equipment, verify by visual inspection of kitting room that theitems have been moved out.
8.10 Carpet the kitting room, verify by visual inspection that the kitting room is carpeted.
8.11 Purchase carpet squares, 384 square yards, Style 146710200, Color 9247, verify by visual inspection of receiving paperwork.
8.12 Provide Shuttle Documentation Archive Support for DX3 to catalog binders, verify by visual inspection of DX3 retirement folders.
8.13 Install Carpet Tile at former Shuttle Trainer CCT-1 location, verify by visual inspection of installed carpet tiles.
8.14 Provide NBL Shuttle Documentation Archive Support for DX12, verify by visual inspection of DX12 retirement folders.
8.15 Provide Shuttle Documentation Archive Support for CCT-2, verify by visual inspection of DX14 retirement folders.
8.16 Provide 4 specialty lifting slings, 12 inch wide, 45 ft long, 19,200 lbs. vertical lift rating, P/N EE1-0912 x 45, verify by visual inspection of receiving paperwork.
8.17 Provide two more pallets of carpet squares, 388 sq yards total, Earth II / Butte style number 1467102500, Color number 9247, verify by visual inspection of receiving paperwork.
8.18 Provide technicians and supplies for cleaning up the building during the weekend from all the Shuttle Retirement Activities, verify by visual inspection that the has been cleaned of the plastic sheets, and that the paint dust has been wiped off handrails.

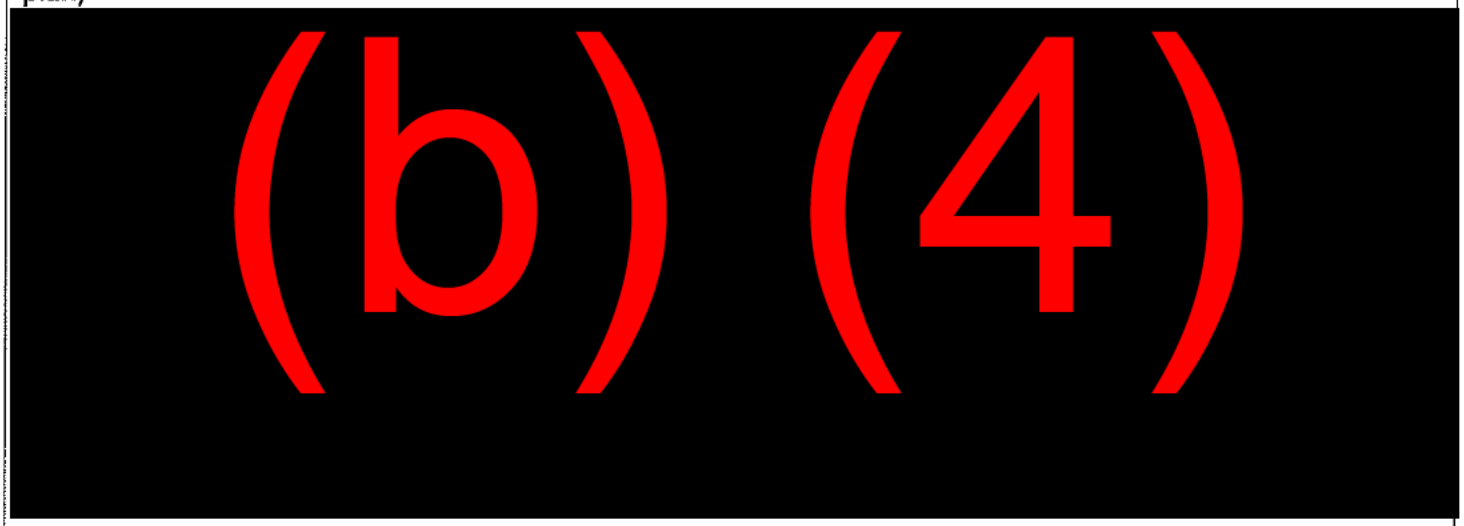
CR NO.: 2497 Rev. B	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



CR NO.: 2497 Rev. B	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Engineering and Program Support	Management	Technicians	Material
Baseline					
Rev. A					
Rev B					

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO916 Rev A	03/13/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO916 Rev A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 03, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO916 Rev A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO916 Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer L. Krause
Jennifer L. Krause 3/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 916 Rev A is to: Shuttle Loose Equipment Retirement The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is -$77.093.64 Work is to be completed by August 03, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	-77,093.64	-77,093.64	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total -77,093.64

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2497 Rev A	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.1 (485310)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
The Transition and Retirement of the Shuttle program includes the Loose Equipment items used to support Shuttle training. The Shuttle training hardware shall be dispositioned according to JSC property requirements and procedures.
Rev A: Reduced scope to reflect only those items already identified as being donated.

7. RATIONALE
The Shuttle Loose Equipment includes many components of value to the ISS program and future NASA programs. Transfer the Shuttle Loose Equipment ~~per NASA direction to support other programs. The remaining items will be screened through GSA.~~ Museum Artifacts per NASA/GSA direction to recipients. The remaining items will be dispositioned separately under JSC N-Prop and SVMF operating procedures as part of the normal property operations.- **Rev A**

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
~~8.1 Separate the Shuttle Loose Equipment into three groups:~~ **- Rev A**
~~8.1.1 Prescreened Museum Artifacts.~~ **- Rev A**
~~8.1.2 NASA selected items for other NASA programs.~~ **- Rev A**
~~8.1.3 Items to be dispositioned through GSA screening.~~ **- Rev A**
8.2 Transfer the Museum Artifacts through JSC property.
8.3 Retain the NASA selected items in Loose Equipment.
8.4 ~~Transfer the items from group 8.1.3 through N-PROP for GSA screening.~~ **- Rev A**
8.5 Develop a spreadsheet of NASA tagged Museum Artifact items dispositioned through JSC property.
8.6 Develop a spreadsheet of non-tagged Museum Artifact items dispositioned through JSC property.
Note: Safety Review waived by TOM 10/31/11.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
09/28/12	10/11/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 10/17/11

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ronny Newman	281-483-1793	Ronny.l.newman@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: [redacted] (b) (4)	**16. PHONE:** [redacted]	**17. E-MAIL:** [redacted] (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$94,000~~ **Rev A:** $17,100	~~09/28/12~~ **Rev A:** 08/03/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____
Date: _____
CCB CHAIR: _____
Date: _____

COTR for CRs with Cost Impact Only
COTR: _____
Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2497 Rev A	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

The CR will be closed and accepted as complete with the disposition of Shuttle Loose Equipment through JSC Property.

STEP	Operato / Equip. Action	Expected Results	Observed Results	Rqmt	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and shar exposed fastener ends are addressed.	This requirement is not applicable, no hardware or equipment fabricated by this CR.			
2	Verify there are no unidentified pinch points.	This requirement is not applicable, no hardware or equipment fabricated by this CR.			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	This requirement is not applicable.			
4	~~Verify the Shuttle Loose Equipment items have been dispositioned to 3 groups, retained, Museum, and Excess by visual inspection of the spreadsheets.~~	~~The Shuttle Loose Equipment items have been dispositioned to 3 groups, one for retained items, one for Museum, and one for Excess, by visual inspection of the spreadsheets.~~		**8.1, 8.3**	**Deleted by Rev A**
5	Verify that the **66** Shuttle Loose Equipment **Museum Artifact** items have been dispositioned through JSC Property by comparing the items listed **to the items picked up** in the folder of Excess Transportation Documents.	The items listed on the Excess Transportation Documents matches the items listed on the spreadsheets in steps 6 and 7.		**8.2, ~~8.4~~**	**Modified by Rev A**
6	Verify that the list of NASA tagged Museum Artifact Shuttle Loose Equipment items has been delivered to DX-14 by checking email.	The email shows that the spreadsheet was sent to DX-14 recipient.		**8.5**	
7	Verify that the list of non-tagged Museum Artifact Shuttle Loose Equipment items has been delivered to DX-14 by checking email.	The email shows that the spreadsheet was sent to DX-14 recipient.		**8.6**	

CR NO.: 2497 Rev A	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

SCHEDULE MILESTONES: (complete or reference separate project plan)

Form: DX-FRM-001

CR NO.: 2497 Rev A	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Engineering and Program Support	Management	Technicians	Material
Baseline		(b) (4)			
Rev. A					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO916	11/09/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO916

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO916

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO916

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer — 11/9/11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 916 is to: Shuttle Loose Equipment Retirement CR-2497 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $94,206.81 Work is to be completed by August 28, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	94,206.81	94,206.81	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 94,206.81

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2497	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: Shuttle T/R

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
The Transition and Retirement of the Shuttle program includes the Loose Equipment items used to support Shuttle training. The Shuttle training hardware shall be dispositioned according to JSC property requirements and procedures.

7. RATIONALE
The Shuttle Loose Equipment includes many components of value to the ISS program and future NASA programs. Transfer the Shuttle Loose Equipment per NASA direction to support other programs. The remaining items will be screened through GSA.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
8.1 Separate the Shuttle Loose Equipment into three groups:
8.1.1 Prescreened Museum Artifacts.
8.1.2 NASA selected items for other NASA programs.
8.1.3 Items to be dispositioned through GSA screening.
8.2 Transfer the Museum Artifacts through JSC property.
8.3 Retain the NASA selected items in Loose Equipment.
8.4 Transfer the items from group 8.1.3 through N-PROP for GSA screening.
8.5 Develop a spreadsheet of NASA tagged items dispositioned through JSC property.
8.6 Develop a spreadsheet of non-tagged items dispositioned through JSC property.
Note: Safety Review waived by TOM 10/31/11.

9. NEED DATE: (support date in block 7 rationale) 09/28/12	10. CR SUBMISSION DATE: 10/11/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 10/17/11

12. NASA POC: Ronny Newman	13. PHONE: 281-483-1793	14. E-MAIL: Ronny.l.newman@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $94,000	20. NEGOTIATED DELIVERY DATE: 09/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2497	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

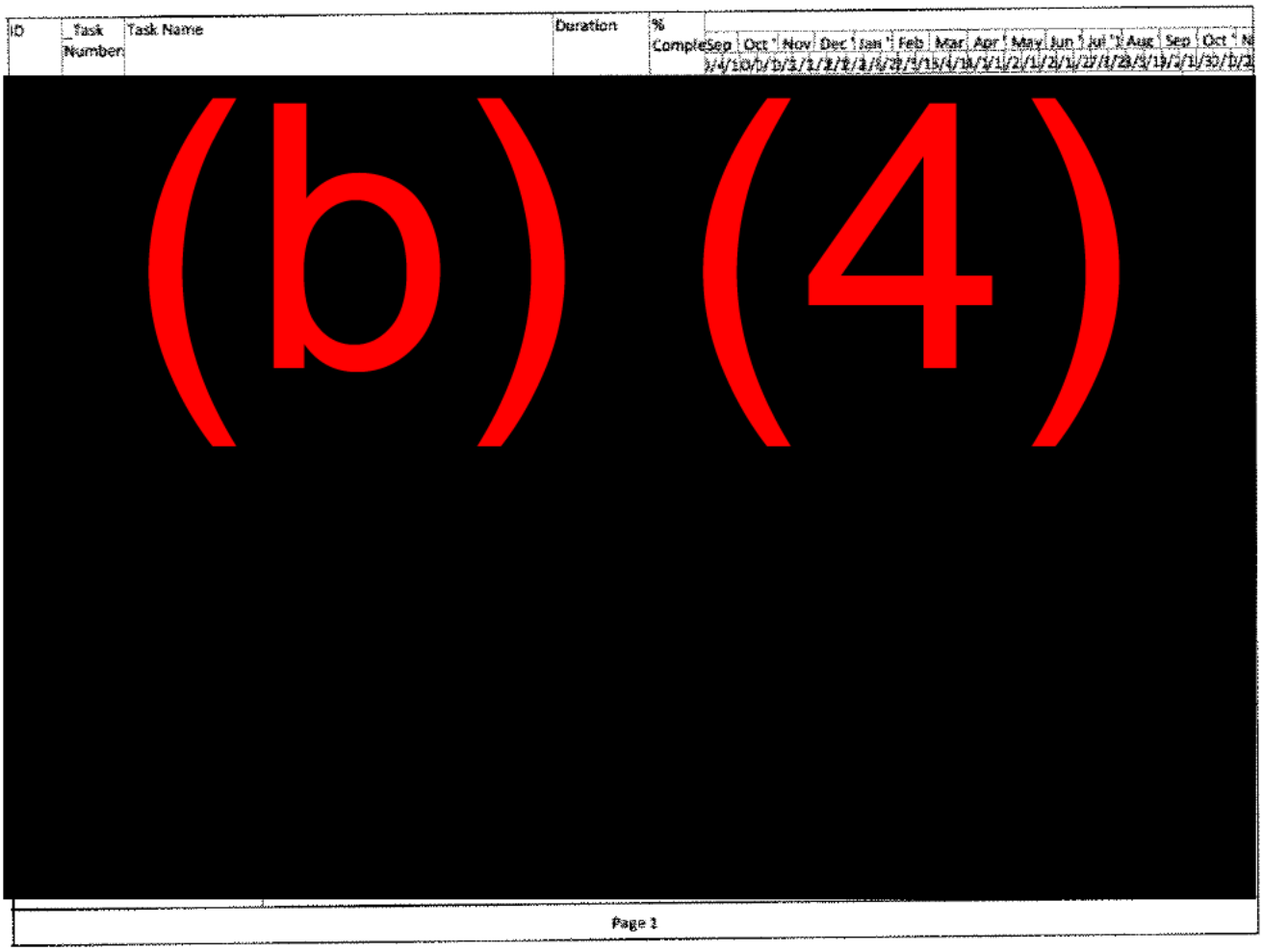
The CR will be closed and accepted as complete with the disposition of Shuttle Loose Equipment through JSC Property.

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and shar exposed fastener ends are addressed.	This requirement is not applicable, no hardware or equipment fabricated by this CR.			
2	Verify there are no unidentified pinch points.	This requirement is not applicable, no hardware or equipment fabricated by this CR.			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	This requirement is not applicable.			
4	Verify the Shuttle Loose Equipment items have been dispositioned to 3 groups, retained, Museum, and Excess by visual inspection of the spreadsheets.	The Shuttle Loose Equipment items have been dispositioned to 3 groups, one for retained items, one for Museum, and one for Excess, by visual inspection of the spreadsheets.		8.1, 8.3	
5	Verify that the Shuttle Loose Equipment items have been dispositioned through JSC Property by comparing the items listed in the folder of Excess Transportation Documents matches the spreadsheets.	The items listed on the Excess Transportation Documents matches the spreadsheets in steps 6 and 7..		8.2, 8.4	
6	Verify that the list of NASA tagged Shuttle Loose Equipment items has been delivered to DX-14 by checking email.	The email shows that the spreadsheet was sent to DX-14 recipient.		8.5	
7	Verify that the list of non-tagged Shuttle Loose Equipment items has been delivered to DX-14 by checking email.	The email shows that the spreadsheet was sent to DX-14 recipient.		8.6	

CR NO.: 2497	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2497	DX CHANGE REQUEST

CR TITLE: Shuttle Loose Equipment Retirement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Engineering and Program Support	Management	Technicians	Material
Baseline	(b) (4)	(b) (4)	(b) (4)	(b) (4)	(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO917	11/09/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO917

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 15, 2011

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO917

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO916

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 11/9/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 917 is to: ER MRV Parts CR-2509 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $5,984 Work is to be completed by November 15, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	5,984.00	5,984.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 5,984.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2509	DX CHANGE REQUEST

CR TITLE: ER MRV Parts

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) 1@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: ER

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Manufacture parts for Robotics division. Material for Part number ch2a0301039 will be provided by requestor. Blue foam will be provided by NSOC

7. RATIONALE
Requested from ER

8. REQUIREMENTS AND REFERENCES: Manufacture Parts for ER per provided Dwgs

MRV Parts

Name	Outer dimensions	qty	Material
Battery	37" x 19" x 5.25"	3	Bluefoam
DC-DC Converter	18" x 13" x 4.32"	1	Bluefoam
CPCI Chassis	10.4" x 6" x 8.5"	2	Bluefoam
Radiator	13.875" x17.25"x5.25"	1	Bluefoam
Reservoir	9.5" x 6.25" x 3.5"	2	Bluefoam
Pump	13.875" x 4.5" x 3.5"	2	Bluefoam
HVS/PDU LRU	6.1875" x 17" x 13.75"	1	Bluefoam
Air separator	3" x 3" x 3"	2	Bluefoam
(b) (4) part drawing)	4.65" x 3.25" x 0.42"	15	AL6061T6

9. NEED DATE: (support date in block 7 rationale) 11-15-11	10. CR SUBMISSION DATE: 10-31-2011

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED Signature: _____ Date:_____

12. NASA POC: Clayton Waggoner (ER)	13. PHONE: 39160	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: 6000.00	20. NEGOTIATED DELIVERY DATE: 11-15-2011

AUTHORIZATION TO PROCEED

CR NO.: 2509	DX CHANGE REQUEST

CR TITLE: ER MRV Parts

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)
Parts complete per provided drawings and tolerance standards

CR NO.: 2509	DX CHANGE REQUEST

CR TITLE: ER MRV Parts

SCHEDULE MILESTONES: (complete or reference separate project plan)
None

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)
Estimated per manufacturing standards. (b) (4) [redacted]

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)
None identified

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO918 Rev A	03/13/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO918 Rev A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28,2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO918 Rev A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO918 Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer L. Krause

Jennifer Krause 3/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 918 Rev A is to: NSOC Support of Commercial Space Mockups in DX Facilities The estimated cost is -(b) (4) The estimated award fee is -$(b) (4) The estimated incentive fee is The total value of this Delivery Order is -$60,473.57 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	-60,473.57	-60,473.57	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total -60,473.57

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2486 Rev A	DX CHANGE REQUEST

CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

1. REQUESTOR: Angie Prince	2. PHONE: 281.244.1086	3. E-MAIL: angela.r.prince@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.3 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provides IDIQ funding for NSOC to support requirements definition, coordination, and estimating with NASA organizations~~, including Gate A/B review and actions~~ for Commercial Space activities in DX facilities. Also provides for integration and operations support of known mock-ups into SVMF. – **Rev A**
Rev A: Deleted support of commercial pursuits, and requirement for associated Gate A/B reviews. Reduced expected quantity of cost estimates from 3 to 2. Added requirement to support a Commercial Space Infrastructure Working Group.

7. RATIONALE
Supports priority goal for MOD for Commercial Space mockups and activities in DX facilities, in accordance with guidance that SVMF commercial space pursuits will be NASA led.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Develop SVMF integration cost estimates for up to ~~3~~ 2 Commercial Space customers in FY12 as requested. – **Rev A**
2. Integrate SpaceX (Dragon) and Orbital (Cygnus) commercial resupply mockups into the SVMF
3. ~~Support pursuit of up to 4 Commercial Space companies in FY12~~. – **Rev A**
4. ~~Develop up to 4 Gate A/B packages in FY12 as requested~~. – **Rev A**
5. Support development of SpaceX and Orbital MOUs with the SVMF as requested
6. Provide SVMF Operations support for up to 18 Commercial Space events in FY12, including schedule, setup takedown, and loose equipment
7. A TRR will be required for each new mockup as per the review conducted 10/12/11.
8. Support a CS led Commercial Space Infrastructure Working Group to modify existing facility infrastructure and develop any needed processes necessary to engage future commercial space entities. Support bi-weekly meetings and document development. – **Rev A**

9. NEED DATE: (support date in block 7 rationale) 09/30/12	10. CR SUBMISSION DATE: 09/26/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 10/06/11

12. NASA POC: Allison McIntyre	13. PHONE: x47115	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: [redacted] (b) (4)	16. PHONE: [redacted]	17. E-MAIL: [redacted] (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$ 125,600~~ **Rev A:** $65,000	20. NEGOTIATED DELIVERY DATE: 09/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2486 Rev A	DX CHANGE REQUEST

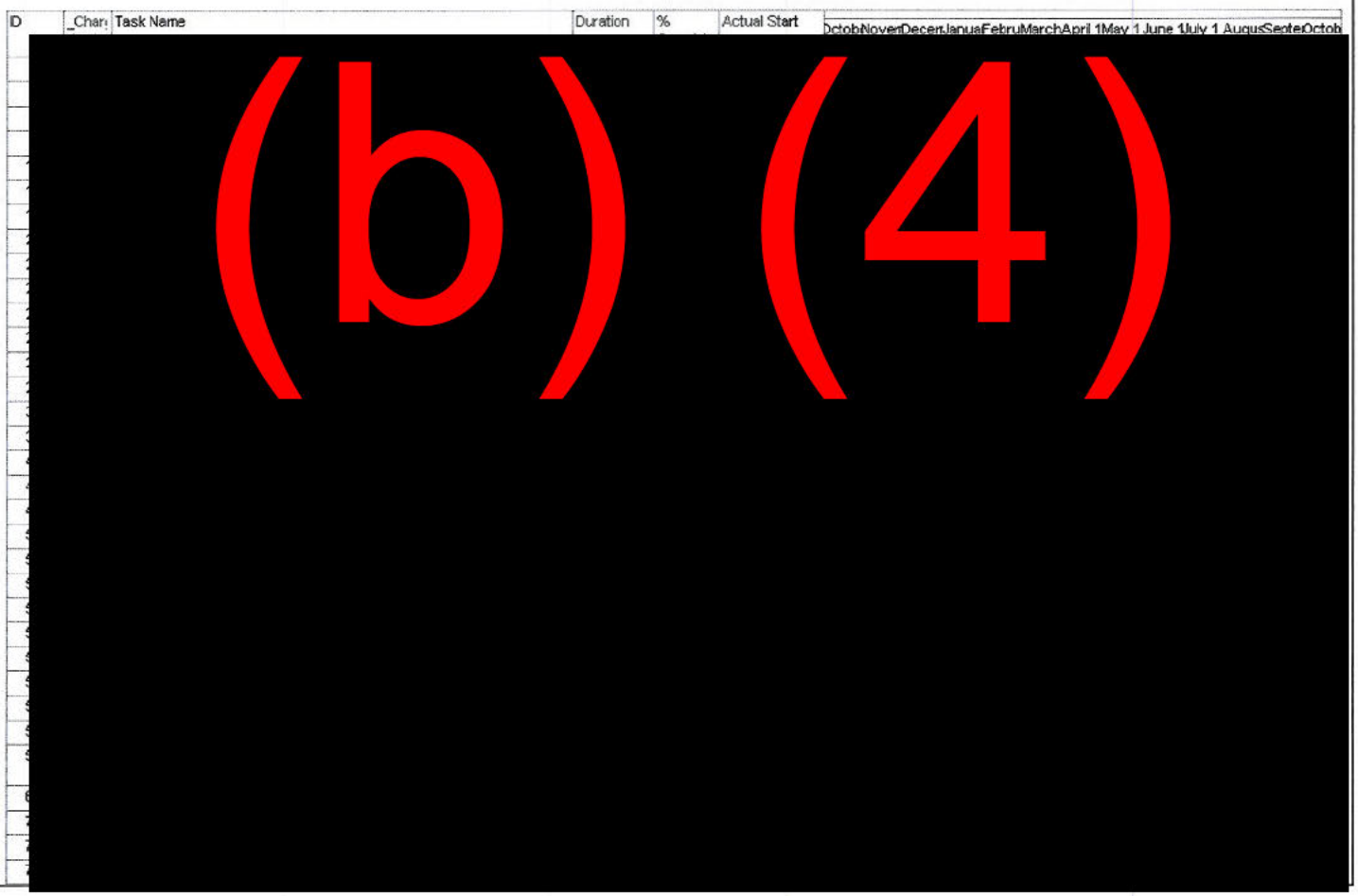
CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

The CR will be closed and accepted as complete following the last support provided on or before 09/28/12.

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2486 Rev A	DX CHANGE REQUEST

CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT : (complete or reference separate project plan)

None identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

~~Pursuit and estimation costs are primary drivers.~~ – **Rev A**

	Travel	Engineering and Program	Management	Technicians	Material
Baseline		(b) (4)			
Rev A					

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO918 Rev B	09/13/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO918 Rev B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28,2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO918 Rev B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO918 Rev B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 918 Rev B is to: NSOC Support of Commercial Space Mockups in DX Facilities The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Revision is -$16,999.85 The total value of this Delivery Order is $47,962.79 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	-16,999.85	-16,999.85	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total -16,999.85

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2486 Rev B	DX CHANGE REQUEST

CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

1. REQUESTOR: Angie Prince	2. PHONE: 281.244.1086	3. E-MAIL: angela.r.prince@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.3 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provides IDIQ funding for NSOC to support requirements definition, coordination, and estimating with NASA organizations~~, including Gate A/B review and actions~~ for Commercial Space activities in DX facilities. Also provides for integration and operations support of known mock-ups into SVMF. – **Rev A**
Rev A: Deleted support of commercial pursuits, and requirement for associated Gate A/B reviews. Reduced expected quantity of cost estimates from 3 to 2. Added requirement to support a Commercial Space Infrastructure Working Group. **Rev B:** Incorporate SCIF01 and remove Cygnus support, reduce CSWG support

7. RATIONALE
Supports priority goal for MOD for Commercial Space mockups and activities in DX facilities, in accordance with guidance that SVMF commercial space pursuits will be NASA led.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Develop SVMF integration cost estimates for up to ~~3~~ 2 Commercial Space customers in FY12 as requested. – **Rev A**
2. Integrate SpaceX (Dragon) ~~and Orbital (Cygnus)~~ commercial resupply mockups into the SVMF **Rev B**
3. ~~Support pursuit of up to 4 Commercial Space companies in FY12~~. – **Rev A**
4. ~~Develop up to 4 Gate A/B packages in FY12 as requested~~. – **Rev A**
5. Support development of SpaceX ~~and Orbital~~ MOUs with the SVMF as requested **Rev B**
6. Provide SVMF Operations support for up to 18 Commercial Space events in FY12, including schedule, setup takedown, and loose equipment
7. A TRR will be required for each new mockup as per the review conducted 10/12/11.
8. Support a CS led Commercial Space Infrastructure Working Group to modify existing facility infrastructure and develop any needed processes necessary to engage future commercial space entities. Support kickoff in april and five weekly meetings from Aug. 21 thru Sept. 21 with minimal document/FRA development support. – **Rev B**

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 09/26/11
09/30/12	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 10/06/11

12. NASA POC:	13. PHONE:	14. E-MAIL:
Allison McIntyre	x47115	global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$ 125,600~~ ~~Rev A: $65,000~~ **Rev B** $48,000	09/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2486 Rev B	DX CHANGE REQUEST

CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

The CR will be closed and accepted as complete following the last support provided on or before 09/28/12.

SCHEDULE MILESTONES: (complete or reference separate project plan)
Rev B

ID	Char Numbe	Task Name	Start

11 December 1 January 21 March 11 May 1 June 21 August 11 October

(b) (4)

CR NO.: 2486 Rev B	DX CHANGE REQUEST

CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT : (complete or reference separate project plan)

None identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

~~Pursuit and estimation costs are primary drivers.~~ – **Rev A**

	Travel	Engineering and Program	Management	Technicians	Material
Baseline		(b) (4)			
~~Rev A~~					
Rev B					

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO918	12/01/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO918

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO918

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO918

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 12/7/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 918 is to: NSOC Support of Commercial Space Mockups in DX Facilities CR-2486 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $125,436.20 Work is to be completed by September 30, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	125,436.20	125,436.20	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 125,436.20

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2486	DX CHANGE REQUEST

CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

1. REQUESTOR: Angie Prince	2. PHONE: 281.244.1086	3. E-MAIL: angela.r.prince@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER:

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provides IDIQ funding for NSOC to support requirements definition, coordination, and estimating with NASA organizations, including Gate A/B review and actions for Commercial Space activities in DX facilities. Also provides for integration and operations support of known mock-ups into SVMF.

7. RATIONALE
Supports priority goal for MOD for Commercial Space mockups and activities in DX facilities, in accordance with guidance that SVMF commercial space pursuits will be NASA led.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Develop SVMF integration cost estimates for up to 3 Commercial Space customers in FY12 as requested
2. Integrate SpaceX (Dragon) and Orbital (Cygnus) commercial resupply mockups into the SVMF
3. Support pursuit of up to 4 Commercial Space companies in FY12
4. Develop up to 4 Gate A/B packages in FY12 as requested
5. Support development of SpaceX and Orbital MOUs with the SVMF as requested
6. Provide SVMF Operations support for up to 18 Commercial Space events in FY12, including schedule, setup takedown, and loose equipment
7. A TRR will be required for each new mockup as per the review conducted 10/12/11.

9. NEED DATE: (support date in block 7 rationale) 09/30/12	10. CR SUBMISSION DATE: 09/26/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 10/06/11

12. NASA POC: Allison McIntyre	13. PHONE: x47115	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: [redacted]	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $ 125,600	20. NEGOTIATED DELIVERY DATE: 09/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2486	DX CHANGE REQUEST

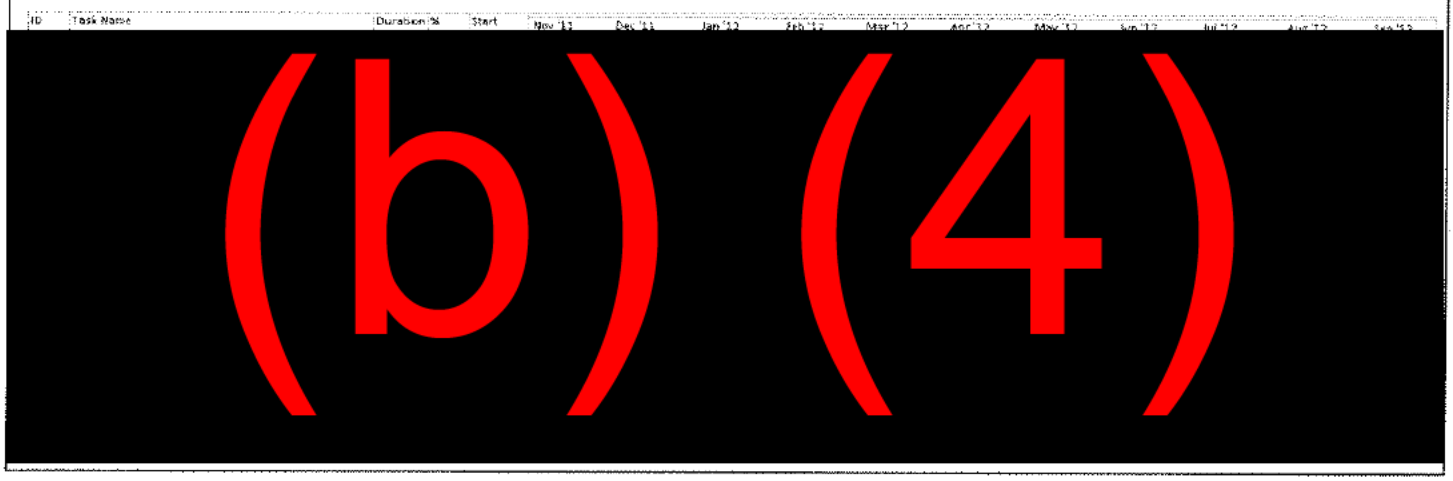
CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

The CR will be closed and accepted as complete following the last support provided on or before 09/28/12.

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2486	DX CHANGE REQUEST

CR TITLE: NSOC Support of Commercial Space Mockups in DX Facilities

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT : (complete or reference separate project plan)

None identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Pursuit and estimation costs are primary drivers

Travel	Engineering and Program	Management	Technicians	Material
	(b) (4)			

(b) (4)

NSOC Support of Commercial Space Mockups in DX Facilities
CR-2486 Risk Cost Assessment

H060 CR 2486 NSOC
Support of Comm Mockups

		TOTAL		
		GFY 12	GFY 12	GFY 12
SLC	Labor Category	Hours	Rate	Total
[redacted] (b) (4)		[redacted] (b) (4)		
Material				
Material Handling				
G&A				
Subtotal Material				
Travel				
TravelHandling				
Non Labor G&A				
Subtotal Travel				
Total Estimated Cost				
Total Available Fee				
Award Fee	[redacted] (b) (4)			
Target Incentive Fee				
Max Incentive Fee				
Total Cost Plus Fee				

G4 I-4

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO919	12/01/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO919

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO919

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO919

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer
12/2/11 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 919 is to: CRAFT PORT Testing Support CR-2510 Cost The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is (b) (4) Work is to be completed by December 5, 2011. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2510	DX CHANGE REQUEST

CR TITLE: CM Recovery Attach Fitting Test (CRAFT) Support for PORT Integration

1. REQUESTOR: John Haas	2. PHONE: 281-792-5925	3. E-MAIL: john.haas-1@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☒ MPCV ☐ OTHER: _____

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides funding for travel to KSC to participate in CM Recovery Attach Fitting Test (CRAFT) activities to facilitate the future PORT integration of new fittings for future testing in the NBL.

7. RATIONALE:
Use of PORT for Orion Crew Module recovery training at the NBL is planned for FY13. Attach fitting tests will determine which of multiple designs will be implemented into the flight vehicle and PORT.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Transportation, accommodations to support travel for one week of testing conducted out of KSC port on KSC boat. This CR will fund [redacted] specifically who has participated in prior tests and is specifically requested by Detachment 3 and the EFT Landing and Recovery Panel. Testing is tentatively planned for the last week of November 2011.
No Safety Review or TRR required.

9. NEED DATE: (support date in block 7 rationale) 25 November 2011	10. CR SUBMISSION DATE: November 7, 2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Robert Durkin [redacted]

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: john.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted] (b) (4)	16. PHONE: [redacted] (b) (4)	17. E-MAIL: [redacted] (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: [redacted] (b) (4)	20. NEGOTIATED DELIVERY DATE: 12/05/11

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR For CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2510	DX CHANGE REQUEST

CR TITLE: CM Recovery Attach Fitting Test (CRAFT) Support for PORT Integration

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Provide trip report, any test data collected and any design decisions made from the test.

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2510	DX CHANGE REQUEST

CR TITLE: CM Recovery Attach Fitting Test (CRAFT) Support for PORT Integration

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

None identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Project Engineering	Administrative	Technician Support	Material
(b) (4)				

CRAFT PORT Testing Support
CR-2510 Cost

	H060 CR 2510 PORT Testing Support	
		TOTAL
		GFY 12
SLC	Labor Category	Hours
(b) (4)		(b) (4)
Material		
Material Handling		
G&A		
Subtotal Material		
Travel		
TravelHandling		
Non Labor G&A		
Subtotal Travel		
Total Estimated Cost		
Total Available Fee		
Award Fee		(b) (4)
Target Incentive Fee		
Max Incentive Fee		
Total Cost Plus Fee		

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO920	12/08/11	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO920

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
January 31, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO920

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO920

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 12/7/11
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 920 is to: RATS Ops CR-2515 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $ (b) (4) Work is to be completed by January 31, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.:	DX CHANGE REQUEST

CR TITLE: NASA External Customer Operations Support

1. REQUESTOR: A. McIntyre	2. PHONE: x47115	3. E-MAIL: Allison.l.mcintyre@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLAT X OTHER: External IDIQ

5. FUNCTIONAL AREA:
X SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide operational support and hardware configuration to support various Non-ISS external customer requests as an IDIQ project.

7. RATIONALE
Several JSC communities are requesting operational support for various projects, engineering studies, and analogue missions. This CR will provide a mechanism for charging outside of the ISS baseline operations.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Activity 1: Provide technician support for EA RATS activities in Building 9C for 2 1 week periods plus preparation including TRR. Estimate for event support is 12 hours of real time support plus set-up/take down of approximately 8 hours.

9. NEED DATE: (support date in block 7 rationale) 1/31/12 (complete)	10. CR SUBMISSION DATE: 11/29/12

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED Signature: _____
Date:_____

12. NASA POC:	13. PHONE:	14. E-MAIL:
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER:	16. PHONE:	17. E-MAIL:

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

RATS Ops
CR-2515 Cost

	H060 CR 2515 RATS Ops Support			
		TOTAL		
		GFY 12	GFY 12	GFY 12
SLC	Labor Category	Hours	Rate	Total
(b) (4)		(b) (4)		
	Material			
	Material Handling			
	G&A			
	Subtotal Material			
	Travel			
	TravelHandling			
	Non Labor G&A			
	Subtotal Travel			
	Total Estimated Cost			
	Total Available Fee			
	Award Fee			
	Target Incentive Fee			
	Max Incentive Fee			
	Total Cost Plus Fee			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO921	01/24/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO921

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO921

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO921

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 1/24/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 921 is to: FY12 Orion Mockup Installation Operations The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $91,131.88 Work is to be completed by September 26, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	91,131.88	91,131.88	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 91,131.88

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2512	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

1. REQUESTOR: Christie Sauers	2. PHONE: 281-244-5692	3. E-MAIL: christie.n.sauers@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 747797

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Perform the following Orion MPCV tasks:
- Create IDIQ
- Ops support approximately 1 -2 events per month
- Install student hardware in MFM.
- Prepare stress analyses for floor panel and locker loading.
- Provide support of design, safety, acceptance and test readiness reviews.
- Install strut locks, seats, handstraps and CPAS hardware in/on the Medium Fidelity Mockup (MFM)
- Provide minor modifications to existing hardware.
- Provide Orion backbone visual weld inspection.
- FY2011 MFM Installation redlines incorporation in drawings (from CR 2375 IDIQ).

7. RATIONALE
This is work that needs to be done to further outfit the MFM in preparation for test activities and also support FY2012 needed events in the mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Create IDIQ, or method deemed most efficient for managing and performing the required work.
2. Provide (b) (4) of total Operations support for up to (b) (4)

(continued on next page)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 10/31/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 11/16/2011

12. NASA POC: June Huhn	13. PHONE: 281-792-5837	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $91,130	20. NEGOTIATED DELIVERY DATE: 09/26/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 2512	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

REQUIREMENTS/REFERENCES (cont.):

3. Install the following student provided hardware assemblies and hardware:
   a. Backbone built by KSU
   b. Avionics & ECLS Bays walls (Qty 7, 1/8", aluminum) - mount to the wood support structure & MFM walls
   c. Lockers (Bays A, B, C, D, and E) – Lockers will be assembled by CWG.
   d. Non-locker floor panels (Qty 4) near the Avionics Bays walls
4. Provide stress analysis for locker loading.
5. Provide stress analysis for non-locker floor panel loading.
6. Provide support of design and safety reviews for locker and floor panel installation tasks.
7. Provide support of the CR safety review, final acceptance test and test readiness review.
8. Install 3 seat ingress/egress handstraps (5 attachment points to the MFM structure for seats 1,3 & 4).
9. Install 4 seats in the MFM – Drill holes in pallet to attach seat brackets (same or similar to current seatbacks/brackets in the LFM).
10. Install CPAS Gen-1 Pilot Mortar and CPAS Gen-1 Drogue Mortar mockups on external Forward Bulkhead.
11. Provide minor hardware rework on 2 installation items.
12. Design and install a locking feature to keep pallet struts in place.
13. Provide visual weld inspection of backbone assembly and correct any sharp edges.
14. Complete drawing redlines – carryover from FY 2011 CR 2375 IDIQ.

Note: Safety Review conducted 01/17/2012 requested that the baseline plan reflect two Safety Reviews and two Test Readiness Reviews to accommodate significant changes to the mockup that would need to be reviewed before allowing operations to proceed.

CR NO.: 2512	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify that an IDIO has been created for this CR 2512		Inspection	Documentation provided		
5	Verify that (b) (4) of total Operations support has been provided for up to (b) (4)		Inspection	OCC records show that (b) (4) were supported as requested. Who-charged report shows number of ops tech hours charged to this CR.		
6	Verify that a backbone assembly built by KSU has been installed into the MFM per installation instructions also provided by KSU		Inspection	Backbone assembly has been installed into the MFM per installation instructions provided by KSU		
7	Verify that seven Avionics & ECLS Bay wall panels have been mounted to the wood support structure & MFM walls per installation instructions provided by CWG		Inspection	Seven Avionics & ECLS Bay wall panels have been mounted to the wood support structure & MFM walls per installation instructions provided by CWG		
8	Verify that five stowage lockers for bays A, B, C, D and E have been installed into the floor of the MFM per installation instructions/drawings provided by CWG		Inspection	Five stowage lockers for bays A, B, C, D and E have been installed into the floor of the MFM per installation instructions provided by CWG		
9	Verify that four non-locker floor panels are installed near the Avionics Bays walls per installation instructions/drawings provided by CWG		Inspection	Four non-locker floor panels are installed near the Avionics Bays walls per installation instructions/drawings provided by CWG		
10	Verify that a stress analysis has been provided for locker loading.		Inspection	A stress analysis has been provided for locker loading.		
11	Verify that a stress analysis has been provided for non-locker floor panel loading.		Inspection	A stress analysis has been provided for non-locker floor panel loading.		
12	Verify that the design and safety reviews for locker and floor panel installation tasks have been conducted		Inspection	The design and safety reviews for locker and floor panel installation tasks have been conducted		

CR NO.: 2512	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

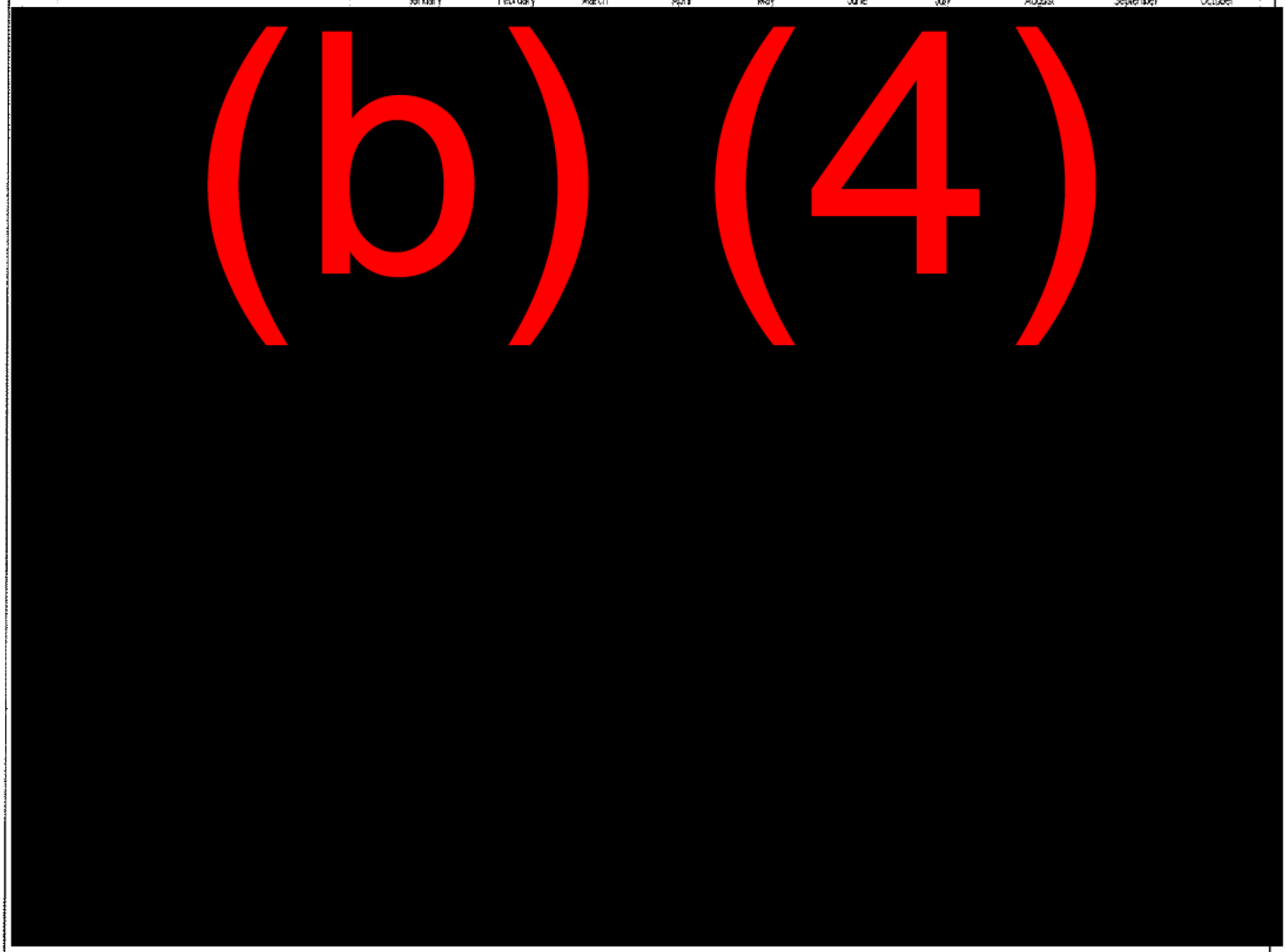
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
13	Verify that the CR safety review, final acceptance test and test readiness reviews have been conducted		Inspection	The CR safety review, final acceptance test and test readiness reviews have been conducted		
14	Verify that three seat ingress/egress handstraps (5 attachment points) have been installed to the MFM structure for seats 1, 3 & 4).		Inspection	Three seat ingress/egress handstraps (5 attachment points) have been installed to the MFM structure for seats 1, 3 & 4).		
15	Verify that four seats have been installed in the MFM per instructions provided by CWG		Inspection	Four seats have been installed in the MFM per instructions provided by CWG		
16	Verify that one CPAS Gen-1 Pilot Mortar mockup and one CPAS Gen-1 Drogue Mortar mockup have been installed on the external Forward Bulkhead		Inspection	Verify that CPAS Gen-1 Pilot Mortar and CPAS Gen-1 Drogue Mortar mockups have been installed on the external Forward Bulkhead		
17	Verify that minor hardware rework has been done on 2 user provided installation items per instructions provided by CWG		Inspection	Minor hardware rework has been done on 2 user provided installation items per instructions provided by CWG		
18	Verify that a locking feature has been designed, fabricated and installed to keep pallet struts in place		Inspection	A locking feature has been installed to keep pallet struts in place		
19	Verify that a visual weld inspection of the backbone assembly was conducted		Inspection	Weld inspection records available and complete		
20	Verify that the backbone assembly has no sharp edges		See requirement #1 of this RVM	Verification was conducted in requirement #1 of this RVM		
21	Verify that drawing redlines carried over from FY 2011 CR 2375 IDIQ have been completed		Inspection	Drawing redlines carried over from FY 2011 CR 2375 IDIQ have been completed		

CR NO.: 2512	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2512	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO921, RevA	04/12/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO921, RevA

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 2, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO921, RevA

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO921, Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 4/12/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 921, Rev A is to: Reduce FY12 Orion Mockup Installation Operations Cost The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fe The total value of this Delivery Order is $33,624 Work is to be completed by May 2, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	33,624.00	33,624.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 33,624.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

FY12 Orion Mockup Installation Operation
CR-2512A Cost

Original

H060 CR 2512 - Orion Mockup Installation Operation

		TOTAL		
		GFY 12	GFY 12	GFY 12
SLC	Labor Category	Hours	Rate	Total
(b) (4)				
	Material			
	Material Handling			
	G&A			
	Subtotal Material			
	Travel			
	Non Labor G&A			
	Subtotal Travel			
	Total Estimated Cost			
	Total Available Fee			
	Award Fee (b) (4) of Total Fee			
	Target Inc (b) (4) of Total Fee			
	Max Incent Target multiplied by (b) (4)			
	Total Cost Plus Fee			

Change

H060 CR 2512 - Orion Mockup Installation Operation

		TOTAL					
		GFY 12	GFY 12	GFY12	GFY12	TOTAL	GFY 12
SLC	bor Catego	Hours	Rate	Hours	OT Rate	LABOR HOURS	Total
(b) (4)							
	Material						
	Material Handling						
	G&A						
	Subtotal Material						
	Travel						
	Non Labor G&A						
	Subtotal Travel						
	Total Estimated Cost						
	Total Available Fee						
	Award Fe (b) (4) of Tot						
	Target Inc (b) (4) of Tot						
	Max Incent Target multip						
	Total Cost Plus Fee						

Total FY12 IDIQ

H060 CR 2512 - Orion Mockup Installation Operation

		TOTAL					
		GFY 12	GFY 12	GFY12	GFY12	TOTAL	GFY 12
SLC	bor Catego	Hours	Rate	Hours	OT Rate	LABOR HOURS	Total
(b) (4)							
	Material						
	Material Handling						
	G&A						
	Subtotal Material						
	Travel						
	Non Labor G&A						
	Subtotal Travel						
	Total Estimated Cost						
	Total Available Fee						
	Award Fe (b) (4) of Tot						
	Target Inc (b) (4) of Tot						
	Max Incent Target mul						
	Total Cost Plus Fee						

CR NO.: 2512 Rev A	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

1. REQUESTOR: Christie Sauers	2. PHONE: 281-244-5692	3. E-MAIL: christie.n.sauers@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION 3.6.1
☐ CONSTELLATION ☒ OTHER: 747797

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide Orion Multi-Purpose Crew Vehicle (MPCV) operations support and mockup additions in the Building 9 Medium Fidelity Mockup (MFM) to include items provided by the Students Shaping America's Next Spacecraft (SSANS) program. Requirements are listed in priority order.

REV A: Requirement changes as noted below.

7. RATIONALE
This is work that needs to be done to further outfit the MFM in preparation for test activities and also support FY2012 events in the mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. **REV A:** Create IDIQ **to complete the scope of this CR and include work defined in CR-2516 Orion Reconfiguration** ~~or method deemed most efficient for managing and performing the required work.~~

2. **REV A:** Provide **support for one acceptance test, and one test readiness review to include HA update** [redacted] (b) (4)

(continued on next page)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 1/27/12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 11/16/11

12. NASA POC: June Huhn	13. PHONE: 281-792-5837	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR [redacted]	16. PHONE: [redacted]	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: REV A: ~~$ 91,130~~ $33,600	20. NEGOTIATED DELIVERY DATE: Rev A: ~~09/26/12~~ **05/02/12**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2512 Rev A	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

REQUIREMENTS/REFERENCES (cont.):

3. **REV A:** ~~Install the following student provided hardware assemblies and hardware:~~
   a. ~~Backbone built by KSU~~
   b. ~~Avionics & ECLS Bays walls (Qty 7, 1/8", aluminum) - mount to the wood support structure & MFM walls~~
   c. ~~Lockers (Bays A, B, C, D, and E) – Lockers will be assembled by CWG.~~
   d. ~~Non-locker floor panels (Qty 4) near the Avionics Bays walls~~
4. **REV A:** ~~Provide stress analysis for locker loading~~
5. **REV A:** ~~Provide stress analysis for non-locker floor panel loading.~~
6. **REV A:** ~~Provide support of design and safety reviews for locker and floor panel installation tasks~~
7. **REV A:** ~~Provide support of the CR safety review, final acceptance test and test readiness review~~
8. **REV A:** ~~Install 3 seat ingress/egress handstraps (5 attachment points to the MFM structure for seats 1,3 & 4)~~
9. Install 4 seats in the MFM – Drill holes in pallet to attach seat brackets (same or similar to current seatbacks/brackets in the LFM).
10. **REV A:** ~~Install CPAS Gen-1 Pilot Mortar and CPAS Gen-1 Drogue Mortar mockups on external Forward Bulkhead~~
11. **REV A:** ~~Provide minor hardware rework on 2 installation items~~
12. **REV A:** ~~Design and install a locking feature to keep pallet struts in place~~
13. **REV A:** ~~Provide visual weld inspection of backbone assembly and correct any sharp edges~~
14. **REV A:** ~~Complete drawing redlines – carryover from FY 2011 CR 2375 IDIQ~~
15. **REV A:** **Install the Backbone Assembly that was designed, built and delivered by KSU**

CR NO.: 2512 Rev A	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Test Step	Test Description	Verification Criteria	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify that an IDIO has been created for this CR 2512	REV A: Rqt 1	Inspection	Documentation provided		
5	REV A: Verify that one final acceptance test and one test readiness review have been conducted ~~(b) (4) of total Operations support has been provided for up to~~ ~~(b) (4)~~	Rqt 2	Inspection	One final acceptance test and one test readiness review have been conducted		
6	Verify that a backbone assembly built by KSU has been installed into the MFM per installation instructions also provided by KSU	REV A: Rqt 15	Inspection	Backbone assembly has been installed into the MFM per installation instructions provided by KSU		
7	REV A: ~~Verify that seven Avionics & ECLS Bay wall panels have been mounted to the wood support structure & MFM walls per installation instructions provided by CWG~~		~~Inspection~~	~~Seven Avionics & ECLS Bay wall panels have been mounted to the wood support structure & MFM walls per installation instructions provided by CWG~~		
8	REV A: ~~Verify that five stowage lockers for bays A, B, C, D and E have been installed into the floor of the MFM per installation instructions/drawings provided by CWG~~		~~Inspection~~	~~Five stowage lockers for bays A, B, C, D and E have been installed into the floor of the MFM per installation instructions provided by CWG~~		
9	REV A: ~~Verify that four non-locker floor panels are installed near the Avionics Bays walls per installation instructions/drawings provided by CWG~~		~~Inspection~~	~~Four non-locker floor panels are installed near the Avionics Bays walls per installation instructions/drawings provided by CWG~~		
10	REV A: ~~Verify that a stress analysis has been provided for locker loading.~~		~~Inspection~~	~~A stress analysis has been provided for locker loading.~~		
11	REV A: ~~Verify that a stress analysis has been provided for non-locker floor panel loading.~~		~~Inspection~~	~~A stress analysis has been provided for non-locker floor panel loading.~~		
12	REV A: ~~Verify that the design and safety reviews for locker and floor panel installation tasks have been conducted~~		~~Inspection~~	~~The design and safety reviews for locker and floor panel installation tasks have been conducted~~		
13	REV A: ~~Verify that the CR safety review, final acceptance test and test readiness reviews have been conducted~~		~~Inspection~~	~~The CR safety review, final acceptance test and test readiness reviews have been conducted~~		
14	REV A: ~~Verify that three seat ingress/egress handstraps (5 attachment points) have been installed to the MFM structure for seats 1, 3 & 4).~~		~~Inspection~~	~~Three seat ingress/egress handstraps (5 attachment points) have been installed to the MFM structure for seats 1, 3 & 4).~~		
15	Verify that four seats have been installed in the MFM per instructions provided by CWG	REV A: Rqt 9	Inspection	Four seats have been installed in the MFM per instructions provided by CWG		

(continued)

CR TITLE: FY12 Orion Mockup Installation and Operations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (continued)

Test Step	Test Description	Verification Criteria	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
16	REV A: ~~Verify that one CPAS Gen-1 Pilot Mortar mockup and one CPAS Gen-1 Drogue Mortar mockup have been installed on the external Forward Bulkhead~~		~~Inspection~~	~~Verify that CPAS Gen-1 Pilot Mortar and CPAS Gen-1 Drogue Mortar mockups have been installed on the external Forward Bulkhead~~		
17	REV A: ~~Verify that minor hardware rework has been done on 2 user provided installation items per instructions provided by CWG~~		~~Inspection~~	~~Minor hardware rework has been done on 2 user provided installation items per instructions provided by CWG~~		
18	REV A: ~~Verify that a locking feature has been designed, fabricated and installed to keep pallet struts in place~~		~~Inspection~~	~~A locking feature has been installed to keep pallet struts in place~~		
19	REV A: Verify **the documentation of a backbone assembly visual weld inspection is provided** ~~that a visual weld inspection of the backbone assembly was conducted~~.		Inspection	Weld inspection records available and complete		
20	REV A: ~~Verify that the backbone assembly has no sharp edges~~		~~See requirement #1 of this RVM~~	~~Verification was conducted in requirement #1 of this RVM~~		
21	REV A: ~~Verify that drawing redlines carried over from FY 2011 CR 2375 IDIQ have been completed~~		~~Inspection~~	~~Drawing redlines carried over from FY 2011 CR 2375 IDIQ have been completed~~		

CR NO.: 2512 Rev A	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

SCHEDULE MILESTONES: (complete or reference separate project plan)
REV A:

ID	Task Name	Duration	2	February 2012	March 2012	April 2012	May 2012

(b) (4)

CR NO.: 2512 Rev A	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2512 Rev A	DX CHANGE REQUEST

CR TITLE: FY12 Orion Mockup Installation and Operations

RISK ASSESSMENT (continued)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Engineering and Program Support	Management	Technicians	Material
Rev A:	(b) (4)				
Rev A:					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO922 Rev A	04/12/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO922 Rev A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO922 Rev A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO922 Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 4/12/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 922 Rev A is to: Reduce the ORION Reconfiguration Cost. The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $77,261 Work is to be completed by September 26, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	77,261.00	77,261.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 77,261.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

FY12 Orion Reconfiguration
CR-2516A Cost

Original

H060 CR 2516 - Orion Reconfiguration				
		TOTAL		
		GFY 12	GFY 12	GFY 12
SLC	Labor Category	Hours	Rate	Total
[redacted]				
Material				
Material Handling				
G&A				
Subtotal Material				
Travel				
Non Labor G&A				
Subtotal Travel				
Total Estimated Cost				
Total Available Fee				
Award Fe[redacted] Total Fee				
Target Inc[redacted]f Total Fee				
Max Incent Target multiplied by 1.5				
G4 I–4				
Total Cost Plus Fee				

(b) (4) (b) (4)

Change

H060 CR 2516 - Orion Reconfiguration							
		TOTAL					
		GFY 12	GFY 12	GFY12	GFY12	TOTAL	GFY 12
SLC	bor Categ	Hours	Rate	Hours	OT Rate	LABOR	Total
[redacted]							
Material							
Material Handling							
G&A							
Subtotal Material							
Travel							
Non Labor G&A							
Subtotal Travel							
Total Estimated Cost							
Total Available Fee							
Award Fe[redacted]f Tot							
Target In[redacted]f Tot							
Max Incent Target mul							
Total Cost Plus Fee							

(b) (4) (b) (4)

Total FY12 IDIQ

H060 CR 2516 - Orion Reconfiguration							
		TOTAL					
		GFY 12	GFY 12	GFY12	GFY12	TOTAL	GFY 12
SLC	bor Categ	Hours	Rate	Hours	OT Rate	LABOR	Total
						HOURS	
[redacted]							
Material							
Material Handling							
G&A							
Subtotal Material							
Travel							
Non Labor G&A							
Subtotal Travel							
Total Estimated Cost							
Total Available Fee							
Award Fe[redacted] of Tot							
Target Ince[redacted] of Tot							
Max Incent Target mult							
Total Cost Plus Fee							

(b) (4) (b) (4)

CR NO.: 2516 Rev A	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

1. REQUESTOR: June Huhn	2. PHONE: 281-792-5837	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.1 (282938)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides an avenue to relocate and reconfigure the Orion Medium Fidelity Mockup (MFM) and access platform within the Space Vehicle Mockup Facility (SVMF).
REV A: Implement requirement changes.

7. RATIONALE
Relocation is required to complete FY 2012 ISS mockup reconfiguration which plans for co-location of the Orion medium fidelity mockup (MFM) with the low fidelity mockup (LFM) such that there is floor space available for the new Node 3 mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Create an IDIQ to support completion of the defined Orion mockup reconfiguration tasks.
2. Provide support for CR Safety, Acceptance and Test Readiness Reviews.
3. GFE platform legs (currently located in Building 59) will be cut to a length of 57 ¾ inches and modified for installation on "old" LFM platform.
4. The "old" LFM platform will be disassembled such that the bottom deck area can be relocated to a position immediately East of the current LFM access platform in between LFM and final MFM locations. Long sides of platform will be on East and West faces and centered on MFM side hatch (West side of mockup). South tangential edge of MFM module will align with south edge of LFM riser platform.

(continued on next page)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 12/6/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 12/09/11

12. NASA POC: June Huhn	13. PHONE: x25837	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: Rev A: ~~$89,350~~ $ 77,300	20. NEGOTIATED DELIVERY DATE: 09/26/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2516 Rev A	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

REQUIREMENTS/REFERENCES (cont.):

5. A single set of access stairs shall be provided at the Northwest end of the old" LFM platform in its new location.

6. **A** viewing window platforms will be provided for ~~both~~ the MFM ~~and LFM~~. **This** ~~These~~ platforms will be rated to support four people. **The** ~~Each~~ platform will be equipped with entry and exit stairs on North and South sides. – **Rev A**

7. All platforms and stairs shall have safety hand rails.

8. A floor plan layout shall be prepared and approved by DX14 prior to relocation of the platform or MFM.

9. **A** GFE air conditioning units and ventilation ducting shall be installed for ~~both~~ the MFM ~~and LFM~~ mockups to provide temperature and humidity control of the mockup interior for the comfort of eight people. ~~Air conditioning should be adjustable from within the mockup if not a significant cost driver.~~ – **Rev A**

10. Two existing observation cameras (lipstick) shall be reactivated in their current locations in MFM after module is relocated. Camera output should be routed for viewing at independent GFE stand-alone monitors. Infrastructure supporting the new Orion area shall allow for the addition of another 1 to 2 camera views to be added for use during evaluations.

11. LFM power cabinet shall be relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools.

12. MFM shall be outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console). One LED block is available for use (stored on the shelves behind the MFM) and 3 shop lights are available. Less than $200 shall be spent to buy new lights, and it's preferred to utilize in-house existing equipment, as a student project is in work to deliver a lighting system by May 2012.

13. MPLM mockup power components shall be reconfigured into ~~RSA~~ **the Lab** power console. – **Rev A**

14. One 10/100 Ethernet connection shall be provided for high-end computer.

15. IOS TVs, workbench, file cabinets, shelving units, conference tables and chairs shall be relocated to new Orion area per CWG/DX14 approved layout to be provided at a later date.

16. Orion and platform relocation must be scheduled after CCT1 is removed from the SVMF.

17. ~~The conference tables and chairs near the MFM current location shall be moved to the area just north of the access platforms in their new locations.~~ – **Rev A**

Note: The Safety Review conducted 01/17/2012 confirmed that a TRR is required prior to final project acceptance.

CR NO.: 2516 Rev A	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Test Step #	Test Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Results (pass/ fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify that an IDIQ has been created to support completion of the defined Orion mockup reconfiguration tasks		Inspection	An IDIQ has been created for this CR		
5	Verify that CR Safety, Acceptance and Test Readiness Reviews were supported	Rqt 2	Inspection	CR Safety, Acceptance and Test Readiness Reviews were supported		
6	Verify that GFE platform legs (currently located in Building 59) have been cut to a length of 57 ¾ inches and modified for installation on the "old" LFM platform	Rqt 3	Inspection	GFE platform legs have been cut to a length of 57 ¾ inches and are installed on the"old" LFM platform		
7	**REV A:** Verify that the "old" LFM platform ~~has been~~ bottom deck area has been relocated to a position immediately East of the current LFM access platform in between LFM and final MFM locations per DX approved floor plan, with the long sides of platform located on East and West faces and centered on MFM side hatch (West side of mockup). South tangential edge of MFM module will align with south edge of LFM riser platform	Rqt 4	Inspection	Platform is positioned per DX approved floor plan		
8	Verify a single set of access stairs has been installed at the Northwest end of the "old" LFM platform in its new location	Rqt 5	Inspection	A single set of access stairs has been installed at the Northwest end of the platform in its new location		
9	**REV A:** Verify that **one** ~~two~~ viewing window platforms **has** ~~have~~ been provided for the MFM.	Rqt 6	Inspection	One viewing window platform has been provided for the MFM.		
10	**REV A:** Verify that the viewing window platforms ~~are~~ **is** rated to support four people	Rqt 6	Inspection	The booster platform was used for the viewing window platform at the request of DX. It was previously in service as a platform supporting up to four people. There is no documentation for the platform.		
11	**REV A:** Verify that the viewing window platforms ~~are~~ **is** equipped with entry and exit stairs on North and South sides	Rqt 6	Inspection	The viewing window platform is equipped with entry and exit stairs on North and South sides		
12	Verify that all platforms and stairs have safety hand rails	Rqt 7	Inspection	All the Orion platforms and stairs have safety hand rails		
13	Verify that a floor plan layout has been prepared and approved by DX14 prior to relocation of the platform or MFM	Rqt 8	Inspection	A floor plan layout was prepared and approved by DX14 prior to relocation of the platform or MFM		
14	**REV A:** Verify that GFE air conditioning units and ventilation ducting have been installed for ~~both the LFM and~~ the MFM mockup to provide temperature and humidity control of the mockup interior for comfort of eight people	Rqt 9	Inspection	GFE air conditioning unit and ventilation ducting has been installed for the MFM mockup		

(continued)

CR TITLE: ORION Reconfiguration

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (continued)

Test Step #	Test Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
15	**REV A:** ~~Verify that the air conditioning is adjustable from within the mockup~~		~~Demonstration~~	~~Air conditioning is controllable from within each mockup.~~		
16	Verify that two existing observation cameras (lipstick) have been reactivated in their current locations in the MFM	Rqt 10	Demonstration	Two existing observation cameras (lipstick) have been reactivated in their current locations in the MFM.		
17	Verify that the lipstick camera output has been routed for viewing at three independent GFE stand-alone monitors	Rqt 10	Demonstration	The lipstick camera output has been routed for viewing at three independent GFE stand-alone monitors		
18	Verify that the infrastructure supporting the new Orion area accommodates the addition of another 1 to 2 camera views to be added for use during evaluations.	Rqt 10	Inspection	The infrastructure supporting the new Orion area accommodates the addition of another 1 to 2 camera views to be added for use during evaluations.		
19	Verify that the LFM power cabinet has been relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools	Rqt 11	Inspection and Demonstration	The LFM power cabinet has been relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools		
20	Verify that MFM has been outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console).	Rqt 12	Inspection	The MFM has been outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console).		
21	**REV A:** Verify that the MPLM mockup power components have been reconfigured into the ~~RSA~~ **Lab** power console	Rqt 13	Inspection	The MPLM mockup power components have been reconfigured into the U.S. Lab power console (see assumption 8)		
22	Verify that one 10/100 Ethernet connection has been provided for high-end computer	Rqt 14	Inspection	One 10/100 Ethernet connection has been provided to the SSMTF network		
23	Verify that the IOS TVs, workbench, file cabinets, shelving units, conference tables and chairs have been relocated to the new Orion area per CWG/DX14 approved layout.	Rqt 15	Inspection	the IOS TVs, workbench, file cabinets, shelving units, conference tables and chairs have been relocated to the new Orion area per CWG/DX14 approved layout		
24	Verify that the Orion and platform relocation was scheduled after the CCT1 was removed from the SVMF	Rqt 16	Inspection	Orion and platform relocation was scheduled after the CCT1 was removed from the SVMF		
25	**REV A:** ~~Verify that the conference tables and chairs near the MFM current location have been moved to the area just north of the access platforms in their new locations.~~	~~Rqt 17~~	~~Inspection~~	~~The conference tables and chairs have been moved~~		

CR NO.: 2516 Rev A	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

SCHEDULE MILESTONES: (complete or reference separate project plan)
REV A: **Order of tasks modified to support CCT-I move as late as 08/16/12.**

(b) (4)

CR NO.: 2516 Rev A	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Engineering and Program Support	Management	Technicians	Material
REV A:		(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order
NNJ10HD35C DO922 Rev B	09/13/12

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.

Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO922 Rev B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO922 Rev B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO922 Rev B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 9/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 922 Rev B is to: Reduce the ORION Reconfiguration Cost. The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Revision is $10,928.56 The total value of this Delivery Order is $88,189.47 Work is to be completed by September 26, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	10,928.56	10,928.56	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 10,928.56

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2516 Rev B	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

1. REQUESTOR: June Huhn	2. PHONE: 281-792-5837	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.1 (282938)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides an avenue to relocate and reconfigure the Orion Medium Fidelity Mockup (MFM) and access platform within the Space Vehicle Mockup Facility (SVMF).
REV A: Implement requirement changes. **Rev B:** Adds Electrical and platform requirements changes

7. RATIONALE
Relocation is required to complete FY 2012 ISS mockup reconfiguration which plans for co-location of the Orion medium fidelity mockup (MFM) with the low fidelity mockup (LFM) such that there is floor space available for the new Node 3 mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Create an IDIQ to support completion of the defined Orion mockup reconfiguration tasks.
2. Provide support for CR Safety, Acceptance and Test Readiness Reviews.
3. GFE platform legs (currently located in Building 59) will be cut to a length of 57 ¾ inches and modified for installation on "old" LFM platform.
4. The "old" LFM platform will be disassembled such that the bottom deck area can be relocated to a position immediately East of the current LFM access platform in between LFM and final MFM locations. Long sides of platform will be on East and West faces. ~~and centered on MFM side hatch (West side of mockup). South tangential edge of MFM module will align with south edge of LFM riser platform~~ MFM positioning relative to LFM will be approved by floor plan layout. MFM hatch access offset relative to platform will match white room data as provided by requestor. An existing spacer bridge will be installed between platform and MFM. **Rev B**

(continued on next page)

9. NEED DATE: (support date in block 7 rationale) 9/28/12 **Rev B**	10. CR SUBMISSION DATE: 12/6/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 12/09/11

12. NASA POC: June Huhn	13. PHONE: x25837	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$89,350~~ **~~$ 77,300~~ ~~Rev A~~ $ 88,200 Rev B**	20. NEGOTIATED DELIVERY DATE: 09/26/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____
Date: _____
CCB CHAIR: _____
Date: _____

COTR for CRs with Cost Impact Only
COTR: _____
Date: _____

Closed by: _____ **Date:** _____

CR TITLE: ORION Reconfiguration

REQUIREMENTS/REFERENCES (cont.):

5. A single set of access stairs shall be provided at the Northwest end of the old" LFM platform in its new location.

6. **A** viewing window platforms will be provided for ~~both~~ the MFM ~~and LFM~~. **This** ~~These~~ platforms will be rated to support four people. **The** ~~Each~~ platform will be equipped with ~~entry and exit stairs on North and South sides. – Rev A~~ the set of stairs used previously with it. **Rev A**

7. All platforms and stairs shall have safety hand rails.

8. A floor plan layout shall be prepared and approved by DX14 prior to relocation of the platform or MFM.

9. **A** GFE air conditioning units and ventilation ducting shall be installed for ~~both~~ the MFM ~~and LFM~~ mockups to provide temperature and humidity control of the mockup interior for the comfort of eight people. ~~Air conditioning should be adjustable from within the mockup if not a significant cost driver.~~ – **Rev A**

10. Two existing observation cameras (lipstick) shall be reactivated in their current locations in MFM after module is relocated. Camera output should be routed for viewing at independent GFE stand-alone monitors. Infrastructure supporting the new Orion area shall allow for the addition of another 1 to 2 camera views to be added for use during evaluations.

11. LFM power cabinet shall be relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools.

12. MFM shall be outfitted to provide similar interior lighting to match current MFM configuration (~~LEDs,~~ shop lights, ~~and light bar above D&C console~~) and **one LED block mounted at a location to be provided by the requestor**. **Rev B** One LED block is available for use (stored on the shelves behind the MFM) and 3 shop lights are available. Less than $200 shall be spent to buy new lights, and it's preferred to utilize in-house existing equipment, as a student project is in work to deliver a lighting system by May 2012.

13. MPLM mockup power components shall be reconfigured into ~~RSA~~ **the Lab** power console. – **Rev A**

14. One 10/100 Ethernet connection shall be provided for high-end computer.

15. IOS TVs, workbench, file cabinets, shelving units, **GFE MCC console,** conference tables and chairs shall be relocated to new Orion area per CWG/DX14 approved layout to be provided at a later date. **Rev B**

16. Orion and platform relocation must be scheduled after CCT1 is removed from the SVMF.

17. ~~The conference tables and chairs near the MFM current location shall be moved to the area just north of the access platforms in their new locations.~~ – **Rev A**

18. **Two electrical quad receptacle boxes installed, one at the console (exact locations to be provided by the requestor) and one at the north leg of the cradle. Rev B**

Note: The Safety Review conducted 01/17/2012 confirmed that a TRR is required prior to final project acceptance.

CR NO.: 2516 Rev B	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Test Step #	Test Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Results (pass/ fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify that an IDIQ has been created to support completion of the defined Orion mockup reconfiguration tasks		Inspection	An IDIQ has been created for this CR		
5	Verify that CR Safety, Acceptance and Test Readiness Reviews were supported	Rqt 2	Inspection	CR Safety, Acceptance and Test Readiness Reviews were supported		
6	Verify that GFE platform legs (currently located in Building 59) have been cut to a length of 57 ¾ inches and modified for installation on the "old" LFM platform	Rqt 3	Inspection	GFE platform legs have been cut to a length of 57 ¾ inches and are installed on the"old" LFM platform		
7	**REV B:** Verify that the "old" LFM platform ~~has been~~ bottom deck area has been relocated to a position immediately East of the current LFM access platform in between LFM and final MFM locations per DX approved floor plan, with the long sides of platform located on East and West faces ~~and centered on MFM side hatch (West side of mockup). South tangential edge of MFM module will align with south edge of LFM riser platform~~ **and MFM hatch access offset relative to platform matches white room data provided by requestor. Verify existing spacer bridge is installed between platform and MFM.**	Rqt 4	Inspection	Platform is positioned per DX approved floor plan		
8	Verify a single set of access stairs has been installed at the Northwest end of the "old" LFM platform in its new location	Rqt 5	Inspection	A single set of access stairs has been installed at the Northwest end of the platform in its new location		
9	**REV A:** Verify that **one** ~~two~~ viewing window platforms **has** ~~have~~ been provided for the MFM.	Rqt 6	Inspection	One viewing window platform has been provided for the MFM.		
10	**REV A:** Verify that the viewing window platforms ~~are~~ **is** rated to support four people	Rqt 6	Inspection	The booster platform was used for the viewing window platform at the request of DX. It was previously in service as a platform supporting up to four people. There is no documentation for the platform.		
11	**REV A:** Verify that the viewing window platforms ~~are~~ **is** equipped ~~with entry and exit stairs on North and South sides~~ stairs used previously with this platform	Rqt 6	Inspection	The viewing window platform is equipped with stairs used previously with this platform		**Rev B**
12	Verify that all platforms and stairs have safety hand rails	Rqt 7	Inspection	All the Orion platforms and stairs have safety hand rails		
13	Verify that a floor plan layout has been prepared and approved by DX14 prior to relocation of the platform or MFM	Rqt 8	Inspection	A floor plan layout was prepared and approved by DX14 prior to relocation of the platform or MFM		
14	**REV A:** Verify that GFE air conditioning units and ventilation ducting have been installed for ~~both the LFM and~~ the MFM mockup to provide temperature and humidity control of the mockup interior for ~~crew~~ occupied people	Rqt 9	Inspection	GFE air conditioning unit and ventilation ducting has been installed for the MFM mockup		

(continued)

CR TITLE: ORION Reconfiguration

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (continued)

Test Step #	Test Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
15	REV A: ~~Verify that the air conditioning is adjustable from within the mockup~~		~~Demonstration~~	~~Air conditioning is controllable from within each mockup.~~		
16	Verify that two existing observation cameras (lipstick) have been reactivated in their current locations in the MFM	Rqt 10	Demonstration	Two existing observation cameras (lipstick) have been reactivated in their current locations in the MFM.		
17	Verify that the lipstick camera output has been routed for viewing at three independent GFE stand-alone monitors	Rqt 10	Demonstration	The lipstick camera output has been routed for viewing at three independent GFE stand-alone monitors		
18	Verify that the infrastructure supporting the new Orion area accommodates the addition of another 1 to 2 camera views to be added for use during evaluations.	Rqt 10	Inspection	The infrastructure supporting the new Orion area accommodates the addition of another 1 to 2 camera views to be added for use during evaluations.		
19	Verify that the LFM power cabinet has been relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools	Rqt 11	Inspection and Demonstration	The LFM power cabinet has been relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools		
20	Verify that MFM has been outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console).	Rqt 12	Inspection	The MFM has been outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console).		
21	**REV A:** Verify that the MPLM mockup power components have been reconfigured into the ~~RSA~~ Lab power console	Rqt 13	Inspection	The MPLM mockup power components have been reconfigured into the U.S. Lab power console (see assumption 8)		
22	Verify that one 10/100 Ethernet connection has been provided for high-end computer	Rqt 14	Inspection	One 10/100 Ethernet connection has been provided to the SSMTF network		
23	**REV B**: Verify that the IOS TVs, workbench, file cabinets, shelving units, **GFE MCC console**, conference tables and chairs have been relocated to the new Orion area per CWG/DX14 approved layout.	Rqt 15	Inspection	the IOS TVs, workbench, file cabinets, shelving units, conference tables and chairs have been relocated to the new Orion area per CWG/DX14 approved layout		
24	Verify that the Orion and platform relocation was scheduled after the CCT1 was removed from the SVMF	Rqt 16	Inspection	Orion and platform relocation was scheduled after the CCT1 was removed from the SVMF		
25	REV A: ~~Verify that the conference tables and chairs near the MFM current location have been moved to the area just north of the access platforms in their new locations.~~	~~Rqt 17~~	~~Inspection~~	~~The conference tables and chairs have been moved~~		

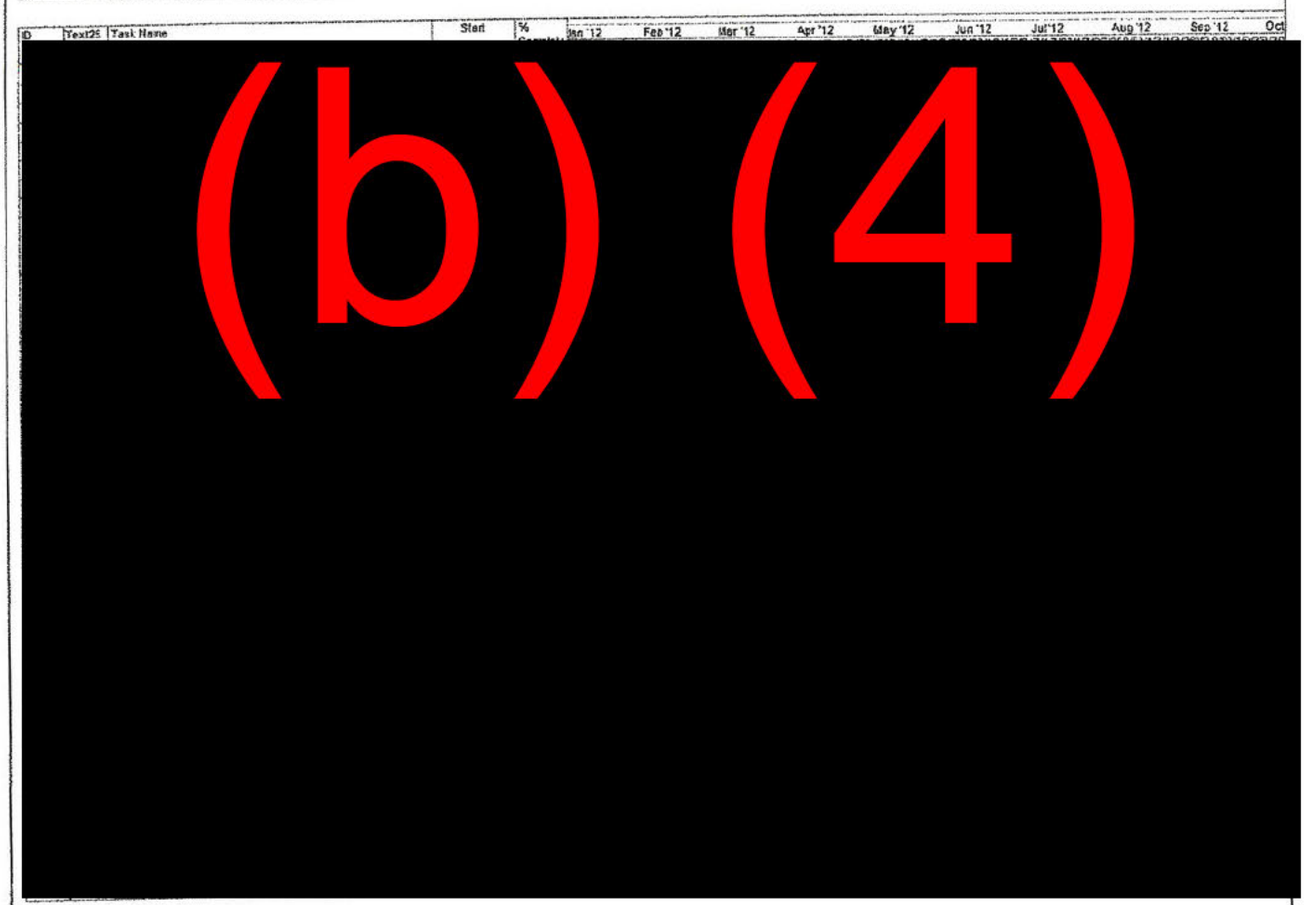
CR TITLE: ORION Reconfiguration

26	**REV B: Verify that two electrical quad receptacle boxes have been installed, one at the console (exact location to be provided by the requestor) and one at the north leg of the cradle.**	Rqt 18	Inspection	Two electrical quad receptacle boxes have been installed, one at the console (exact location to be provided by the requestor) and one at the north leg of the cradle.		**Rev B**

CR NO.: 2516 Rev B	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

SCHEDULE MILESTONES: (complete or reference separate project plan)
REV A: **Order of tasks modified to support CCT-I move as late as 08/16/12.**
Rev B Additional tasks added



National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO922	01/25/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO922

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO922

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO922

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 1/25/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 922 is to: ORION Reconfiguration The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $89,365.85 Work is to be completed by September 26, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	89,365.85	89,365.85	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 89,365.85

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2516	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

1. REQUESTOR: June Huhn	2. PHONE: 281-792-5837	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 282938

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides an avenue to relocate and reconfigure the Orion Medium Fidelity Mockup (MFM) and access platform within the Space Vehicle Mockup Facility (SVMF).

7. RATIONALE
Relocation is required to complete FY 2012 ISS mockup reconfiguration which plans for co-location of the medium fidelity Orion mockup with the Low Fidelity Mockup (LFM) such that there is floor space available for the new Node 3 mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Create an IDIQ to support completion of the defined Orion mockup reconfiguration tasks.
2. Provide support for CR Safety, Acceptance and Test Readiness Reviews.
3. GFE platform legs (currently located in Building 59) will be cut to a length of 57 ¾ inches and modified for installation on "old" LFM platform.
4. The "old" LFM platform will be disassembled such that the bottom deck area can be relocated to a position immediately East of the current LFM access platform in between LFM and final MFM locations. Long sides of platform will be on East and West faces and centered on MFM side hatch (West side of mockup). South tangential edge of MFM module will align with south edge of LFM riser platform.

(continued on next page)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 12/6/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 12/09/2011

12. NASA POC: June Huhn	13. PHONE: x25837	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $89,350	20. NEGOTIATED DELIVERY DATE: 09/26/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2516	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

REQUIREMENTS/REFERENCES (cont.):

5. A single set of access stairs shall be provided at the Northwest end of the old" LFM platform in its new location.
6. Viewing window platforms will be provided for both the MFM and LFM. These platforms will be rated to support four people. Each platform will be equipped with entry and exit stairs on North and South sides.
7. All platforms and stairs shall have safety hand rails.
8. A floor plan layout shall be prepared and approved by DX14 prior to relocation of the platform or MFM.
9. GFE air conditioning units and ventilation ducting shall be installed for both the LFM and MFM mockups to provide temperature and humidity control of the mockup interior for comfort of eight people. Air conditioning should be adjustable from within the mockup if not a significant cost driver.
10. Two existing observation cameras (lipstick) shall be reactivated in their current locations in MFM after module is relocated. Camera output should be routed for viewing at independent GFE stand-alone monitors. Infrastructure supporting the new Orion area shall allow for the addition of another 1 to 2 camera views to be added for use during evaluations.
11. LFM power cabinet shall be relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools.
12. MFM shall be outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console). One LED block is available for use (stored on the shelves behind the MFM) and 3 shop lights are available. Less than $200 shall be spent to buy new lights, and it's preferred to utilize in-house existing equipment, as a student project is in work to deliver a lighting system by May 2012.
13. MPLM mockup power components shall be reconfigured into RSA power console.
14. One 10/100 Ethernet connection shall be provided for high-end computer.
15. IOS TVs, workbench, file cabinets, shelving units and conference tables shall be relocated to new Orion area per CWG/DX14 approved layout to be provided at a later date.
16. Orion and platform relocation must be scheduled after CCT1 is removed from the SVMF.
17. The conference tables and chairs near the MFM current location shall be moved to the area just north of the access platforms in their new locations.

Note: the Safety Review conducted 01/17/2012 confirmed that a TRR is required prior to final project acceptance.

CR NO.: 2516	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify that an IDIQ has been created to support completion of the defined Orion mockup reconfiguration tasks		Inspection	An IDIQ has been created for this CR		
5	Verify that CR Safety, Acceptance and Test Readiness Reviews were supported		Inspection	CR Safety, Acceptance and Test Readiness Reviews were supported		
6	Verify that GFE platform legs (currently located in Building 59) have been cut to a length of 57 ¾ inches and modified for installation on the "old" LFM platform		Inspection	GFE platform legs have been cut to a length of 57 ¾ inches and are installed on the"old" LFM platform		
7	Verify that the "old" LFM platform has been bottom deck area has been relocated to a position immediately East of the current LFM access platform in between LFM and final MFM locations per DX approved floor plan, with the long sides of platform located on East and West faces and centered on MFM side hatch (West side of mockup). South tangential edge of MFM module will align with south edge of LFM riser platform		Inspection	Platform is positioned per DX approved floor plan		
8	Verify that a single set of access stairs has been installed at the Northwest end of the "old" LFM platform in its new location		Inspection	A single set of access stairs has been installed at the Northwest end of the platform in its new location		
9	Verify that two viewing window platforms have been provided, one for the MFM and one for the LFM.		Inspection	Two viewing window platforms have been provided, one for the MFM and one for the LFM		
10	Verify that the viewing window platforms are rated to support four people		Inspection	The viewing window platforms are rated to support four people		
11	Verify that the viewing window platforms are equipped with entry and exit stairs on North and South sides		Inspection	The viewing window platforms are equipped with entry and exit stairs on North and South sides		
12	Verify that all platforms and stairs have safety hand rails		Inspection	All the Orion platforms and stairs have safety hand rails		
13	Verify that a floor plan layout has been prepared and approved by DX14 prior to relocation of the platform or MFM		Inspection	A floor plan layout was prepared and approved by DX14 prior to relocation of the platform or MFM		

(continued on page 4)

CR NO.: 2516	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
14	Verify that GFE air conditioning units and ventilation ducting have been installed for both the LFM and MFM mockups to provide temperature and humidity control of the mockup interior for comfort of eight people		Inspection	GFE air conditioning units and ventilation ducting have been installed for both the LFM and MFM mockups		
15	Verify that the air conditioning is adjustable from within the mockup		Demonstration	Air conditioning is controllable from within each mockup.		
16	Verify that two existing observation cameras (lipstick) have been reactivated in their current locations in the MFM		Demonstration	Two existing observation cameras (lipstick) have been reactivated in their current locations in the MFM.		
17	Verify that the lipstick camera output has been routed for viewing at three independent GFE stand-alone monitors		Demonstration	The lipstick camera output has been routed for viewing at three independent GFE stand-alone monitors		
18	Verify that the infrastructure supporting the new Orion area accommodates the addition of another 1 to 2 camera views to be added for use during evaluations.		Inspection	The infrastructure supporting the new Orion area accommodates the addition of another 1 to 2 camera views to be added for use during evaluations.		
19	Verify that the LFM power cabinet has been relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools		Inspection and Demonstration	The LFM power cabinet has been relocated to provide power and grounding to both the LFM and MFM for lighting, computer and other external electronic equipment commanding the D&C console, high-end computer, and at least two free outlets for tools		
20	Verify that MFM has been outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console).		Inspection	The MFM has been outfitted to provide similar interior lighting to match current LFM configuration (LEDs, shop lights, and light bar above D&C console).		
21	Verify that the MPLM mockup power components have been reconfigured into the RSA power console		Inspection	The MPLM mockup power components have been reconfigured into the U.S. Lab power console (see assumption 8)		
22	Verify that one 10/100 Ethernet connection has been provided for high-end computer		Inspection	One 10/100 Ethernet connection has been provided to the SSMTF network		

(continued on page 5)

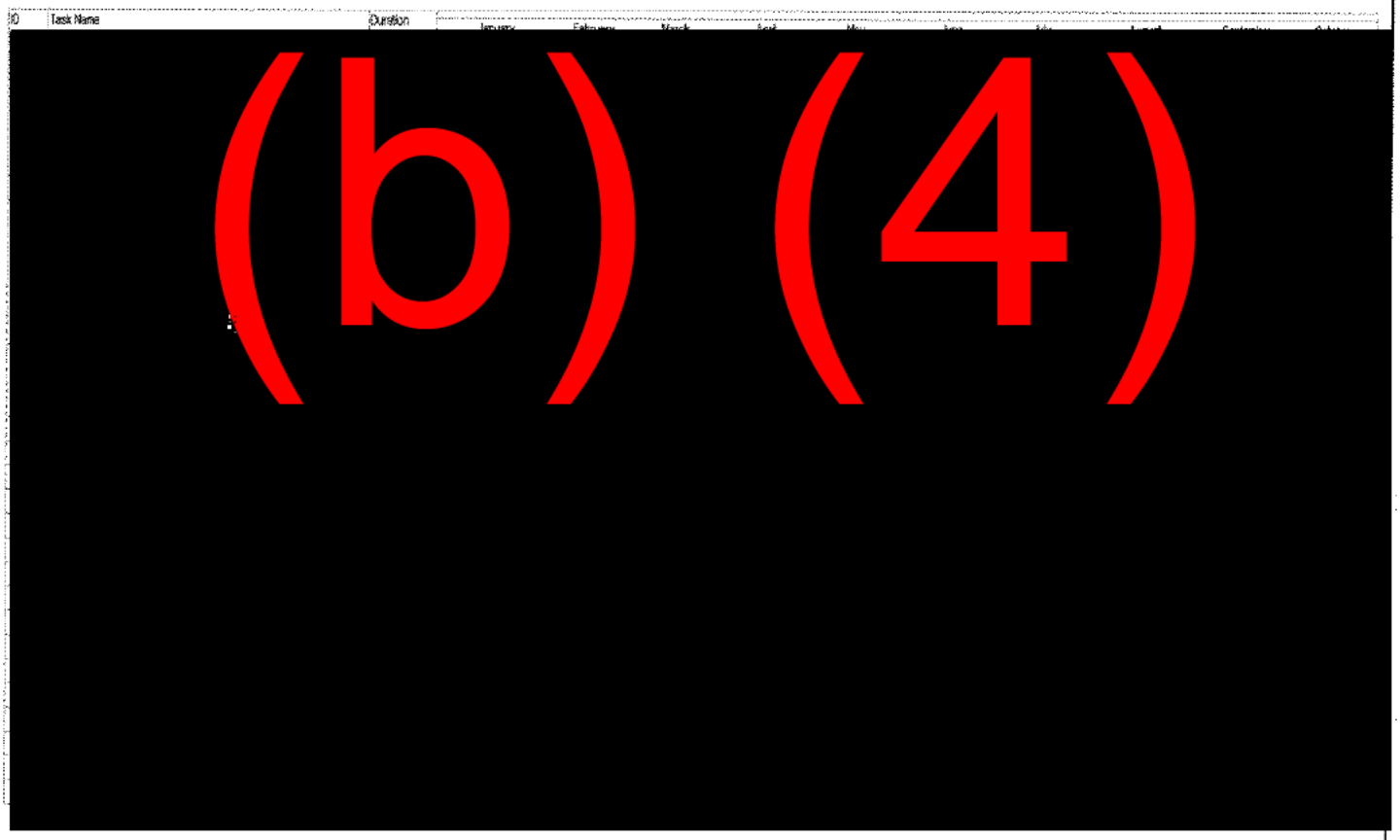
CR NO.: 2516	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
23	Verify that the IOS TVs, workbench, file cabinets, shelving units and conference tables have been relocated to the new Orion area per CWG/DX14 approved layout.		Inspection	the IOS TVs, workbench, file cabinets, shelving units and conference tables have been relocated to the new Orion area per CWG/DX14 approved layout		
24	Verify that the Orion and platform relocation was scheduled after the CCT1 was removed from the SVMF		Inspection	Orion and platform relocation was scheduled after the CCT1 was removed from the SVMF		
25	Verify that the conference tables and chairs near the MFM current location have been moved to the area just north of the access platforms in their new locations.		Inspection	The conference tables and chairs have been moved to the area just north of the access platforms in their new locations.		

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2516	DX CHANGE REQUEST

CR TITLE: ORION Reconfiguration

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
		(b) (4)		

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO923	01/25/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO923

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
February 1, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO923

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO922

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

Cynthia Maclean — Contracting Officer
1/25/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 923 is to: CR 2512 and 2516 Estimation The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $4,077.99 Work is to be completed by February 1, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	4,077.99	4,077.99	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 4,077.99

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

FY12 Estimation
CR-2512 & 2516

H060 CR 2512 & 2516 - Estimation only

		TOTAL		
SLC	Labor Category	GFY 12 Hours	GFY 12 Rate	GFY 12 Total
	(b) (4)			
	Material			
	Material Handling			
	G&A			
	Subtotal Material			
	Travel			
	Non Labor G&A			
	Subtotal Travel			
	Total Estimated Cost			
	Total Available Fee			
	Award Fee	(b) (4) of Total Fee		
	Target Incentive Fee	(b) (4) of Total Fee		
	Max Incentive Fee	Target multiplied by (b) (4)		
	Total Cost Plus Fee			

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO924	01/26/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO924

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 1, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO924

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO924

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer — 1/25/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 924 is: CR 2520 MSS-2 Rack Removal The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $18,032.71 Work is to be completed by March 1, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	18,032.71	18,032.71	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 18,032.71

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2520	DX CHANGE REQUEST

CR TITLE: MSS-2 Rack Removal

1. REQUESTOR: Michele Brekke	2. PHONE: global	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 609524

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
In order to support avionics development of C2V2 under ISS program CR 12639, the MSS-2 rack currently installed in SVMF Lab position P5 must be removed. The RWS capability in the lab mockup must be retained with minimal downtime.

7. RATIONALE
Boeing C2V2 development requires a MSS rack by 2/24/12. Reinstallation of the MSS-mounted Robotics Workstation (RWS) is required by 03/09/12, to support Inc-32 training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See page 2.

Note: Per the Safety Review conducted 01/10/2012 no TRR is required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale) 03/9/2012 (RWS function restored in Lab)	10. CR SUBMISSION DATE: 12/20/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _Allison McIntyre, Date:12/20/11

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: Ronny.l.newman@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $18,100	20. NEGOTIATED DELIVERY DATE: 03/01/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2520	DX CHANGE REQUEST

CR TITLE: MSS-2 Rack Removal

REQUIREMENTS/REFERENCES (cont.):

Rqmt #	Requirement Description	Primary Data Reference (Spec / Drawing)	Da a Source	QTY	Fidelity C d	Technical Contact
1	NSOC shall remove the RWS DCP, and associated wiring needed for RWS functionality from the LAP5 MSS-2 rack.	N/A	N/A	1	N/A	(b) (4)
2	NSOC shall coordinate with Boeing Huntsville for shipment of MSS-2 rack in time for 2/24/12 arrival. (Reference: COD to provide shipment.)	N/A	(b) (4)	N/A	N/A	
3	NSOC shall provide a rack front in the LAP5 location with the ability top mount the functional RWS equipment upon it.	N/A	N/A	1	N/A	
4	The replacement LAP5 rack front will have a front closeout with a UOP sized opening.	N/A	N/A	1	N/A	
5	The replacement LAP5 will have a Rack Interface Panel (RIP) plate that need not be labeled or painted.	N/A	N/A	1	N/A	
6	Install existing MSS rack photo façade on replacement rack front (Derived requirement).	N/A	N/A	1	N/A	Scott Segadi

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corn rs and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	NSOC shall remove the RWS DCP, and associated wiring needed for RWS functionality from the LAP5 MSS-2 rack.		Inspection	the RWS DCP, and associated wiring needed for RWS functionality were removed from the LAP5 MSS-2 rack		
5	NSOC shall coordinate with Boeing Huntsville for shipment of MSS-2 rack in time for 2/24/12 arrival. (Reference: COD to provide shipment.)		Inspection	NSOC coordinated with Boeing Huntsville for shipment of MSS-2 rack in time for 2/24/12 arrival.		
6	NSOC shall provide a rack front in the LAP5 location with the ability top mount the functional RWS equipment upon it.		Inspection	Rack front in the LAP5 location with the ability top mount the functional RWS equipment upon it was provided		
7	The replacement LAP5 rack front will have a front closeout with a UOP sized opening.		Inspection	The replacement LAP5 rack front has a front closeout with a UOP sized opening		
8	The replacement LAP5 will have a Rack Interface Panel (RIP) plate that need not be labeled or painted		Inspection	The replacement LAP5 has a RIP plate		
9	Install existing MSS rack photo façade (Derived requirement)		Inspection	MSS rack photo façade installed		

CR NO.: 2520	DX CHANGE REQUEST

CR TITLE: MSS-2 Rack Removal

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Task Name	Duration

(b) (4)

CR NO.: 2520	DX CHANGE REQUEST

CR TITLE: MSS-2 Rack Removal

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design Cost	PE Cost	Administrative	Tech Cost	Material Cost
FY2012	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO925	01/31/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO925

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 04,2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO925

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO924

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 1/31/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 925 is: CR 454 First Robotics Support The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $24,331.88 Work is to be completed by May 4, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	24,331.88	24,331.88	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 24,331.88

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 454	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY12

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: ITA-EA

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Establish NSOC technical support associated with the annual First Robotics Competition.

7. RATIONALE

Annual NASA-sponsored support - confirmed externally funded.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No Safety review required -- Annual event with safety processes in place from previous CR's (CR-407)

Annual NASA-sponsored support - confirmed externally funded.

9. NEED DATE: (support date in block 7 rationale) 9/30/2012	10. CR SUBMISSION DATE: 01/09/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 1/10/2012

12. NASA POC: Dan Sedej	13. PHONE: 48346	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $24,800	20. NEGOTIATED DELIVERY DATE: 5/04/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 454	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY12

REQUIREMENTS/REFERENCES (cont.):

- Safety oversight and facility oversight
- Manufacturing resources
- Travel in support of competition

Such support is scheduled outside of NBL standard working hours, and therefore, will be charged at an overtime rate (x1.5) for non-exempt personnel.

This CR will be funded through an ITA with the JSC/Engineering Directorate (Mail Code EA). The NBL and LMF have supported this activity in previous years under CR-107, 166, 220, 267, 334 and 407.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Safety oversight and facility oversight	Job	1	Inspection		(b) (4)
2.	Manufacturing resources	Job	1	Inspection		
3.	Travel in support of competition	Job	1	Inspection		

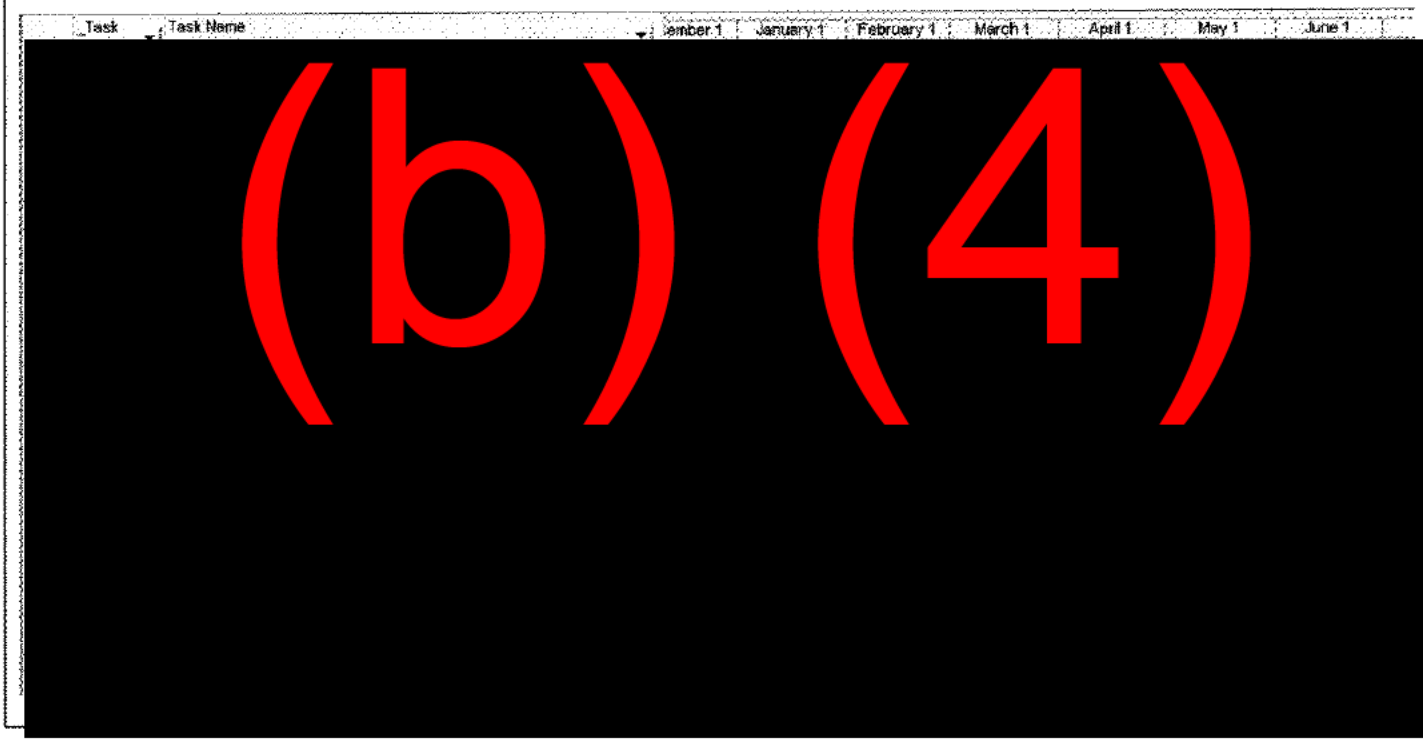
CR NO.: 454	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY12

SCHEDULE MILESTONES: (complete or reference separate project plan)

FIRST (For Inspiration and Recognition of Science and Technology) Robotics Schedule
January 4th first meeting.
January 7th Official Kickoff
February 29th Alamo Regional Tournament
March 28th – 31th Connecticut Regional Tournament
April 5th – 7th Lone Star Regional Tournament
April 25h – 28th St. Louis Nationals

(b) (4)



CR NO.: 454	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY12

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

No TRR is required per SR and therefore not in estimate.
Project planning worksheet and past similar project costs were used to establish estimate.

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO926Rev A	04/12/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO926Rev A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 17, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO926Rev A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO926 Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer — 4/13/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 926 Rev A is to: increase CR 2518 Seattle Museum of Flight FFT Project Cost The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $1,215,325.13 Work is to be completed by September 17, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	1,215,325.13	1,215,325.13	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 1,215,325.13

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2518A	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION T&R 3.6.3
☐ CONSTELLATION ☒ OTHER: (485310)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Seattle MOF project for NSOC portion of RSAA funded tasks, as previously estimated and specified.
Rev A incorporates changes from SCIFs 1,2,& 3.

7. RATIONALE
Implement RSAA between MOF and NASA

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. NSOC shall Provide FFT reassembly mechanical and electrical Instructions for MOF technicians use
2. NSOC shall package the ~~power~~ Blue ECS Cart **Rev A**, video, and audio consoles in crates suitable for truck transport
3. NSOC shall package loose items from the FFT in crates suitable for truck transport
4. NSOC shall provide electronic media of FFT photos, drawings and documents
5. NSOC shall protect the **4** 3 **Rev A** main FFT components with marine style shrink wrap and desiccant
6. NSOC shall design, analyze, reinforce and package the nose FFT section for Super Guppy transport requirements
7. NSOC shall design, analyze, reinforce and package the two payload bay FFT sections for Super Guppy transport requirements
8. NSOC shall provide Engineering and Technician supervision of the FFT reassembly
9. NSOC shall assist in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.
10. Per the Safety Review conducted 01/10/2012, Safety Review required prior to lift/wrap/foam activity.

(Cont on pg 2) **Rev A**

9. NEED DATE: (support date in block 7 rationale) 07/05/2012	10. CR SUBMISSION DATE: 12/08/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _____
Date: 12/08/2011

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$1,006,770~~ $1,215,300 **Rev A**	20. NEGOTIATED DELIVERY DATE: ~~07/05/2012~~ 9/17/2012 **Rev A**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 2518A	DX CHANGE REQUEST
CR TITLE: Seattle Museum of Flight (MOF) FFT project	
Closed by:_____ Date: _____	

CR NO.: 2518A	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

REQUIREMENTS/REFERENCES (continued):

8.11 Cut the payload bay along the line marked by MOF. **Rev A**
8.12 Remove and package two payload bay light for separate shipment to the MOF. **Rev A**
8.13 Make a paper template of the plywood structure that mounts the OMS Pods from the Tail Section of the FFT. **Rev A**
8.14 Make a paper template of the plywood structure that mounts the Engine Bells from the Tail Section of the FFT. **Rev A**
8.15 Make a paper template of the opening for the Vertical Stabilizer from the Tail Section of the FFT. **Rev A**
8.16 Excess the remaining Tail Section for disposition and remove from Building 9N. **Rev A**
8.17 Proof Test the Pallet Adapter and Tie Down Blanket. **Rev A**
8.18 Identify the sizes of the mid deck and flight deck lights. **Rev A**
8.19 Update the list of items to be shipped with the FFT to match the MOF request. **Rev A**
8.20 Provide technician support for the measurement of the Tail Section using JLG lift. **Rev A**
8.21 Cut the payload bay steel support structure into 8 sections as marked by MOF. **Rev A**
8.22 The pallet adapter shall be made from materials tested to maintain structural properties at 20F **Rev A**

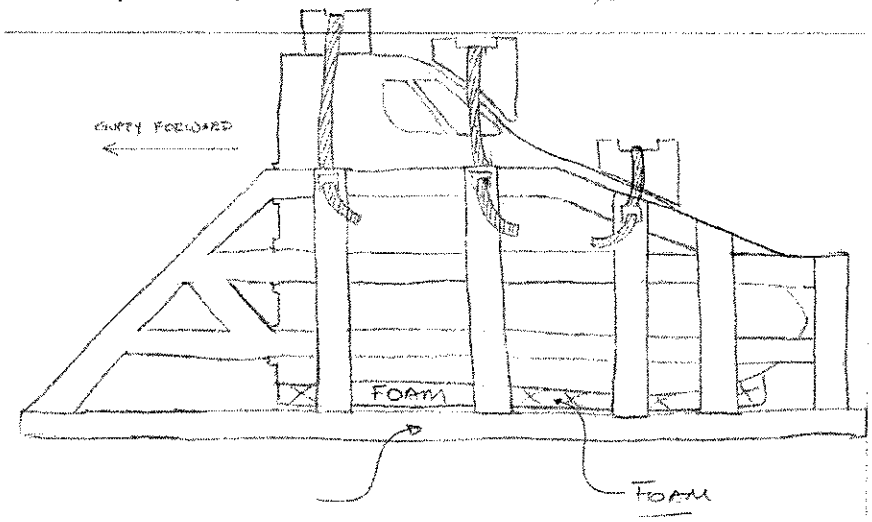


Figure 1 Design Concept for Transport

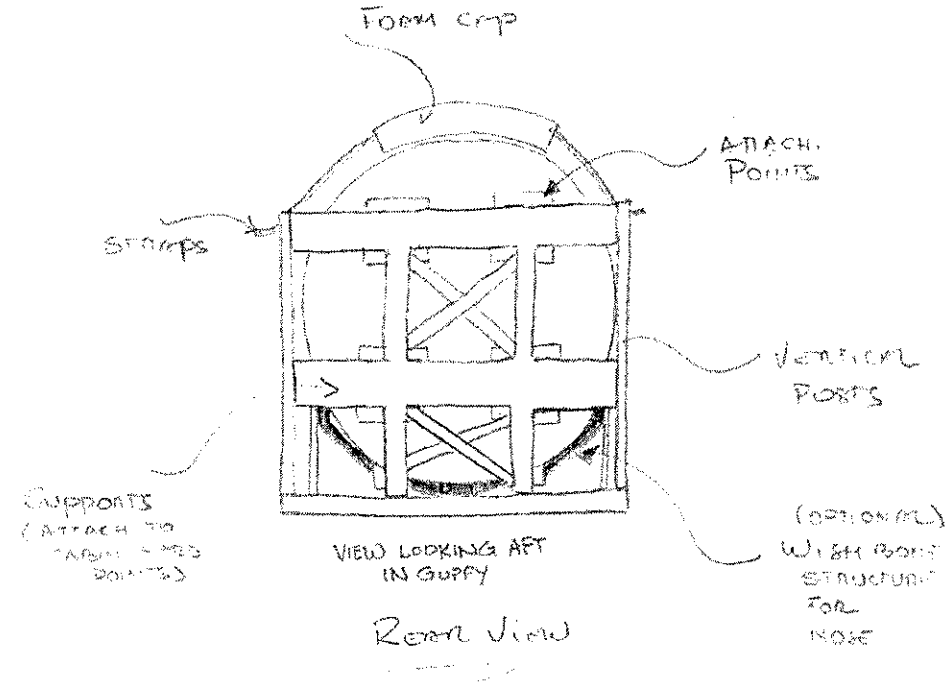


Figure 2 Aft View of Design Concept for Transport

CR NO.: 2518A	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A			
2	Verify there are no unidentified pinch points.	N/A			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A			
4	Verify by inspection that the NSOC has provided FFT reassembly mechanical and electrical Instructions for MOF technicians use.	Inspection of reassembly instructions verifies that NSOC has met requirement.		8.1	
5	Verify by inspection of the minutes of the meeting and closed action items for the PDR and CDR and JSC transportation receipt that the NSOC has packaged the power, video, and audio consoles in crates for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.2	
6	Verify by visual inspection that the NSOC has packaged loose items from the FFT in crates for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.3	
7	Verify by inspection that NSOC has provided electronic media of FFT photos, drawings and documents.	Note: Not to be provided until and unless ECR approval obtained and proper marking has been added. Inspection of electronic media verifies that NSOC has met requirements.		8.4	
8	Verify by visual inspection that NSOC has protected the 4 main FFT components with marine style shrink wrap and desiccant.	Inspection of shrink wrap components verifies that NSOC has met requirements.		8.5	
9	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the nose FFT section for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.6	
10	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the two Payload Bay sections for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.7	
11	Verify by inspection MOF email confirming that Engineering and Technician supervision of the FFT reassembly has occurred.	Inspection of MOF email provides verification that NSOC met requirement.		8.8	
12	Verify by inspection of meeting notes that NSOC has assisted in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.	Inspection of meeting notes and email provides verification that NSOC has met requirement.		8.9	
13	Verify Safety Review was conducted prior to lift/wrap/foam activity	Inspection of SR Folder contents verifies that SR was held.		8.10	

CR NO.: 2518A	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (cont. Rev A)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
14	Verify by inspection the payload bay is in two sections	Payload bay is separated into forward and aft sections		8.11	Rev A
15	Verify payload bay lights were shipped.	Inspection of shipping document lists two payload bay lights		8.12	Rev A
16	Verify paper template of OMS pods mounts is provided	Inspection shows Paper template of OMS pods mounts is provided		8.13	Rev A
17	Verify paper template of Engine bell mounts is provided	Inspection shows Paper template of engine bell mounts is provided		8.14	Rev A
18	Verify paper template of Vertical stabilizer opening mounts is provided	Inspection shows Paper template of vertical stabilizer is provided		8.15	Rev A
19	Verify by visual inspection the Tail is not in Bldg 9N, and view the NASA property record for the tail section	Tail is removed, NASA property cannibalization record is completed		8.16	Rev A
20	Inspect proof test evidence for the Pallet adapter and tie down blanket	Tag or Documents show proof tests were successfully executed		8.17	Rev A
21	Inspect record showing the middeck lights and flight deck lights sizes	Inspection shows size data was identified		8.18	Rev A
22	Inspect FFT shipping list against NASA list	Inspection shows shipping list reflects MOF changes		8.19	Rev A
23	Inspect tail section measurements or work or to support measurements	Inspection of Work order or resulting data shows SVMF supported measurements		8.20	Rev A
24	Verify by inspection Payload bay base structure was cut into 8 sections per MOF instruction for road transport	Inspection shows structure was cut into 8 sections for road transport		8.21	Rev A
25	Inspect charpy steel test records for material used to fabricate pallet adapter	Test results show strength of material is maintained at 20F		8.22	Rev A

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Task Numbers	Task Name	Start	Finish	% Work

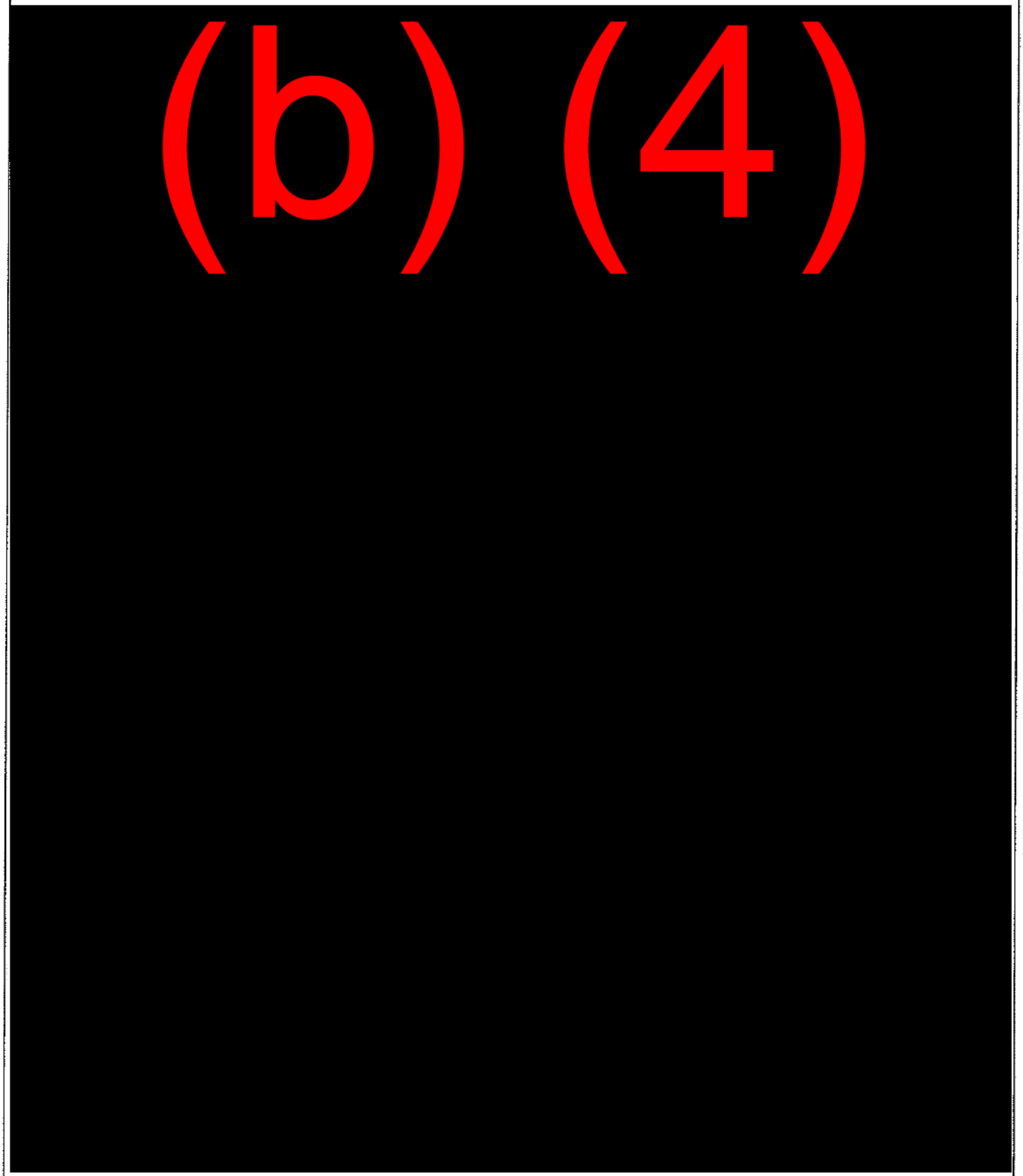
(b) (4)

Form: DX-FRM-001

SCHEDULE MILESTONES: (continued)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

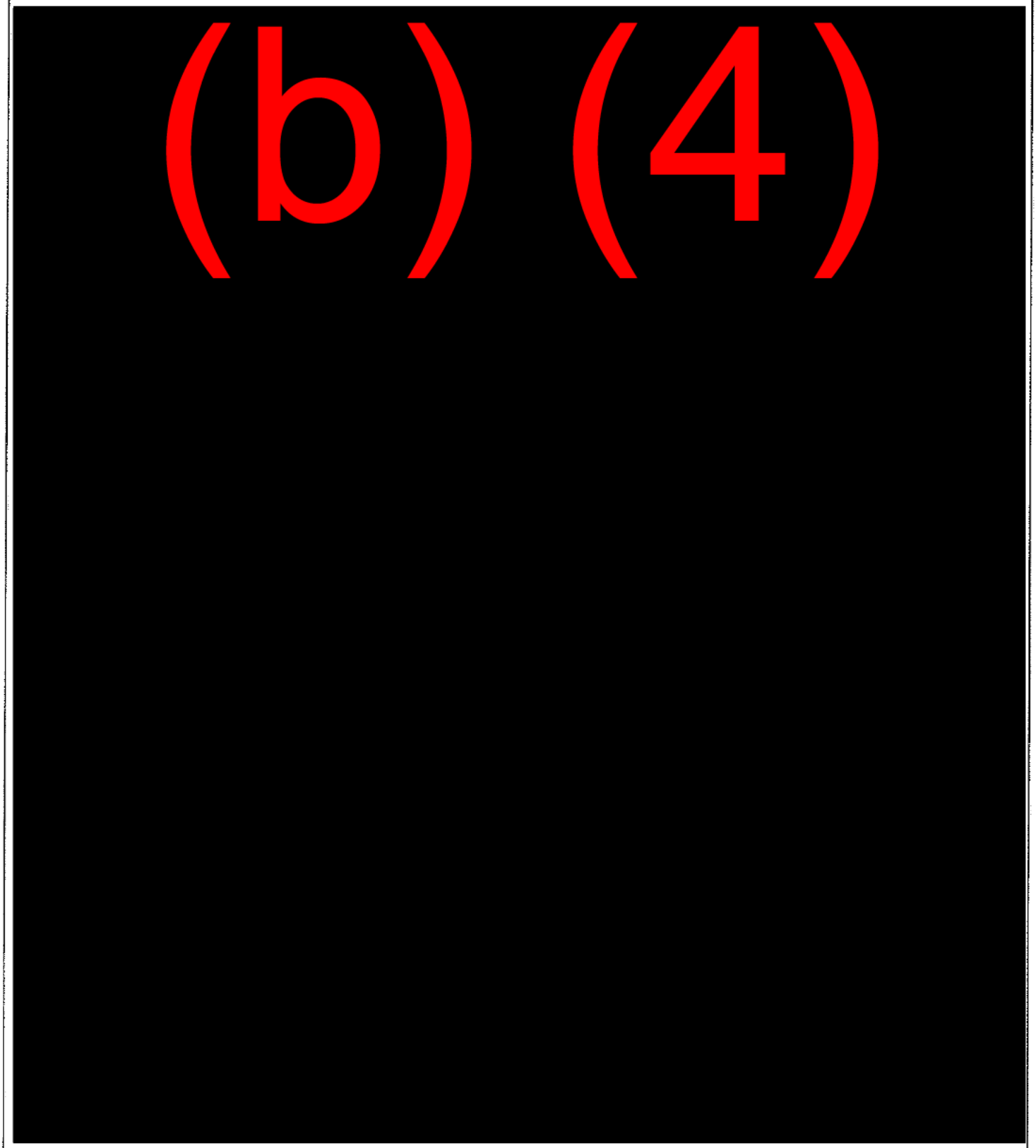


RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

(Continued)

RISK ASSESSMENT (Continued)



MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material	Travel
(b) (4)					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO926Rev C	09/04/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO926Rev C

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 17, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO926Rev C

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO926 Rev C

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/4/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 926 Rev C is to: Increase CR 2518C Seattle Museum of Flight FFT Project Cost The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Revision is $-34,659.12 The total value of this Delivery Order is $1,279,290.23 Work is to be completed by September 17, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	-34,659.12	-34,659.12	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total -34,659.12

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2518 Rev C	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION T&R 3.6.3
☐ CONSTELLATION ☒ OTHER: ~~(486310)~~ **Rev B** 150112

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Seattle MOF project for NSOC portion of RSAA funded tasks, as previously estimated and specified.
Rev A incorporates changes from SCIFs 1,2,& 3. **Rev B** Incorporates SCIFs 4-12 **Rev C** incorporates SCIF 13 and deletes final reassembly support

7. RATIONALE
Implement RSAA between MOF and NASA

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. NSOC shall Provide FFT reassembly mechanical and electrical Instructions for MOF technicians use
2. ~~NSOC shall package the power Blue ECS Cart **Rev A**, video, and audio consoles in crates suitable for truck transport~~ **Rev B**
3. ~~NSOC shall package loose items from the FFT in crates suitable for truck transport~~ **Rev B**
2. NSOC shall provide the power Blue ECS Cart, video, and audio consoles to JSC transportation for packaging and shipment. **Rev B SCIF 10**
3. NSOC shall provide loose items from the FFT to JSC transportation for packaging and shipment. **Rev B SCIF 10**
4. NSOC shall provide electronic media of FFT photos, drawings and documents
5. NSOC shall protect the **4** 3 **Rev A** main FFT components with marine style shrink wrap and desiccant
6. NSOC shall design, analyze, reinforce and package the nose FFT section for Super Guppy transport requirements
7. NSOC shall design, analyze, reinforce and package the two payload bay FFT sections for Super Guppy transport requirements
8. NSOC shall provide Engineering and Technician supervision of the FFT reassembly
9. NSOC shall assist in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.
10. Per the Safety Review conducted 01/10/2012, Safety Review required prior to lift/wrap/foam activity.

(Cont on pg 2) **Rev A**

9. NEED DATE: (support date in block 7 rationale) 07/05/2012	10. CR SUBMISSION DATE: 12/08/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _____
Date: 12/08/2011

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$1,006,770~~ ~~$1,215,300 Rev A~~ ~~$1,313,950 Rev B~~ **$1,279,300 Rev C**	20. NEGOTIATED DELIVERY DATE: ~~07/05/2012~~ 9/17/2012 **Rev A**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2518 Rev C	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

REQUIREMENTS/REFERENCES (continued):

8.11 Cut the payload bay along the line marked by MOF. **Rev A**
8.12 Remove and package two payload bay light for separate shipment to the MOF. **Rev A**
8.13 Make a paper template of the plywood structure that mounts the OMS Pods from the Tail Section of the FFT. **Rev A**
8.14 Make a paper template of the plywood structure that mounts the Engine Bells from the Tail Section of the FFT. **Rev A**
8.15 Make a paper template of the opening for the Vertical Stabilizer from the Tail Section of the FFT. **Rev A**
8.16 Excess the remaining Tail Section for disposition and remove from Building 9N. **Rev A**
8.17 Proof Test the Pallet Adapter and Tie Down Blanket. **Rev A**
8.18 Identify the sizes of the mid deck and flight deck lights. **Rev A**
8.19 Update the list of items to be shipped with the FFT to match the MOF request. **Rev A**
8.20 Provide technician support for the measurement of the Tail Section using JLG lift. **Rev A**
8.21 Cut the payload bay steel support structure into 8 sections as marked by MOF. **Rev A**
8.22 The pallet adapter shall be made from materials tested to maintain structural properties at 20F **Rev A**
8.22 Provide a secondary restraint mechanism connecting the Mockup crew compartment to the crate **REV B SCIF 7**

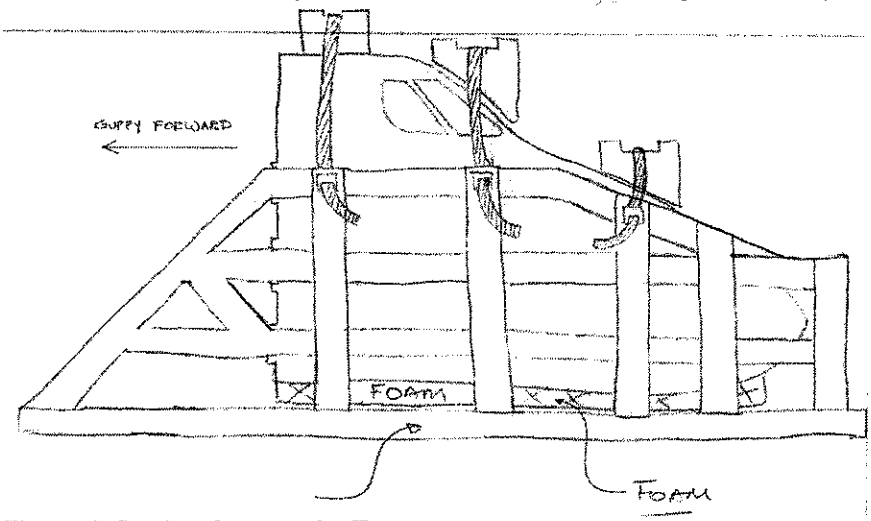


Figure 1 Design Concept for Transport

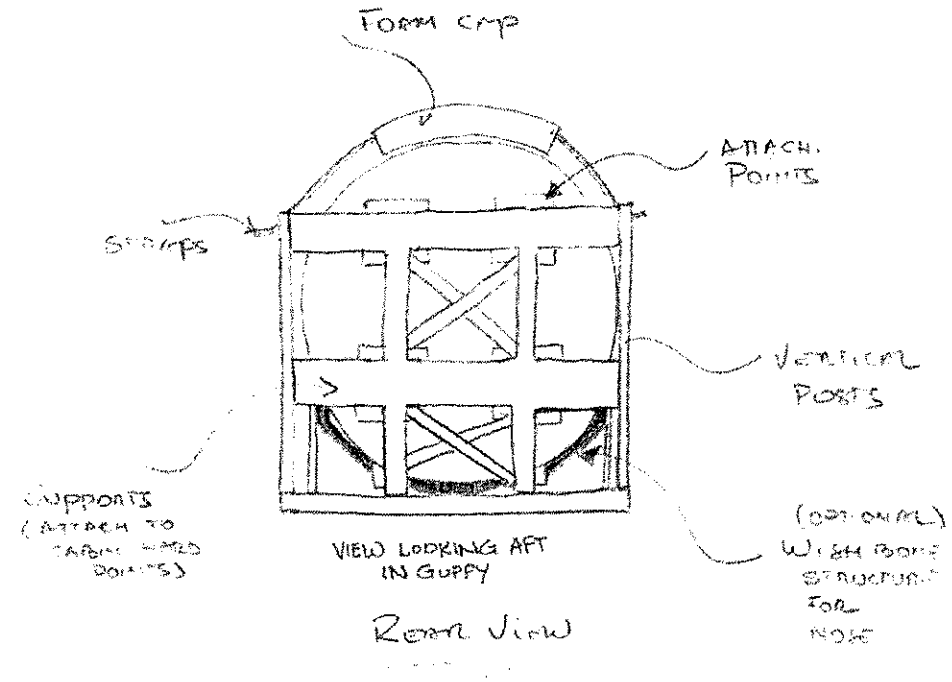


Figure 2 Aft View of Design Concept for Transport

CR NO.: 2518 Rev C	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A			
2	Verify there are no unidentified pinch points.	N/A			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A			
4	Verify by inspection that the NSOC has provided FFT reassembly mechanical and electrical Instructions for MOF technicians use.	Inspection of reassembly instructions verifies that NSOC has met requirement.		8.1	
5	Verify by inspection of the minutes of the meeting and closed action items for the PDR and CDR and JSC transportation receipt that the NSOC has ~~packaged~~ provided the power, video, and audio consoles ~~in crates~~ to JSC transportation for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.2	**Rev B**
6	Verify by visual inspection that the NSOC has ~~packaged~~ provided loose items from the FFT ~~in crates~~ to JSC transportation for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.3	**Rev B**
7	Verify by inspection that NSOC has provided electronic media of FFT photos, drawings and documents.	Note: Not to be provided until and unless ECR approval obtained and proper marking has been added. Inspection of electronic media verifies that NSOC has met requirements.		8.4	
8	Verify by visual inspection that NSOC has protected the 4 main FFT components with marine style shrink wrap and desiccant.	Inspection of shrink wrap components verifies that NSOC has met requirements.		8.5	
9	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the nose FFT section for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.6	
10	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the two Payload Bay sections for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.7	
11	Verify by inspection MOF email confirming that ~~Engineering and~~ **Rev C** Technician supervision of the FFT reassembly has occurred.	Inspection of MOF email provides verification that NSOC met requirement.		8.8	
12	Verify by inspection of meeting notes that NSOC has assisted in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.	Inspection of meeting notes and email provides verification that NSOC has met requirement.		8.9	
13	Verify Safety Review was conducted prior to lift/wrap/foam activity	Inspection of SR Folder contents verifies that SR was held.		8.10	

CR TITLE: Seattle Museum of Flight (MOF) FFT project

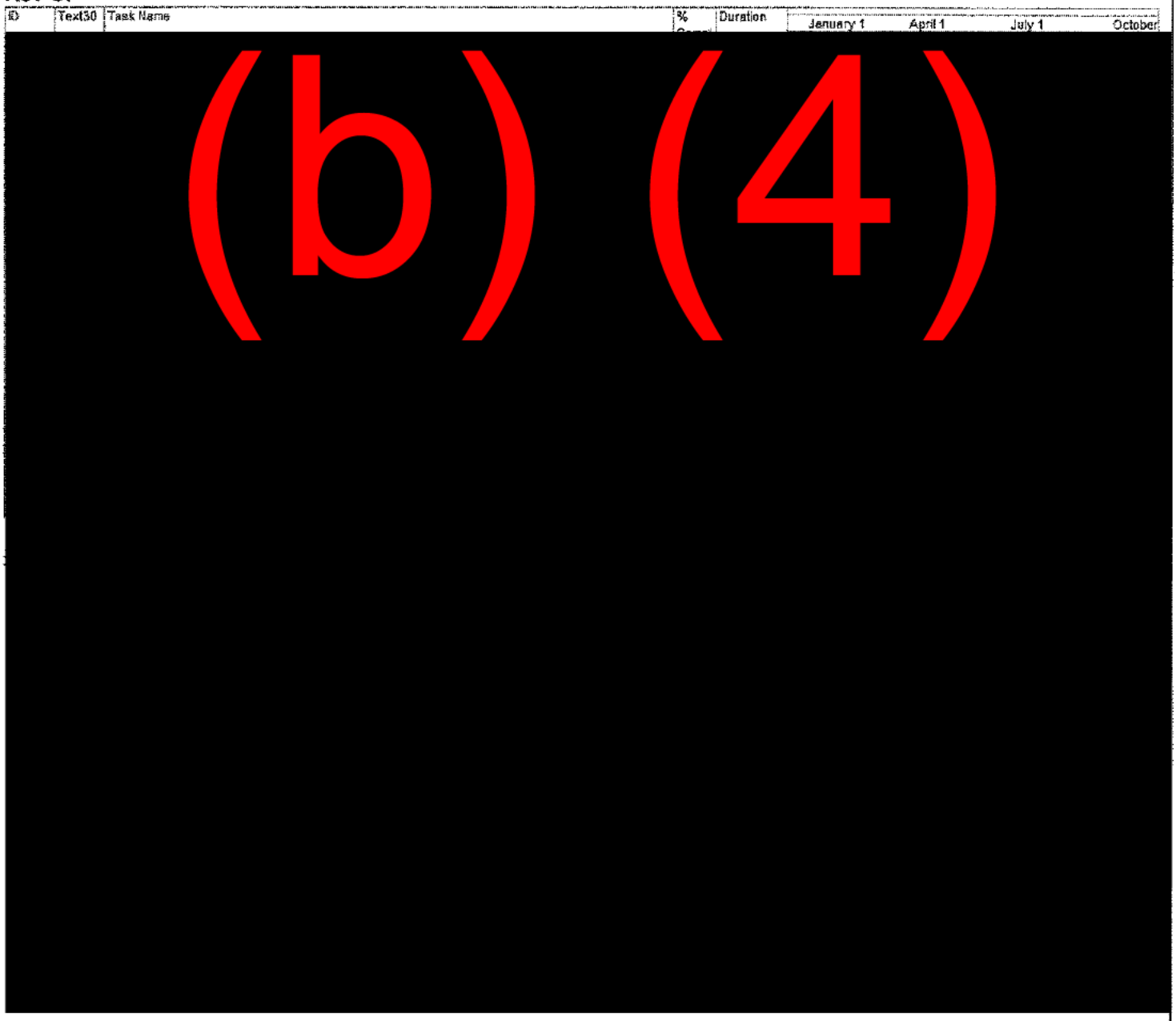
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (cont. Rev A)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
14	Verify by inspection the payload bay is in two sections	Payload bay is separated into forward and aft sections		8.11	Rev A
15	Verify payload bay lights were shipped.	Inspection of shipping document lists two payload bay lights		8.12	Rev A
16	Verify paper template of OMS pods mounts is provided	Inspection shows Paper template of OMS pods mounts is provided		8.13	Rev A
17	Verify paper template of Engine bell mounts is provided	Inspection shows Paper template of engine bell mounts is provided		8.14	Rev A
18	Verify paper template of Vertical stabilizer opening mounts is provided	Inspection shows Paper template of vertical stabilizer is provided		8.15	Rev A
19	Verify by visual inspection the Tail is not in Bldg 9N, and view the NASA property record for the tail section	Tail is removed, NASA property cannibalization record is completed		8.16	Rev A
20	Inspect proof test evidence for the Pallet adapter and tie down blanket	Tag or Documents show proof tests were successfully executed		8.17	Rev A
21	Inspect record showing the middeck lights and flight deck lights sizes	Inspection shows size data was identified		8.18	Rev A
22	Inspect FFT shipping list against NASA list	Inspection shows shipping list reflects MOF changes		8.19	Rev A
23	Inspect tail section measurements or work or to support measurements	Inspection of Work order or resulting data shows SVMF supported measurements		8.20	Rev A
24	Verify by inspection Payload bay base structure was cut into 8 sections per MOF instruction for road transport	Inspection shows structure was cut into 8 sections for road transport		8.21	Rev A
25	Inspect charpy steel test records for material used to fabricate pallet adapter	Test results show strength of material is maintained at 20F		8.22	Rev A

CR NO.: 2518 Rev C	DX CHANGE REQUEST
CR TITLE: Seattle Museum of Flight (MOF) FFT project	

SCHEDULE MILESTONES:

Rev C:



CR NO.: 2518 Rev C	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

Form: DX-FRM-001

CR NO.: 2518 Rev C	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

(Continued)

CR NO.: 2518 Rev C	DX CHANGE REQUEST
CR TITLE: Seattle Museum of Flight (MOF) FFT project	

RISK ASSESSMENT (Continued)

(b) (4)

(Continued)

CR NO.: 2518 Rev C	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

RISK ASSESSMENT (Continued)

(b) (4)

CR NO.: 2518 Rev C	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material	Travel
(b) (4)					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO926Rev B	06/07/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO926Rev B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 17, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO926Rev B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO926 Rev B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer — 6/6/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 926 Rev B is to: increase CR 2518B Seattle Museum of Flight FFT Project Cost The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $98,624.22 Work is to be completed by September 17, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	98,624.22	98,624.22	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 98,624.22

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION T&R 3.6.3
☐ CONSTELLATION ☒ OTHER: ~~(485310)~~ **Rev B** 150112

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Seattle MOF project for NSOC portion of RSAA funded tasks, as previously estimated and specified.
Rev A incorporates changes from SCIFs 1,2,& 3. **Rev B** Incorporates SCIFs 4-12

7. RATIONALE
Implement RSAA between MOF and NASA

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. NSOC shall Provide FFT reassembly mechanical and electrical Instructions for MOF technicians use
2. ~~NSOC shall package the power Blue ECS Cart **Rev A**, video, and audio consoles in crates suitable for truck transport~~ **Rev B**
3. ~~NSOC shall package loose items from the FFT in crates suitable for truck transport~~ **Rev B**
2. NSOC shall provide the power Blue ECS Cart, video, and audio consoles to JSC transportation for packaging and shipment. **Rev B SCIF 10**
3. NSOC shall provide loose items from the FFT to JSC transportation for packaging and shipment. **Rev B SCIF 10**
4. NSOC shall provide electronic media of FFT photos, drawings and documents
5. NSOC shall protect the **4** 3 **Rev A** main FFT components with marine style shrink wrap and desiccant
6. NSOC shall design, analyze, reinforce and package the nose FFT section for Super Guppy transport requirements
7. NSOC shall design, analyze, reinforce and package the two payload bay FFT sections for Super Guppy transport requirements
8. NSOC shall provide Engineering and Technician supervision of the FFT reassembly
9. NSOC shall assist in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.
10. Per the Safety Review conducted 01/10/2012, Safety Review required prior to lift/wrap/foam activity.

(Cont on pg 2) **Rev A**

9. NEED DATE: (support date in block 7 rationale) 07/05/2012	10. CR SUBMISSION DATE: 12/08/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _____
Date: 12/08/2011

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$1,006,770~~ ~~$1,215,300~~ **Rev A $1,313,950 Rev B**	20. NEGOTIATED DELIVERY DATE: ~~07/05/2012~~ 9/17/2012 **Rev A**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

REQUIREMENTS/REFERENCES (continued):

8.11 Cut the payload bay along the line marked by MOF. **Rev A**
8.12 Remove and package two payload bay light for separate shipment to the MOF. **Rev A**
8.13 Make a paper template of the plywood structure that mounts the OMS Pods from the Tail Section of the FFT. **Rev A**
8.14 Make a paper template of the plywood structure that mounts the Engine Bells from the Tail Section of the FFT. **Rev A**
8.15 Make a paper template of the opening for the Vertical Stabilizer from the Tail Section of the FFT. **Rev A**
8.16 Excess the remaining Tail Section for disposition and remove from Building 9N. **Rev A**
8.17 Proof Test the Pallet Adapter and Tie Down Blanket. **Rev A**
8.18 Identify the sizes of the mid deck and flight deck lights. **Rev A**
8.19 Update the list of items to be shipped with the FFT to match the MOF request. **Rev A**
8.20 Provide technician support for the measurement of the Tail Section using JLG lift. **Rev A**
8.21 Cut the payload bay steel support structure into 8 sections as marked by MOF. **Rev A**
8.22 The pallet adapter shall be made from materials tested to maintain structural properties at 20F **Rev A**
8.22 Provide a secondary restraint mechanism connecting the Mockup crew compartment to the crate **REV B SCIF 7**

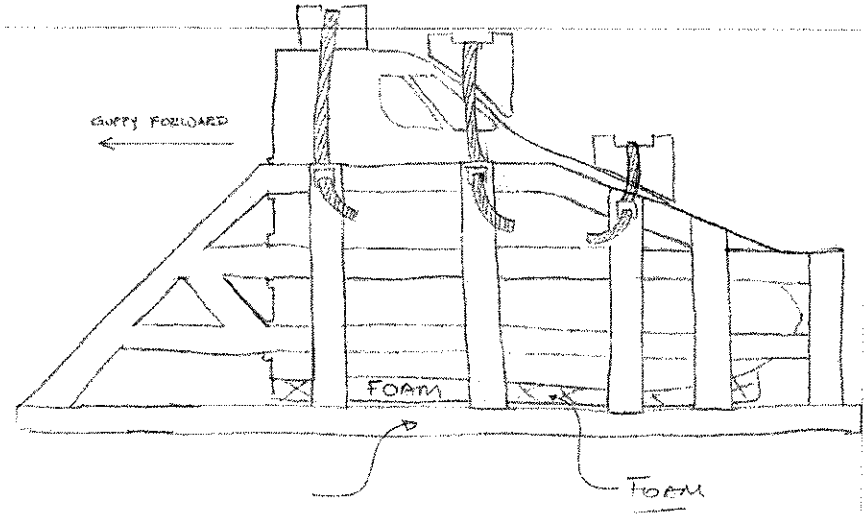


Figure 1 Design Concept for Transport

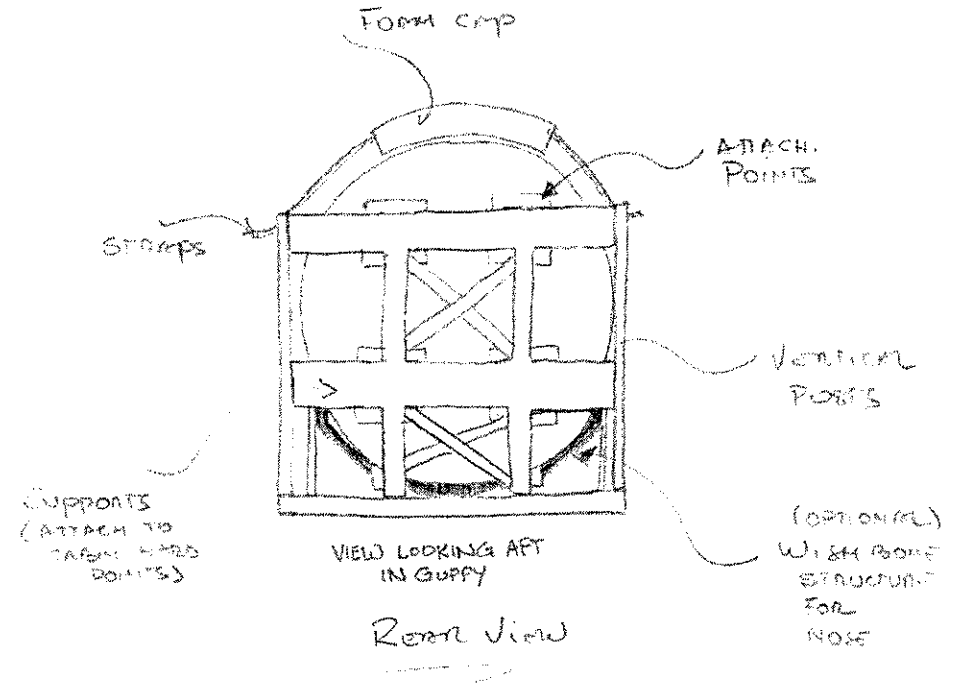


Figure 2 Aft View of Design Concept for Transport

CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A			
2	Verify there are no unidentified pinch points.	N/A			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A			
4	Verify by inspection that the NSOC has provided FFT reassembly mechanical and electrical Instructions for MOF technicians use.	Inspection of reassembly instructions verifies that NSOC has met requirement.		8.1	
5	Verify by inspection of the minutes of the meeting and closed action items for the PDR and CDR and JSC transportation receipt that the NSOC has ~~packaged~~ provided the power, video, and audio consoles ~~in crates~~ to JSC transportation for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.2	**Rev B**
6	Verify by visual inspection that the NSOC has ~~packaged~~ provided loose items from the FFT ~~in crates~~ to JSC transportation for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.3	**Rev B**
7	Verify by inspection that NSOC has provided electronic media of FFT photos, drawings and documents.	Note: Not to be provided until and unless ECR approval obtained and proper marking has been added. Inspection of electronic media verifies that NSOC has met requirements.		8.4	
8	Verify by visual inspection that NSOC has protected the 4 main FFT components with marine style shrink wrap and desiccant.	Inspection of shrink wrap components verifies that NSOC has met requirements.		8.5	
9	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the nose FFT section for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.6	
10	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the two Payload Bay sections for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.7	
11	Verify by inspection MOF email confirming that Engineering and Technician supervision of the FFT reassembly has occurred.	Inspection of MOF email provides verification that NSOC met requirement.		8.8	
12	Verify by inspection of meeting notes that NSOC has assisted in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.	Inspection of meeting notes and email provides verification that NSOC has met requirement.		8.9	
13	Verify Safety Review was conducted prior to lift/wrap/foam activity	Inspection of SR Folder contents verifies that SR was held.		8.10	

CR TITLE: Seattle Museum of Flight (MOF) FFT project

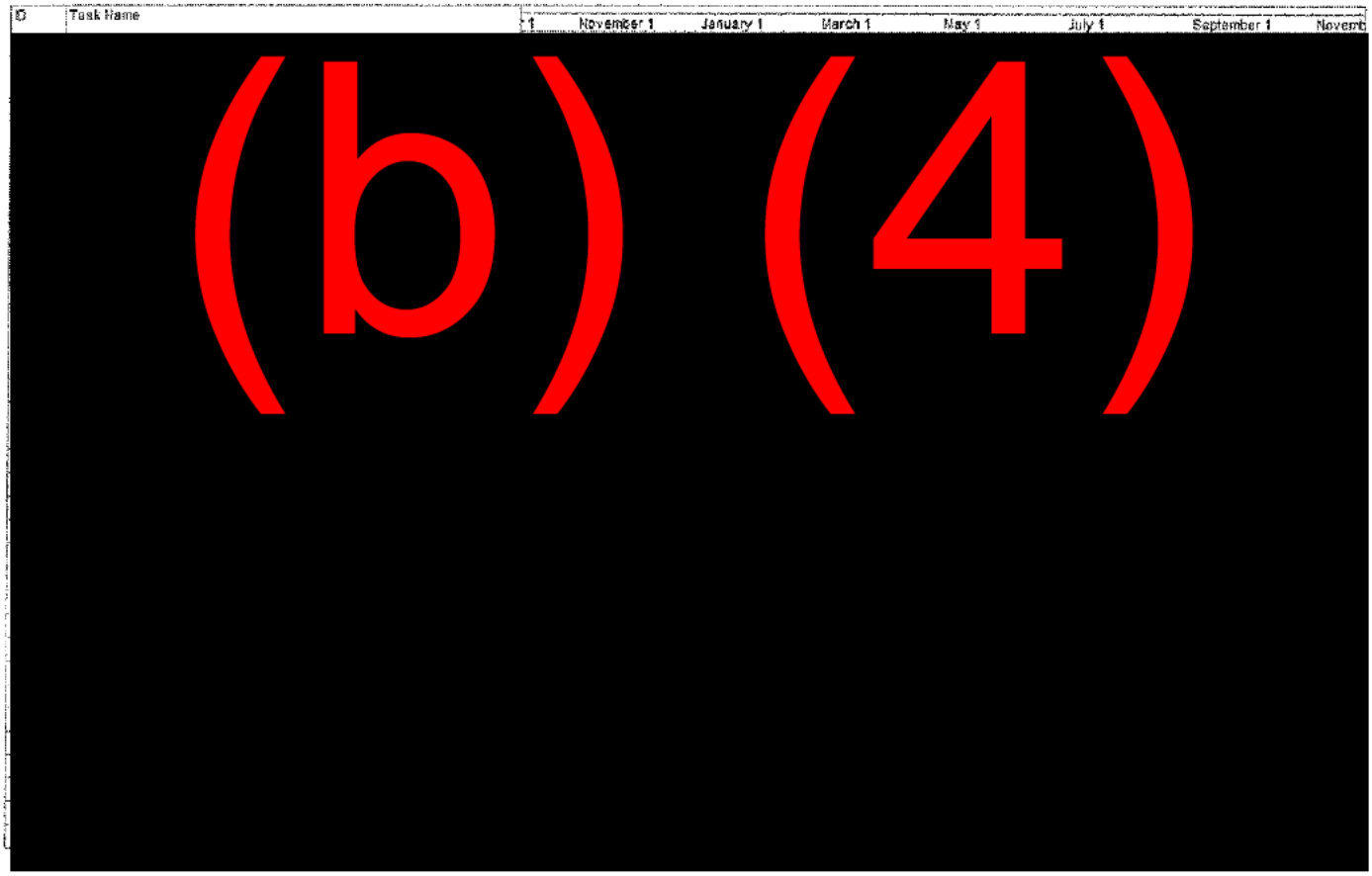
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (cont. Rev A)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
14	Verify by inspection the payload bay is in two sections	Payload bay is separated into forward and aft sections		8.11	Rev A
15	Verify payload bay lights were shipped.	Inspection of shipping document lists two payload bay lights		8.12	Rev A
16	Verify paper template of OMS pods mounts is provided	Inspection shows Paper template of OMS pods mounts is provided		8.13	Rev A
17	Verify paper template of Engine bell mounts is provided	Inspection shows Paper template of engine bell mounts is provided		8.14	Rev A
18	Verify paper template of Vertical stabilizer opening mounts is provided	Inspection shows Paper template of vertical stabilizer is provided		8.15	Rev A
19	Verify by visual inspection the Tail is not in Bldg 9N, and view the NASA property record for the tail section	Tail is removed, NASA property cannibalization record is completed		8.16	Rev A
20	Inspect proof test evidence for the Pallet adapter and tie down blanket	Tag or Documents show proof tests were successfully executed		8.17	Rev A
21	Inspect record showing the middeck lights and flight deck lights sizes	Inspection shows size data was identified		8.18	Rev A
22	Inspect FFT shipping list against NASA list	Inspection shows shipping list reflects MOF changes		8.19	Rev A
23	Inspect tail section measurements or work or to support measurements	Inspection of Work order or resulting data shows SVMF supported measurements		8.20	Rev A
24	Verify by inspection Payload bay base structure was cut into 8 sections per MOF instruction for road transport	Inspection shows structure was cut into 8 sections for road transport		8.21	Rev A
25	Inspect charpy steel test records for material used to fabricate pallet adapter	Test results show strength of material is maintained at 20F		8.22	Rev A

CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

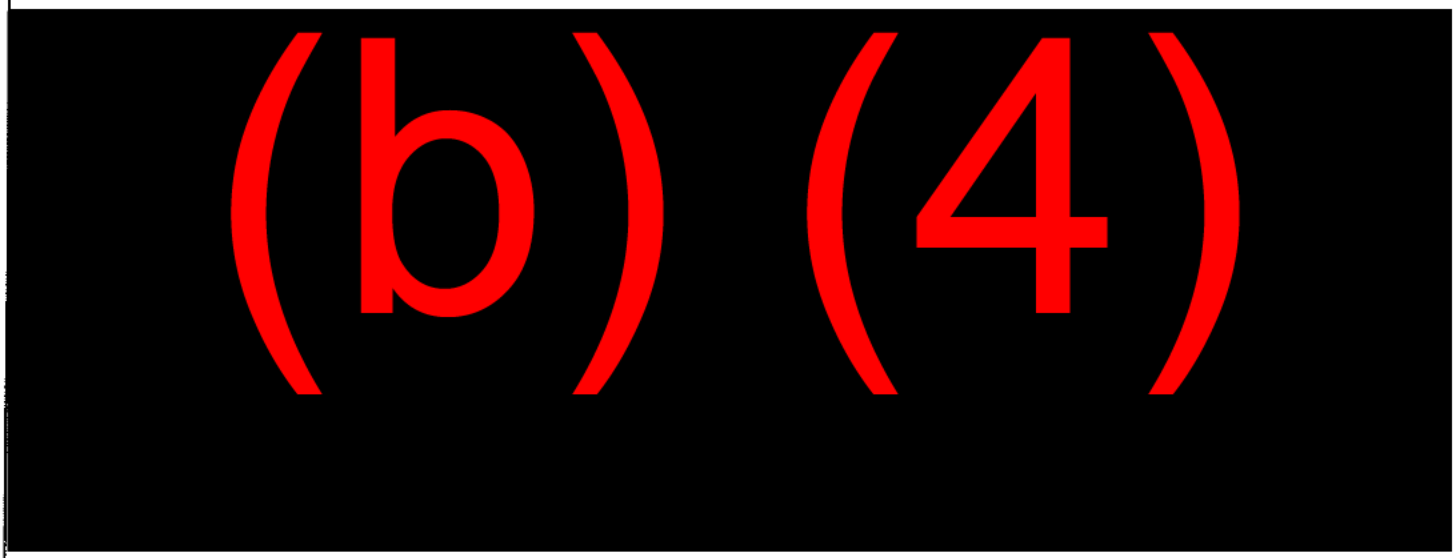
SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

SCHEDULE MILESTONES: (continued)



CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference

[redacted]

(Continued)

CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

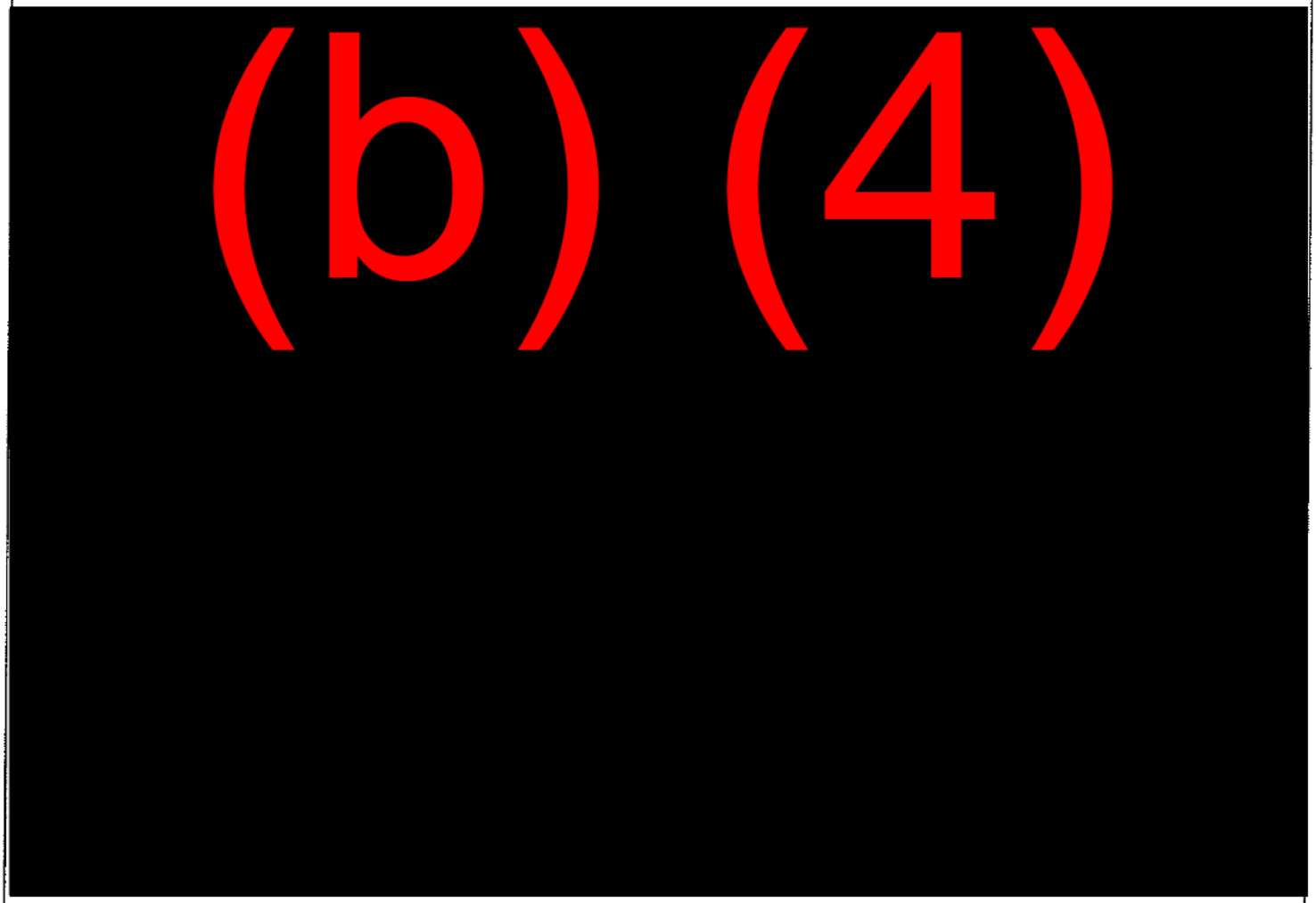
RISK ASSESSMENT (Continued)

(b) (4)

CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

RISK ASSESSMENT (Continued)



CR NO.: 2518 Rev B	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material	Travel
(b) (4)					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO926	02/02/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO926

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
July 05,2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO926

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO924

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 2/3/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 926 is: CR 2518 Seattle Museum of Flight FFT Project The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $1,006,371.00 Work is to be completed by July 05, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	1,006,371.00	1,006,371.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 1,006,371.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: T&R

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Seattle MOF project for NSOC portion of RSAA funded tasks, as previously estimated and specified.

7. RATIONALE
Implement RSAA between MOF and NASA

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. NSOC shall Provide FFT reassembly mechanical and electrical Instructions for MOF technicians use
2. NSOC shall package the power, video, and audio consoles in crates suitable for truck transport
3. NSOC shall package loose items from the FFT in crates suitable for truck transport
4. NSOC shall provide electronic media of FFT photos, drawings and documents
5. NSOC shall protect the 4 main FFT components with marine style shrink wrap and desiccant
6. NSOC shall design, analyze, reinforce and package the nose FFT section for Super Guppy transport requirements
7. NSOC shall design, analyze, reinforce and package the two payload bay FFT sections for Super Guppy transport requirements
8. NSOC shall provide Engineering and Technician supervision of the FFT reassembly
9. NSOC shall assist in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.
10. Per the Safety Review conducted 01/10/2012, Safety Review required prior to lift/wrap/foam activity.

9. NEED DATE: (support date in block 7 rationale) 07/05/2012	10. CR SUBMISSION DATE: 12/08/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _____
Date: 12/08/2011

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes -- prepare per contractor's procedures and attach ☒ No -- completion of this form is adequate for planning

19. COST IMPACT: $1,006,770	20. NEGOTIATED DELIVERY DATE: 07/05/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

Form: DX-FRM-001

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

REQUIREMENTS/REFERENCES (cont.):

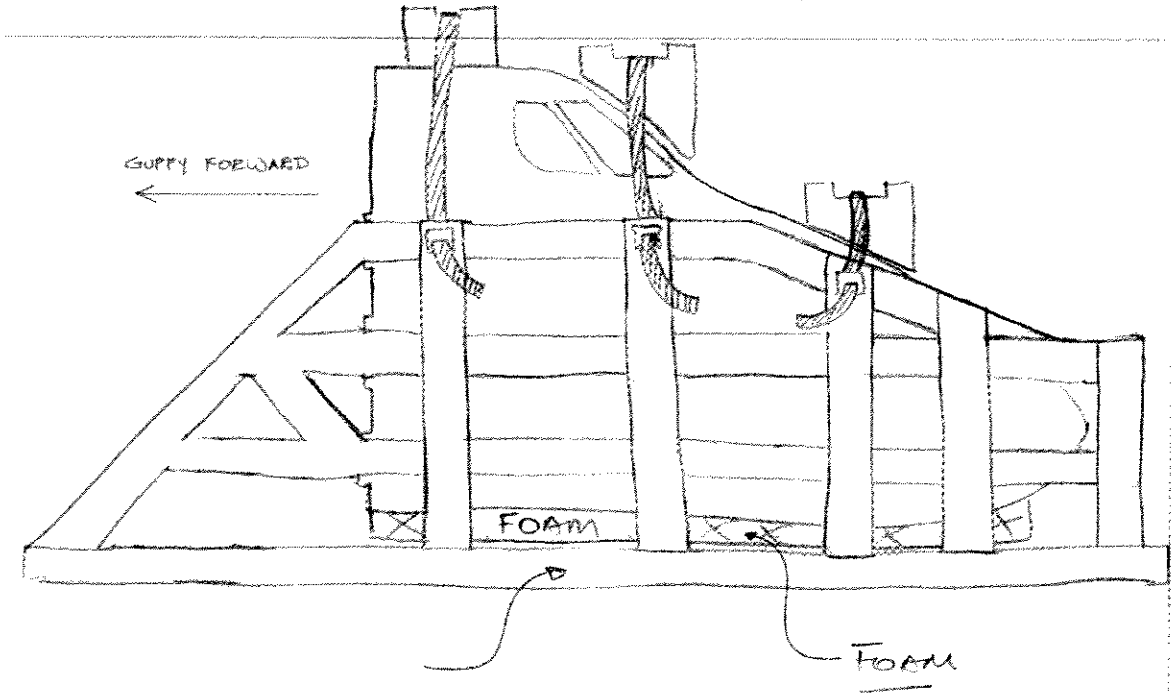


Figure 1 Design Concept for Transport

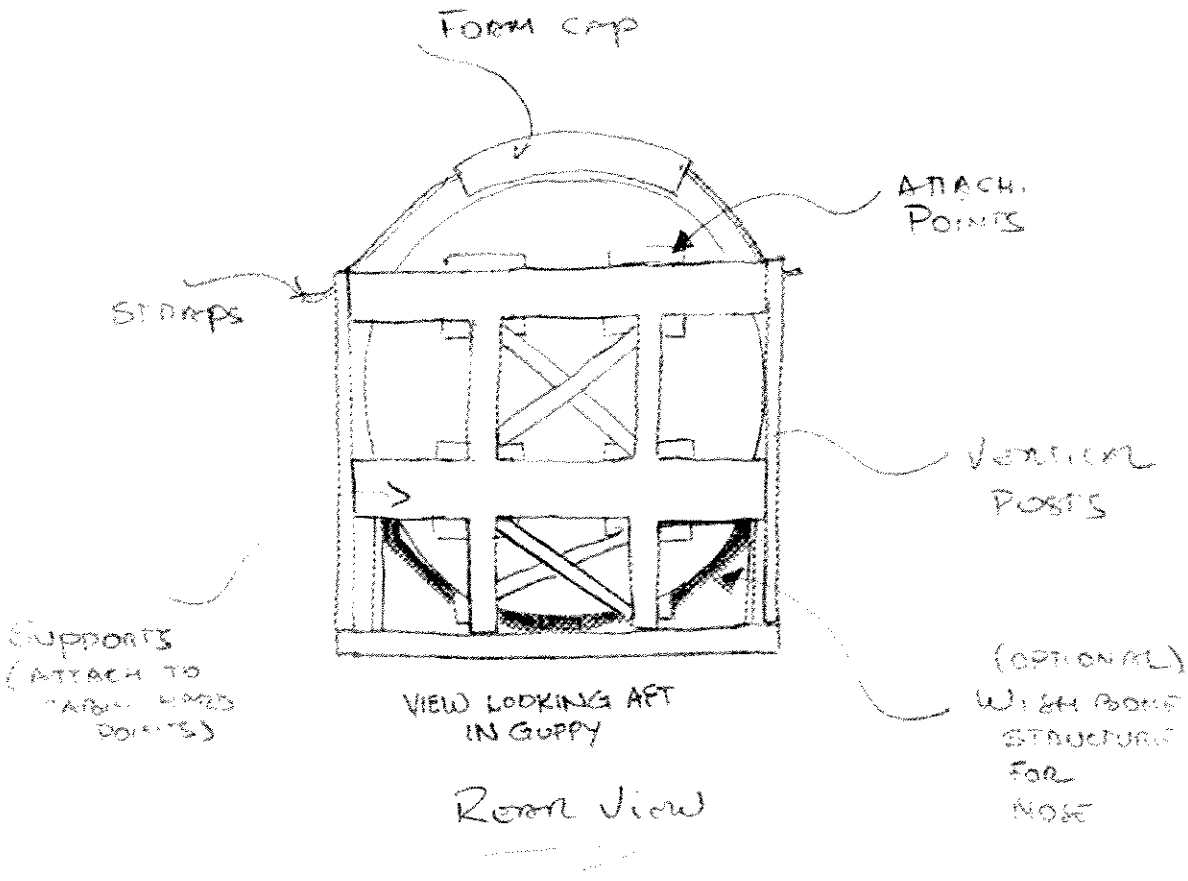


Figure 2 Aft View of Design Concept for Transport

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	N/A			
2	Verify there are no unidentified pinch points.	N/A			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	N/A			
4	Verify by inspection that the NSOC has provided FFT reassembly mechanical and electrical Instructions for MOF technicians use.	Inspection of reassembly instructions verifies that NSOC has met requirement.		8.1	
5	Verify by inspection of the minutes of the meeting and closed action items for the PDR and CDR and JSC transportation receipt that the NSOC has packaged the power, video, and audio consoles in crates for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.2	
6	Verify by visual inspection that the NSOC has packaged loose items from the FFT in crates for truck transport.	Inspection of documents and email verifies that NSOC has met requirement.		8.3	
7	Verify by inspection that NSOC has provided electronic media of FFT photos, drawings and documents.	Note: Not to be provided until and unless ECR approval obtained and proper marking has been added. Inspection of electronic media verifies that NSOC has met requirements.		8.4	
8	Verify by visual inspection that NSOC has protected the 4 main FFT components with marine style shrink wrap and desiccant.	Inspection of shrink wrap components verifies that NSOC has met requirements.		8.5	
9	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the nose FFT section for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.6	
10	Verify by inspection that NSOC has designed, analyzed, reinforced and packaged the two Payload Bay sections for Super Guppy transport requirements.	Inspection of PDR, CDR, Stress Report documents and AOD email verifies that NSOC has met AOD requirement.		8.7	
11	Verify by inspection MOF email confirming that Engineering and Technician supervision of the FFT reassembly has occurred.	Inspection of MOF email provides verification that NSOC met requirement.		8.8	
12	Verify by inspection of meeting notes that NSOC has assisted in coordination with all parties, AOD, COD, EA to aid in the execution of the RSAA with MOF.	Inspection of meeting notes and email provides verification that NSOC has met requirement.		8.9	
13	Verify Safety Review was conducted prior to lift/wrap/foam activity	Inspection of SR Folder contents verifies that SR was held.		8.10	

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)
ASSUMPTIONS

(b) (4)

Form: DX-FRM-001

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

Form: DX-FRM-001

CR NO.: 2518	DX CHANGE REQUEST

CR TITLE: Seattle Museum of Flight (MOF) FFT project

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)
(CONTINUED)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material	Travel
			(b) (4)		

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO928	02/17/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO928

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 4, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO928

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO928

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 2/17/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 928 is to: NEEMO Support CR-0456 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $22,200.09 Work is to be completed by May 4, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	22,200.09	22,200.09	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 22,200.09

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 456	DX CHANGE REQUEST

CR TITLE: NEEMO Support

1. REQUESTOR: Jesse Buffington	2. PHONE: 37110	3. E-MAIL: jesse.a.buffington@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: ITA-EC (TBD)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Support EC division with manufacturing of development hardware for NEEMO.

7. RATIONALE
The LMF Manufacturing department's knowledge of mockup manufacturing use in underwater process development and training is necessary to help ensure cost effectiveness and equipment development of test hardware. This hardware will be used to support the next NEEMO mission and as such needs to be finished by the end of April 2012.

8. REQUIREMENTS AND REFERENCES:

No Safety Review required (Standard LMF work covered by existing processes and procedures (i.e. JHA's))

Note: EC will provide engineering support for manufacturing throughout the life of this project. All direction for design and manufacturing activities will come through the EC project engineering. This CR provides labor and material only. The following requirements are initial and subject to change at the requestor's request. These requirements are not verifiable and the continuance of hours being worked will indicate acceptance of requirements on an ongoing basis. These initial requirements serve Basis of Estimate purposes only.

1. Iterate the "Lightweight Boom" -this will include better pitch/yaw controls, more robustness and will interface with the "Tripod" named below (Qty: 1)
2. Iterate the "Excursion Line Device"- can be just two deployable lines (don't need all 6 as in the first version) but we have to increase the amount of tension the system can put into the lines and we must improve on the spring wind mechanism so it will last longer in water immersion (Qty: 1)
3. Iterate the "Hammer Bag" – this will include building a new bag with lessons learned from NEEMO15, notably a "handle" for the chip points and an improved bag mouth opening scheme to reduce dependency on rock size (Qty: 2)
4. Iterate the magnetic anchor interface (Qty: 1 with 5 "targets")
5. Iterate the "Clamshell Style" soil sampling system for improved robustness (design is well understood, need to swap materials for strength) (Qty: 3)
6. Iterate on PFR pitch/roll/yaw mount- this may include higher friction joints or a ball and socket with detent system (Qty: 2)
7. Procure/modify/build a tripod appropriate for several weeks of continuous water immersion and PFR level loads reaction capability. (Qty: 2)
8. Procure/modify/build a cable winch with at least 50' of braided steel cable appropriate for several weeks of continuous water immersion (Qty: 2)
9. Procure materials and COTs components as necessary to enable these tasks for NEEMO 16, within the contract NTE and schedule
10. Complete a Weigh-Out to Neutral of all items manufactured or modified and verify Weigh Out in water (fresh water acceptable).

CR NO.: 456	DX CHANGE REQUEST

CR TITLE: NEEMO Support

9. NEED DATE: (support date in block 7 rationale) April 25, 2012	10. CR SUBMISSION DATE: _____

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 2/09/2012

12. NASA POC: Dan Sedej	13. PHONE: 48346	14. E-MAIL: Daniel.t.sedej@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $22,200	20. NEGOTIATED DELIVERY DATE: 5/04/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

CR NO.: 456	DX CHANGE REQUEST

CR TITLE: NEEMO Support

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Iterate the "Lightweight Boom"	Job	1	Inspection		(b) (4)
2.	Iterate the "Excursion Line Device"	Job	1	Inspection		
3.	Iterate the "Hammer Bag"	Job	1	Inspection		
4.	Iterate the magnetic anchor interface	EA	1	Inspection		
5.	Iterate the "Clamshell Style" soil sampling system for improved robustness	EA	3	Inspection		
6.	Iterate on PFR pitch/roll/yaw mount	EA	2	Inspection		
7.	Procure/modify/build a tripod appropriate for several weeks of continuous water immersion and PFR level loads reaction capability	EA	2	Inspection		
8.	Procure/modify/build a cable winch with at least 50' of braided steel cable appropriate for several weeks of continuous water immersion	EA	2	Inspection		
9.	Procure materials and COTs components as necessary to enable these tasks for NEEMO 16, within the contract NTE and schedule	JOB	1	Inspection		
10.	Complete a Weigh-Out to Neutral of all items manufactured or modified and verify Weigh Out in water (fresh water acceptable)	JOB	1	Inspection		

CR NO.: 456	DX CHANGE REQUEST

CR TITLE: NEEMO Support

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

No TRR is required per requirement that no SR is required and therefore not in estimate.
Project planning worksheet and past similar project costs were used to establish estimate.

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

CR NO.: 456	DX CHANGE REQUEST

CR TITLE: NEEMO Support

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
[redacted] (b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature :	Date: _____

CR- 0456 - NEEMO Support
Cost

H060 CR 0456-NEEMO Support				
		TOTAL		
		GFY 12	GFY 12	GFY 12
SLC	Labor Category	Hours	Rate	Total
(b) (4)				(b) (4)
Material				
Material Handling				
G&A				
Subtotal Material				
Travel				
Non Labor G&A				
Subtotal Travel				
Total Estimated Cost				
Total Available Fee				
Award Fee	(b) (4) of Total Fee			
Target Incentive Fee	(b) (4) of Total Fee			
Max Incentive Fee	Target multiplied by (b) (4)			
Total Cost Plus Fee				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO929	02/29/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org /Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO929

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO929

8. Type of Order:

☐ PURCHASE
Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO929

9. Written acceptance of this order by contractor:
☐ is ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 2/29/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 929 is to initiate work for: Server, Storage, Slate and Still Photo Equipment Cost - CR 460 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $203,036.37 Work is to be completed by September 30 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	203,036.37	203,036.37	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP ☐ PART PPC

13. Total: 203,036.37

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative Date

CR NO.: 460	DX CHANGE REQUEST

CR TITLE: Server-Storage, Slate and Still Photo Equipment Procurement FY12

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.5.3 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☒ NBL SYSTEMS ☒ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Replace existing NBL-APPS, NBL-IDK, JS-NSOC-DEV, and JS-NBL-SM Servers with one functional equivalent. Procure three electronic storage systems, (20) twenty Slate computers and (3) three still photography cameras with necessary lenses, batteries and flashes.

7. RATIONALE
There is an increasing risk associated with the continued use of the aging HP servers and backup storage system. The three HP machines have already had their warranties extended once and the 40TB system is losing hard drives on a regular interval. Slate computers will be utilized by staff to implement electronic checklist capabilities. And, still photography equipment is needed to upgrade existing aging equipment.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Safety Review not required (This is a procurement CR for replacement equipment of standard COTS equipment)
2. *Quantity* (b)(4) **Dell™ PowerEdge™ R910 high-performance 4-socket 4U rack High Performance Virtualization Server** with Windows Server 2008 R2 Enterprise (Good replacement solution for JS-NBL-SM and also great hosting environment to virtualize all HP Servers).
3. *Quantity* (b)(4) **Dell PowerVault MD3200** (2 x 24TB Direct Attached Storage (HBA SAS SAN devices) - performance storage solution to serve as JS-NBL-SM data storage replacement and 1 x 24TB Direct Attached Storage (HBA SAS SAN devices) - performance storage solution for the virtual environments hosted in Hyper-V.)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
09/30/2012	02/14/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 2/15/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
Robert Durkin	x25836	robert.j.durkin@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$204,500	09/30/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

CR NO.: 460	DX CHANGE REQUEST

CR TITLE: Server-Storage, Slate and Still Photo Equipment Procurement FY12

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

4. *Quantity* (b) (4) **Dell™ 4 GB Dell Certified Replacement Memory Module for PowerEdge R910 Server - 2Rx8 RDIMM 1333MHz LV** (24 x 4gb Memory Upgrade Modules - upgrade the memory on NBLCSN from 32gb to 128gb for better performance and 24 x 4gb Memory Upgrade Modules - upgrade the memory on NSOC-SQL from 32gb to 128gb for better performance.
5. *Quantity* (b) (4) **ASUS Eee Pad Transformer Prime (TF201) each with QWERTY keyboard and case.**
6. *Still Photography Equipment consisting of:*

	Description	Qty
a)	Nikon D4 Digital SLR (Body Only)	(b) (4)
b)	Nikon D800 (Body Only)	
c)	Nikon AF-S NIKKOR 16-25mm f/4G	
d)	Nikon AF-S NIKKOR 24mm f/1.4G	
e)	AF-S NIKKOR 50mm f/1.4	
f)	AF-S NIKKOR 85mm f/1.4	
g)	AF-S NIKKOR 24-70mm f/2.8	
h)	AF-S NIKKOR 14-24mm f/2.8	
i)	AF-S NIKKOR 200mm f/2G	
j)	AF-S NIKKOR 200-400mm f/4G	
k)	AF-S NIKKOR 300mm f/2.8 ED VRII	
l)	AF-S Teleconverter TC-14E II	
m)	AF-S Teleconverter TC-17E II	
n)	Nikon SB-910 AF Speedlight	
o)	Nikon R1C1 Wireless Close-up	
p)	Nikon MB-D12 Battery Pack - D800	
q)	Nikon EN-EL15 Li-Ion Battery	
r)	Nikon EN-EL18 Li-Ion Battery	
s)	Nikon MH-26 Dual Battery Charger	
t)	Nikon ME-1 Stereo Microphone	

CR NO.: 460	DX CHANGE REQUEST

CR TITLE: Server-Storage, Slate and Still Photo Equipment Procurement FY12

REQUIREMENTS/REFERENCES (cont.):

Details for Item #1:

PowerEdge R910 R910 Chassis for up to Sixteen 2.5-Inch Hard
Drives
Operating System Windows Server 2008 R2 SP1, Enterprise
Edition,x64,Includes 10 CALs
SHIP PowerEdge R910 Shipping
Memory
256GB Memory (64x4GB), 1066MHz, Dual Ranked LV RDIMMs for 4 Processors, Perf Optimized
Embedded NIC with ISOE Dual Two-Port Embedded Broadcom NetXtreme
II 5709 Gigabit Ethernet Controllers
Processor
2x Intel® Xeon® E7-4830 2.13GHz, 24M cache, 6.4 GT/s QPI, Turbo, HT, 8C, 1066MHz Max Mem
Additional Processor Upgrade to Four Intel® Xeon® E7-4830 2.13GHz,
8C
Hard Drives HD Multi-Select
Internal Controller PERC H700 Integrated RAID Controller, 1GB NV
Cache
BIOS Setting Performance BIOS Setting
Embedded Management iDRAC6 Enterprise
Optional Optical Drive DVD-RW Drive, Internal
Bezel PowerEdge R910 Bezel
System Documentation Electronic System Documentation and
OpenManage DVD Kit
External Controller and
PCIE Solid State Storage 2x SAS 6Gbps HBA External Controller
RAID Configuration RAID 5 for PERC H700 Controller (Non-Mixed
Drives)
Rails ReadyRails™ Sliding Rails With Cable Management Arm
Hardware Support Services 3 Year ProSupport and Mission Critical 4HR 7x24
Onsite Pack
Proactive Systems
Management Dell Proactive Systems Management
Installation Services No Installation
Power Supply High Output Power Supply (1100W), Redundant
Full-power configuration (2+2)
OS Partitions 80GB Microsoft OS Partition Override
Power Cords (4) NEMA 5-15P to C13 Wall Plug, 125 Volt, 15
AMP, 10 Feet (3m), Power Cord
Keep Your Hard Drive Keep Your Hard Drive, 3 Years
Hard Drives (16) 900GB 10K RPM Serial-Attach SCSI 6Gbps
2.5in Hotplug Hard Drive
Network Adapter Broadcom 5709 Dual Port 1GbE NIC w/TOE
iSCSI, PCIe-4
Enabled Virtualization Hyper-V role enabled with pre-installed ENT Ed
OS on incl Virtual Hard Disk

Details for Item #2:

PowerVault MD3200 PV MD3200,RKMNT,SAS, 12 Bay, Dual
Controller
Server Connectivity 6Gb SAS HBA, Dual Port
Bezel Bezel Option, MD3200
Software Data Protection and Performance Features
License Key Snapshot (16/LUN, 256/Array) & Virtual Disk Copy
Rails Rapid Rails for Dell Rack
Hardware Support Services 3Yr Basic Hardware Warranty Repair: 5x10
HW-Only, 5x10 NBD Onsite
Installation Services No Installation
Power Cords 2x Power Cord, NEMA 5-15P to C14, 15 amp, wall plug, 6 feet / 2 meter
Software Data Protection and Performance Features
License Key Snapshot (16/LUN, 256/Array) & Virtual Disk Copy
Hard Drives (12) 2TB, NLSAS 6GB, 7.2K, 3.5 HDD

CR NO.: 460	DX CHANGE REQUEST

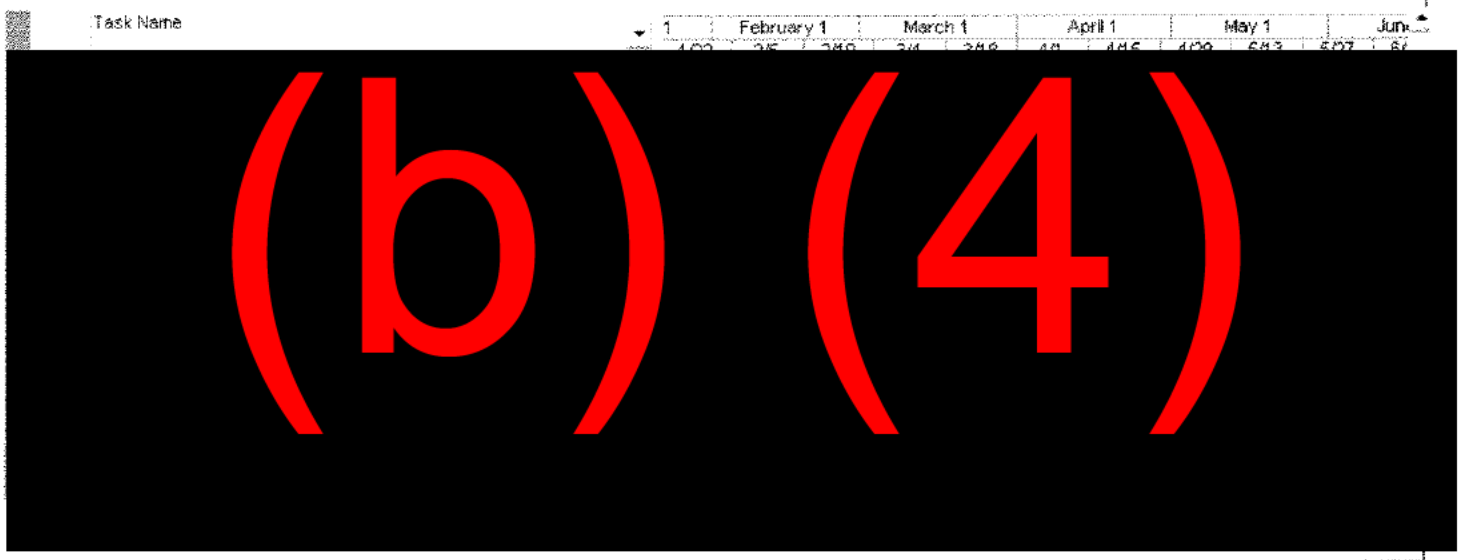
CR TITLE: Server-Storage, Slate and Still Photo Equipment Procurement FY12

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verifica ion	Verified	Technical Contact
1.	Dell™ PowerEdge™ R910 high-performance 4-socket 4U rack server	EA	(b) (4)	Inspection		(b) (4)
2.	Dell PowerVault MD3200	EA		Inspection		
3.	Dell™ 4 GB Dell Certified Replacement Memory Module for PowerEdge R910 Server - 2Rx8 RDIMM 1333MHz LV	EA		Inspection		
4.	ASUS Eee Pad Transformer Prime (TF201) each with QWERTY keyboard and case	EA		Inspection		
5.	Still Photography Equipment as listed in item 6 of requirements section.	EA		Inspection		

Note: The replacement effort associated with the consolidation of NBL database servers to the new PowerEdge Server is outside the scope of this CR and will be performed under existing maintenance work.

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

No Safety Review was performed per requirement #1 and therefore not included in cost.
No TRR is required per SR and therefore not in estimate.
Project planning worksheet and past similar project costs were used to establish estimate.

CR NO.: 460	DX CHANGE REQUEST

CR TITLE: Server-Storage, Slate and Still Photo Equipment Procurement FY12

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
[redacted] (b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

CR- 0460 – Server, Storage, Slate and Still Photo Equipment Cost

H060 CR 460 Server Storage, Slate & Photo Procurement				
		TOTAL		
		GFY 12	GFY 12	GFY 12
SLC	Labor Category	Hours	Rate	Total
(b) (4)				(b) (4)
Material				
Material Handling				
G&A				
Subtotal Material				
Travel				
Non Labor G&A				
Subtotal Travel				
Total Estimated Cost				
Total Available Fee				
Award Fee	(b) (4) of Total Fee			
Target Incentive Fee	(b) (4) of Total Fee			
Max Incentive Fee	Target multiplied by (b) (4)			
Total Cost Plus Fee				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO930	03/13/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO930

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26,2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO930

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO930

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer L. Krause
Jennifer L Krause 3/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 930 is to: FY12 ISS Assemble Platforms The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $171,738.48 Work is to be completed by September 26, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	171,738.48	171,738.48	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 171,738.48

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2522	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

1. REQUESTOR: A. McIntyre	2. PHONE: x47115	3. E-MAIL: Allison.l.mcintyre@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Assemble pre-purchased platforms (15) and locate according to reconfiguration layout (see Figure 1) as they are assembled. Purchase or fabricate leg assemblies required to complete an additional 10 platforms.

7. RATIONALE
Reconfiguration plan for ISS includes platforms from SM to Node3 to allow for more efficient and safer Emer Ops Training. One additional platform is requested for the A/L for Egress safety.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Install leg assemblies, handrails and lexan according to layout plan, Figure 1.
8.2 Install carpet and complete required painting (NASA Blue).
8.3 Install 1 platform to support Airlock egress in an emergency.
8.4 Reconfigure existing stairs and handrails per layout plan, Figure 1.
8.5 Purchase leg assemblies, handrails, etc. required to complete 10 additional platform tops which are on hand.
8.6 Install platforms on the East end of the Stack as they are completed (Russian segment to Node 3).
8.7 After Orion moves, install Platforms to support VOT.
8.8 After PDL moves, install remaining platforms to the West end of the stack.
8.9 Relocate the VOT to mate to the main platforms next to the MPLM

Note: Place completed platforms as they are built if it does not drive rework of handrails and configuration for safety.

Note: Safety Review conducted on 01/30/2012 determined no TRR is required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale) 09/15/2012	10. CR SUBMISSION DATE: 01/09/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: A. McIntyre Date: 01/12/2012

12. NASA POC: A. McIntyre	13. PHONE: x47115	14. E-MAIL: Allison.l.mcintyre@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $ 171,800	20. NEGOTIATED DELIVERY DATE: 09/26/2012, per verbal direction from DX

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

Form: DX-FRM-001

CR NO.: 2522	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

REQUIREMENTS/REFERENCES (cont.):

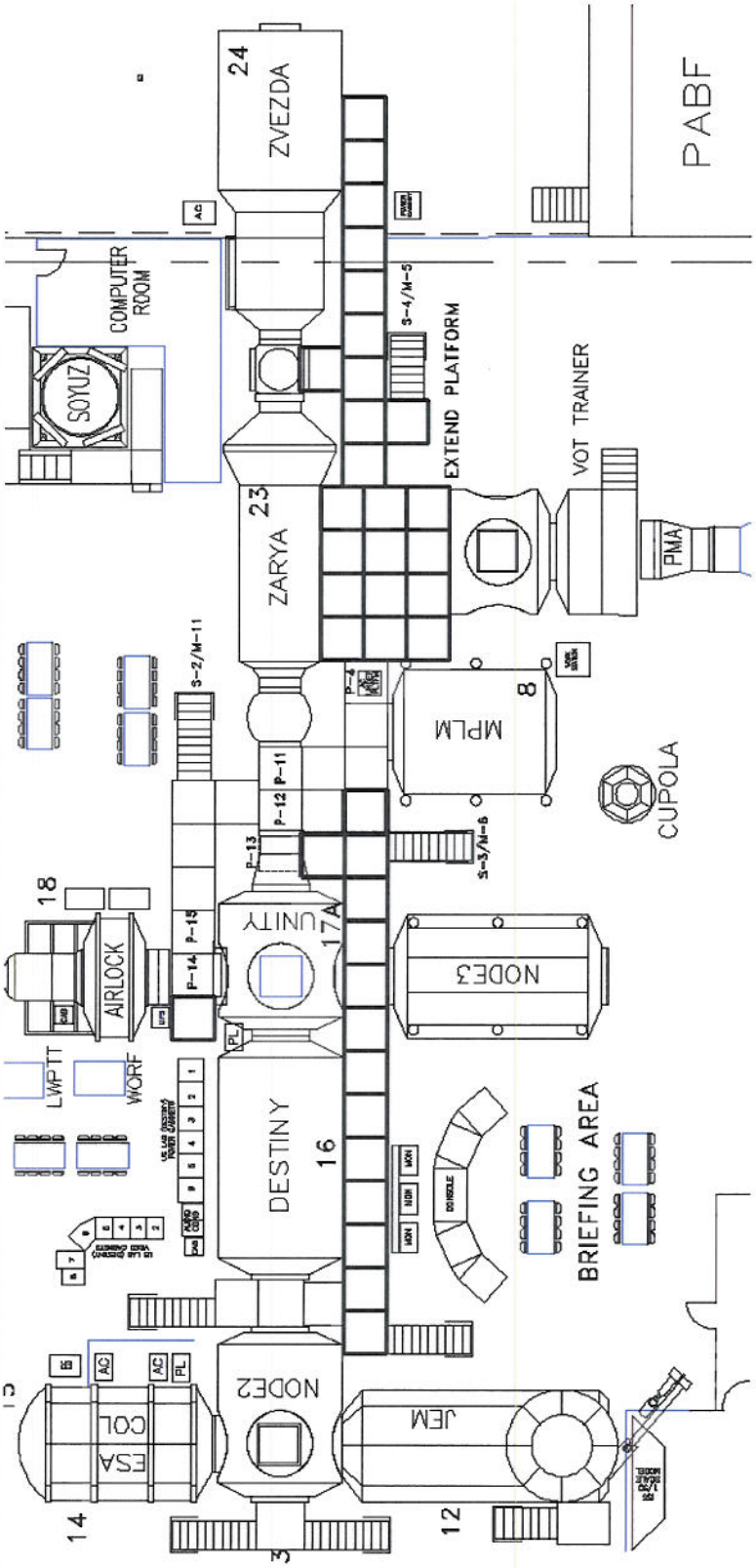


Figure 1 – Platform reconfigured items shown in bold lines,
This layout may be revised with DX concurrence.
The final layout shall be used for acceptance.

CR NO.: 2522	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify the platforms for the following items: Installed leg assemblies, Installed handrails with lexan, Installed carpet Painted (NASA Blue).	8.1 8.2	Inspection	Present items: Leg assemblies, Handrails with lexan, Carpet, Blue paint		
5	Verify platform installation meets the Figure 1 final layout.	Figure 1 8.3 8.4 8.6 8.7 8.8	Inspection	Installation adheres to Figure 1 final layout, except where the presence of the Med Fi CEV, VOT, or PDL precludes platform installation.		
6	Verify VOT is powered and has Ethernet connection.	8.9	Test	VOT lights function, laptop connects to the network.		
7	Verify parts procurement	8.5	Inspection of receiving documents	Parts received		

CR NO.: 2522	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

SCHEDULE:

ID	Task Numbers	Task Name	2 March 2012	April 2012	May 2012	June 2012	July 2012	August 2012	September 2012	Oct

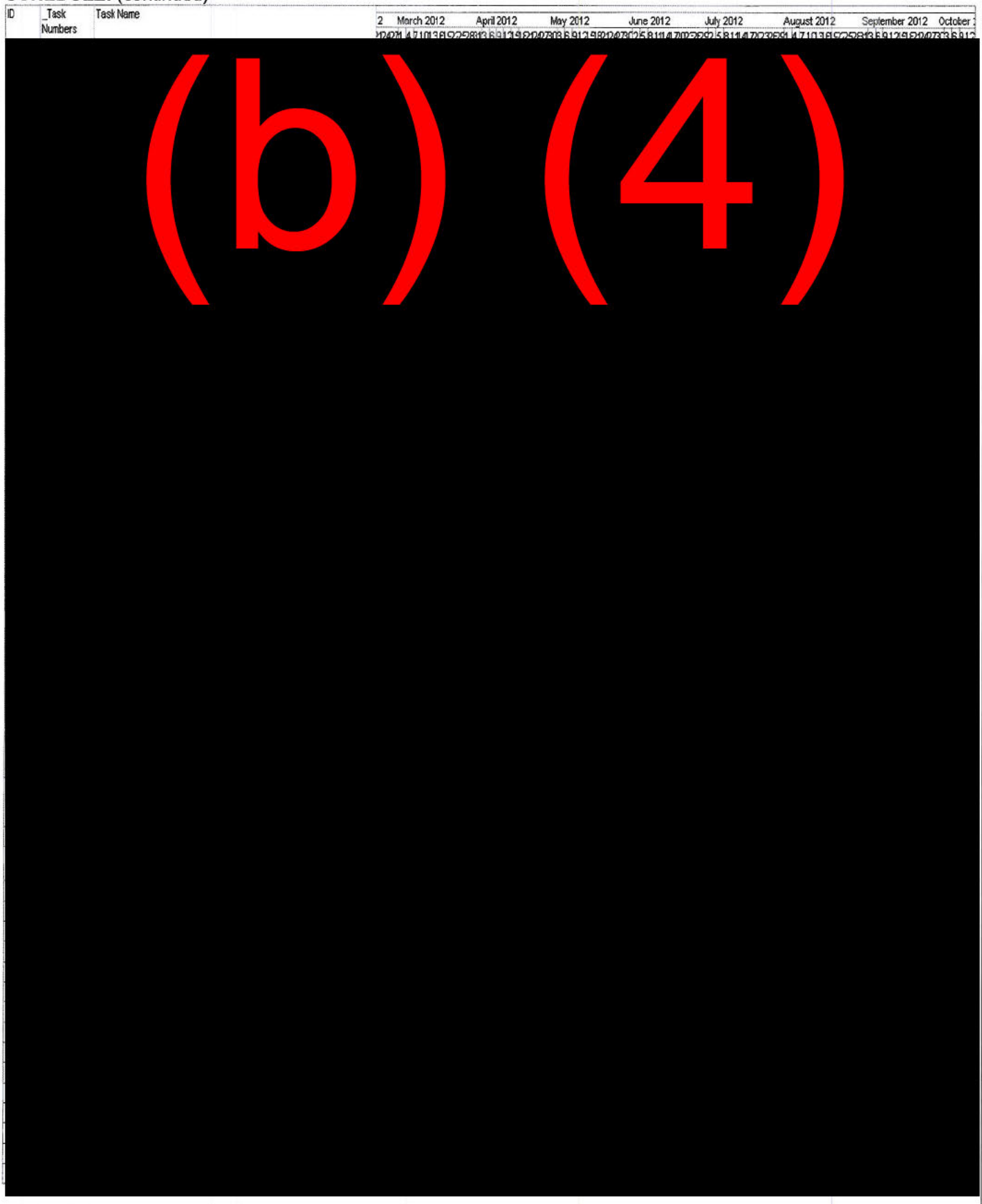
(b) (4)

(Schedule continued)

CR NO.: 2522	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

SCHEDULE: (continued)



CR NO.: 2522	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

BASIS OF ESTIMATE (include and identify significant assumptions):

Project Tasks:

(b) (4)

CR NO.: 2522	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design Cost	PE Cost	Management	Tech Cost	Material Cost
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO930A	09/11/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO930A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26,2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO930A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO930A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 9/12/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 930A is to: FY12 ISS Assemble Platforms The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Revision is $41,501.30 The total value of this Delivery Order is $213,239.79 Work is to be completed by September 26, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	41,501.30	41,501.30	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 41,501.30

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2522 Rev A	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

1. REQUESTOR: A. McIntyre	2. PHONE: x47115	3. E-MAIL: Allison.l.mcintyre@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Assemble pre-purchased platforms (15) and locate according to reconfiguration layout (see Figure 1) as they are assembled. Purchase or fabricate leg assemblies required to complete an additional 10 platforms.
Rev A includes approved SCIFs1-4

7. RATIONALE
Reconfiguration plan for ISS includes platforms from SM to Node3 to allow for more efficient and safer Emer Ops Training. One additional platform is requested for the A/L for Egress safety.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 Install leg assemblies, handrails and lexan according to layout plan, Figure 1.
8.2 Install carpet and complete required painting (NASA Blue).
8.3 Install 1 platform to support Airlock egress in an emergency.
8.4 Reconfigure existing stairs and handrails per layout plan, Figure 1.
8.5 Purchase leg assemblies, handrails, etc. required to complete 10 additional platform tops which are on hand.
8.6 Install platforms on the East end of the Stack as they are completed (Russian segment to Node 3).
8.7 After Orion moves, install Platforms to support VOT.
8.8 After PDL moves, install remaining platforms to the West end of the stack.
8.9 Relocate the VOT to mate to the main platforms next to the MPLM
Note: Place completed platforms as they are built if it does not drive rework of handrails and configuration for safety. (Cont.)
Note: Safety Review conducted on 01/30/2012 determined no TRR is required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale) 09/15/2012	10. CR SUBMISSION DATE: 01/09/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: A. McIntyre Date: 01/12/2012

12. NASA POC: A. McIntyre	13. PHONE: x47115	14. E-MAIL: Allison.l.mcintyre@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$ 171,800~~ $215,600 **Rev A**	20. NEGOTIATED DELIVERY DATE: 09/26/2012, per verbal direction from DX

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2522 Rev A	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

REQUIREMENTS/REFERENCES (cont.):

Rev A:

8.10 After Node1 and Node 3 hatch alignment two custom size handrails shall be installed on Node 3 platform. **SCIF 01**

8.11 Relocate US LAB air sample port K-bottles next to NODE 3 mockup to provide access for replacement after ISS platfoms are installed between Node 3 and Node 2 mockups. **SCIF -02**

8.12 Update SVMF floor plan to correct reflect FGB and SM mockup dimensions. **SCIF-03**

8.13 After ISS platform installation, the following custom size handrails shall be installed: SM platform - 4 ea, platform with stairs from Node 2 - 2 ea, platform with stairs between SM and FGB - 1 ea **SCIF-04**

CR NO.: 2522 Rev A	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

REQUIREMENTS/REFERENCES (cont.):

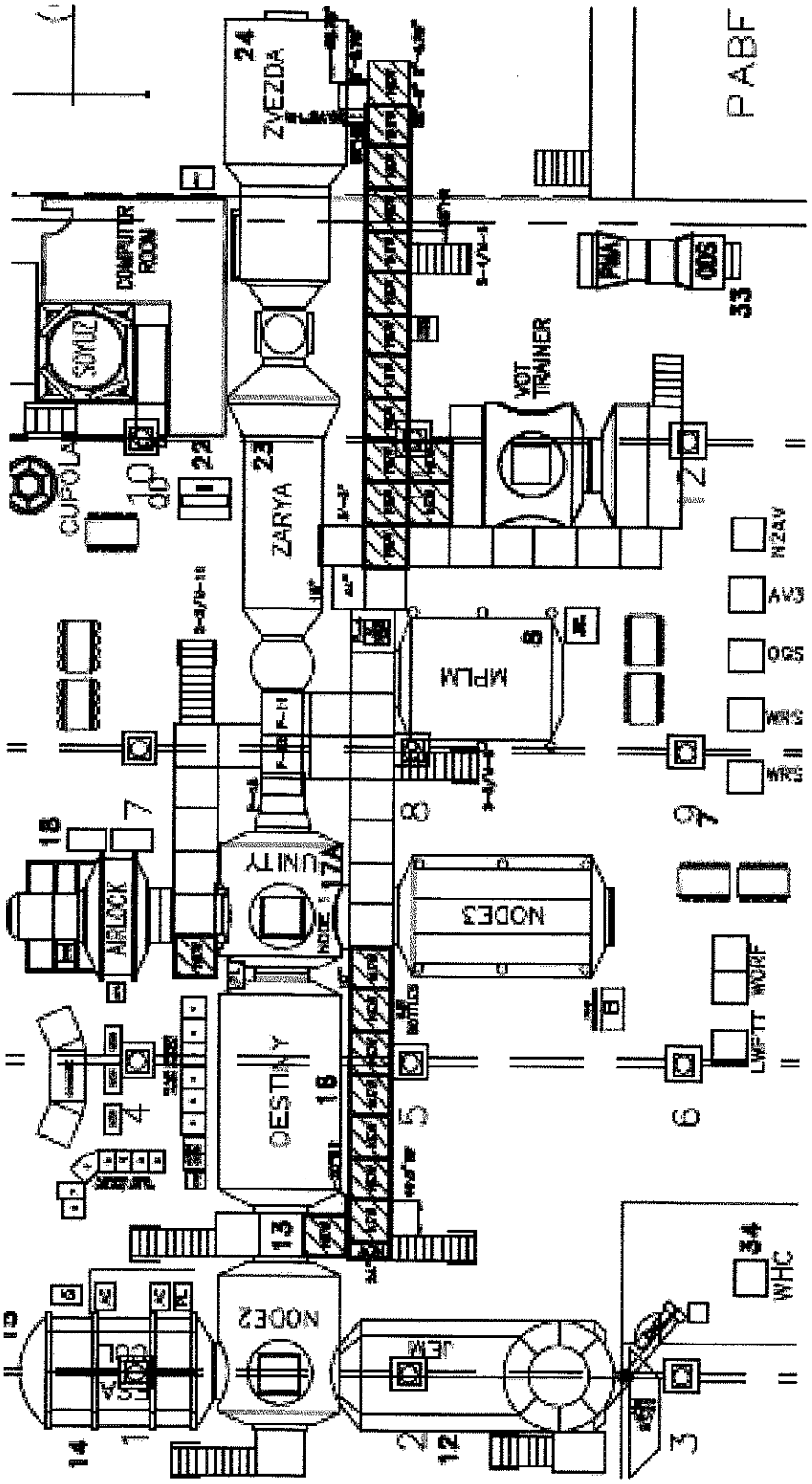


Figure 1 – Platform reconfigured items shown in bold lines,
This layout may be revised with DX concurrence.
The final layout shall be used for acceptance. **REV A**

CR NO.: 2522 Rev A	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

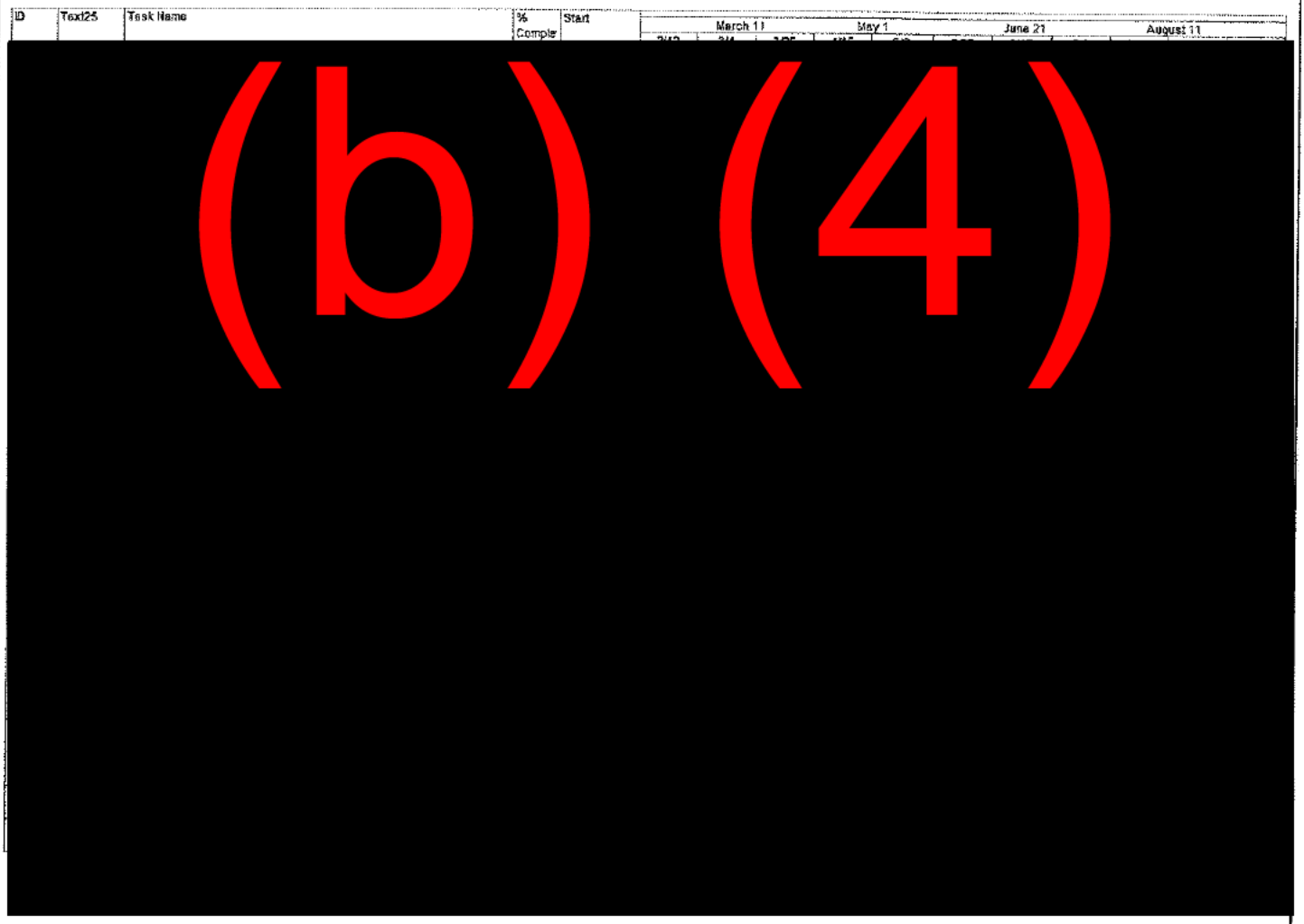
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify the platforms for the following items: Installed leg assemblies, Installed handrails with lexan, Installed carpet Painted (NASA Blue).	8.1 8.2	Inspection	Present items: Leg assemblies, Handrails with lexan, Carpet, Blue paint		
5	Verify platform installation meets the Figure 1 final layout.	Figure 1 8.3 8.4 8.6 8.7 8.8	Inspection	Installation adheres to Figure 1 final layout, except where the presence of the Med Fi CEV, VOT, or PDL precludes platform installation.		
6	Verify VOT is powered and has Ethernet connection.	8.9	Test	VOT lights function, laptop connects to the network.		
7	Verify parts procurement	8.5	Inspection of receiving documents	Parts received		
8	Verify handrails on either side of Node 3 entry hatch, after Node 3 is aligned with Node 1 port side hatch	8.10	Inspection	Handrails cover all large gaps between platforms and Node 3		**Rev A**
9	Verify Lab K-bottle position and hose connection	8.11	Inspection	Lab Sample bottle is south of platforms and hoseconnected to Lab aft endcone		**Rev A**
10	Inspect released Floor plan drawing	8.12	Inspection	FGB and SM mockups dimensions generally correct relative to platforms		**Rev A**
11	Inspect handrails at SM platform , platform with stairs from Node 2 , platform with stairs between SM and FGB	8.13	Inspection	SM platform - 4 ea, platform with stairs from Node 2 - 2 ea, platform with stairs between SM and FGB, 1 ea. Large gaps covered		**Rev A**

CR NO.: 2522 Rev A	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

SCHEDULE: Rev A



CR NO.: 2522 Rev A	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

BASIS OF ESTIMATE (include and identify significant assumptions):

Project Tasks:

(b) (4)

CR NO.: 2522 Rev A	DX CHANGE REQUEST

CR TITLE: Assemble ISS Platforms

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design Cost	PE Cost	Management	Tech Cost	Material Cost

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO931	03/27/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO931

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 18, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO931

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO931

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer — 3/28/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 931 is to: FY12 Expanded Joint B9/PTT Capabilities The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is (b) (4) Work is to be completed by June 18, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	(b) (4)		

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2287	DX CHANGE REQUEST

CR TITLE: Expanded Joint B9/PTT Capabilities

1. REQUESTOR: Carolina De Carvalho / S. Segadi	2. PHONE: x46429 / x47264	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
The following items are requested to be added to the B9/PTT interface in order to expand its capability and correct problems found during previous training:

1. Tie the PTT model to the malfunction laptop for the purposes of causing an IAC transition in the audio hardware (currently done from malfunciton laptop only).
2. Modify the B9/PTT interface to correct inaccuracies with module GLA powerdowns based on PTT commands.
3. Update the B9 Mal Laptop so that it can display the correct failure mode of the JEM C&W panels following power failures commanded from the PTT.
4. Remove all ELPS hardware (except wiring) from ISS mockups.

7. RATIONALE
Expansion and correction of the interface will enhance B9 ISS training while offloading actions required to be taken by instructors in order to display proper signatures to students. This will free up instructors to evaluate students more effectively.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See page 2

Note: Safety Review was waived, A. McIntyre, 02/23/12.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 02/09/12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: A. McIntyre Date: 02/10/12

12. NASA POC: Jill MacGregor	13. PHONE: x30839	14. E-MAIL: jill.a.macgregor@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: (b) (4)	20. NEGOTIATED DELIVERY DATE: 06/18/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR TITLE: Expanded Joint B9/PTT Capabilities

REQUIREMENTS/REFERENCES (continued):

The specific requirements for each item above is listed below:

Test Session support:
Request that [redacted] (b) (4) upport the test sessions for each of these items. Test session time should range from [redacted] (b) (4) total.

1. IAC Transition:

A. Expand the B9/PTT interface to account for the flags needed to trigger an IAC transition per the guidelines below (flags to be provided by PTT personnel via corresponding PTT SRs for this project):

An IAC transition occurs when:

1. Audio FDIR is enabled

AND

2. The Caution "Loss of Active IAC, Handover to Backup IAC" (event code 5100) toggles from 'normal' to 'in alarm'

EXCEPT

During a C&C MDM transition from any state (backup or standby) to primary.

B. The flags sent from the PTT must trigger the coded IAC transition response currently only available by command on the B9 Mal Laptop. IAC Transition button on the Mal Laptop should be disabled when PTT is in control.

C. Support joint B9/PTT test sessions and checkouts through the completion of this portion of the CR and the corresponding PTT SR for this project.

2. Airlock/Node 2 GLAs:

A. Expand the B9 interface with Node 2 and A/L power statuses at the RPC level for the following RPCs (to be provided by PTT personnel via a coresponding PTT SR):

RPCM LA2A3B_D RPC 2 - Opening shall cause half the Node 2 lights to turn off
RPCM LA2A3B_D RPC 3 - Opening shall cause the A/L lights to turn off

B. Regression test the capability to turn off half the lights in Node 2 and all lights in A/L seperately, without affecting the other module via the RPC open commands listed above.

C. Support joint B9/PTT test sessions and checkouts through the completion of this portion of the CR and the corresponding PTT SR for this project.

3. JEM C&W Panels:

A. Expand the B9/PTT interface to account for the flags needed to determine the proper failure mode of the JEM C&W panels, to be provided by PTT personnel via a corresponding PTT SR.

B. Update the JEM C&W panel dynamic icons on the Mal Laptop with the following color coding based on the failure mode affecting the panel:

Green = Fully operational panel
Yellow = Loss of light functionality
Orange = Loss of button functionality
Red = Loss of BOTH light and button functionality

C. Create a legend on the Mal Laptop C&W Panel page that informs the instructors of the color key listed above.

D. Support joint B9/PTT test sessions and checkouts through the completion of this portion of the CR and the corresponding PTT SR for this project.

4. Remove ELPS H/W:

A. ELPS boxes in the Node 1, Lab, and Node 2 should be removed but wiring should be left for potental future use.

CR NO.: 2287	DX CHANGE REQUEST

CR TITLE: Expanded Joint B9/PTT Capabilities

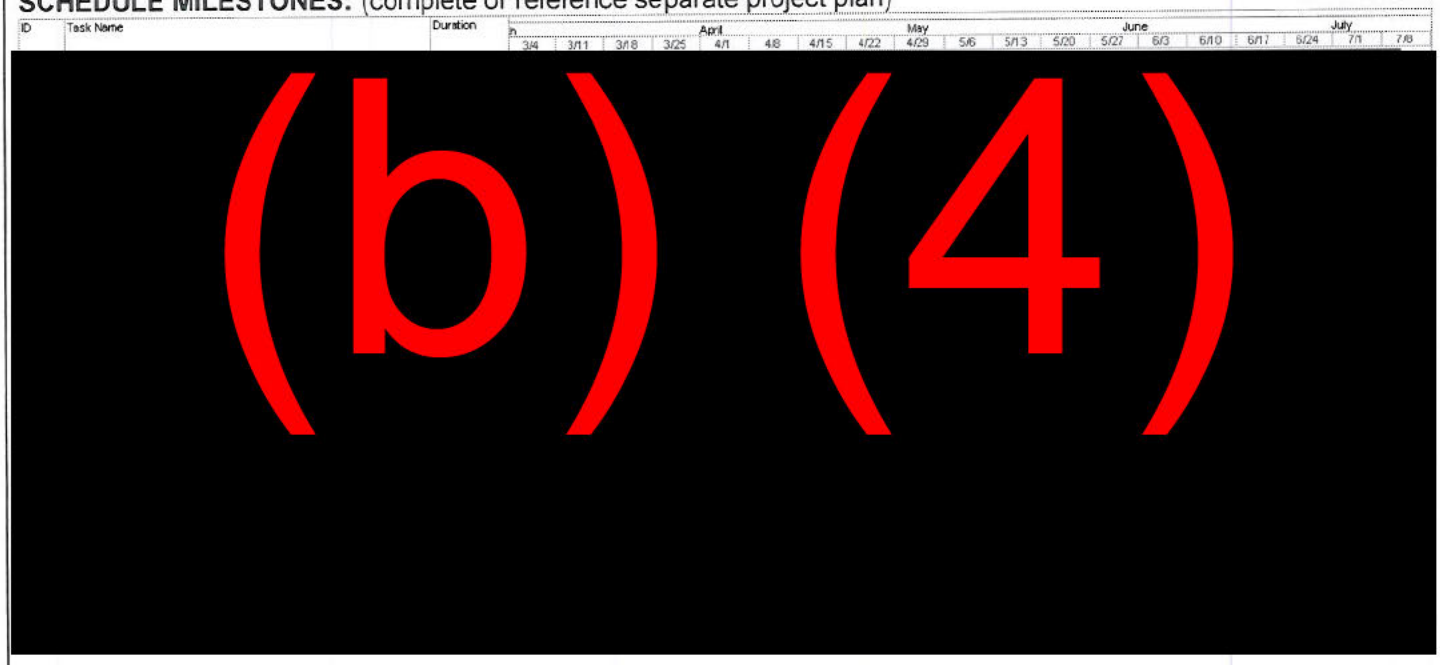
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Test Step	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Result (pass/ fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspect	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspect	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspect	Label requirement satisfied.		
4	Verify PTT Software Load can command a IAC transition of the ATU Audio Bus.	RQT 1	Demo	Audio bus performs a IAC transition		
5	Verify PTT Software Load can command a DDCU LA2A3 change of state of the DDCU Power Bus.	RQT 2B	Demo	DDCU LA2A3 Bus changes the state of Airlock & ½ Node 2 GLA's		
6	Verify PTT Software Load can command a RPCM LA2A3B_D RPC 2 change of state.	RQT 2B	Demo	RPCM LA2A3B_D RPC 2 changes the state of ½ Node 2 GLA's		
7	Verify PTT Software Load can command a RPCM LA2A3B_D RPC 3 change of state.	RQT 2A	Demo	RPCM LA2A3B_D RPC 3 changes the state of Airlock GLA's		
8	Verify PTT Software Load can command a DDCU LA2A3 change of state.	RQT 2B	Demo	DDCU LA2A3 Bus changes the state of Airlock & ½ Node 2 GLA's		
9	Verify a color key legend is present on the Audio Screen near JEM 1 & JEM 2	RQT 3C	Inspect	Color-key legend is present on Audio Screen		
10	Verify PTT Software Load shall send a "Fully operational" status to the PLC Data Base for JEM 1 & JEM 2 C&W Box	RQT 3B	Demo	JEM 1 & JEM 2 shows "Green" state on the MAL Audio Screen		
11	Verify PTT Software Load shall send a "Loss of light functionality" status to the PLC Data Base for JEM 1 & JEM 2 C&W Box	RQT 3B	Demo	JEM 1 & JEM 2 shows "Yellow" state on the MAL Audio Screen		NO active LED's
12	Verify PTT Software Load shall send a "Loss of button functionality" status to the PLC Data Base for JEM 1 & JEM 2 C&W Box	RQT 3B	Demo	JEM 1 & JEM 2 shows "Orange" state on the MAL Audio Screen		No active buttons
13	Verify PTT Software Load shall send a "Loss of light & button functionality" status to the PLC Data Base for JEM 1 & JEM 2 C&W Box	RQT 3B	Demo	JEM 1 & JEM 2 shows "Red" state on the MAL Audio Screen		Signifies "total failure" (but not of the ATP)
14	Verify the ELPS boxes have been removed.	RQT 4A	Inspect	Closed Work Order ordering removal.		

CR NO.: 2287	DX CHANGE REQUEST

CR TITLE: Expanded Joint B9/PTT Capabilities

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

CR NO.: 2287	DX CHANGE REQUEST

CR TITLE: Expanded Joint B9/PTT Capabilities

BASIS OF ESTIMATE (continued)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

Occurrence: Medium).

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engr & Pgm Supt	Management	Tech	Material
FY 12	(b) (4)				

FY12 Expanded Joint B9/PTT Capabilities
CR-2287 Cost

H060 CR 2287 - Expanded Joint B9/PTT Capabilities

		TOTAL		
		GFY 12	GFY 12	GFY 12
SLC	Labor Category	Hours	Rate	Total
(b) (4)				(b) (4)
	Material			
	Material Handling			
	G&A			
	Subtotal Material			
	Travel			
	Non Labor G&A			
	Subtotal Travel			
	Total Estimated Cost			
	Total Available Fee			
	Award Fee (b) (4) of Total Fee			
	Target Incentive Fee (b) (4) of Total Fee			
	Max Incentive Fee Target multiplied by (b) (4)			
	Total Cost Plus Fee			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO932	03/30/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO932

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 1, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO932

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO932

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 3/30/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 932 is to: FY12 ECLL Hardware Upgrades, CR-2464 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $91,468.47 Work is to be completed by August 1, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	91,468.47	91,468.47	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 91,468.47

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

1. REQUESTOR: Jennifer Buchli	2. PHONE: 32590	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Upgrade the freestanding ECLSS Rack trainer to reflect REGEN ECLSS upgrades and ARFTA Hardware. This includes developing new and modifying existing hardware.

7. RATIONALE
Recent failures and on-orbit modifications have led to the creation of additional hardware to support the Regen ECLSS system. Current Regen ECLSS training hardware has not kept pace with on-orbit changes and thus training on several Regen activities performed often onboard can't be conducted. Crew comments have expressed a desire to increase training fidelity in order to mitigate errors that have occurred onboard. In addition, some activities that can't be fully demonstrated can cause potential contact with hazardous substances onboard. Increased training fidelity on the ground, per this CR, can help ensure crewmembers are aware of the danger and be comfortable with limiting potential exposure.

ARFTA Mod Kit and servicing hardware arrived on ISS this summer. Some engineering Development HW was supplied by the ARFTA project and needs to be upgraded to match and mate up with the existing WRS 2 mock-up. Also some servicing hardware is associated with ARFTA operations, and so will be needed for training.

Flight Crew training that would include this hardware will be the first week of April.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See Requirements on page 2.
Provide incremental delivery and acceptance of hardware as each piece is installed and ready for training.

Note: Per the Safety Review conducted 02/09/12 no TRR required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 01/25/12
ASAP	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date:01/31/12

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ernesto Prado	34902	global
15. IMPLEMENTING CONTRACTOR	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: (b) (4)	(b) (4)	global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$84,600	08/01/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

REQUIREMENTS/REFERENCES (continued):

1. Manufacture Condensate/ Fluid pump/manifold
   - Manifold [redacted]
   - Pump - [redacted]
   - Pump and manifold must mate to each other per standard operation
   - Body of units can be volumetric utilizing non-flight like materials. [Fidelity IIIC]
   - Pump head cover [redacted] must be removable [Fidelity IIIC]. Use Fidelity IIB Captive fasteners.
   - Pump rollers [redacted] must rotate freely. [Fidelity IIB]
   - Manifold flex lines assemblies FN 14, 15 on [redacted] shall have IIB fidelity QDs on loose ends..
2. Manufacture Potable water tee- hose, vlv and associated QDs
   - Shutoff vlv assy. Product tee [redacted] fidelity
   - Shut off valve [redacted] shall have IIB handle
   - [redacted] shall be GFE
   - [redacted] shall be IIB fidelity.
   - Provide flex hose assembly, total length is about 8 FT long. One loose end of the hose shall have IIB Female QD to mate with Shutoff Valve Assy [redacted] no fitting is required on the other loose end.
3. Manufacture UPA Depress hose and associated QDs:
   - [redacted]
   - Hose to contain fire hose connections on both ends and capable of connecting to fire hose connections on RFTA/ARFTA.
4. Modify existing PTU T-valve in SVMF Loose Equipment.
   - [redacted]
   - "EDV" QD connection shall be IIB fidelity to mate with QD connection for PTU Xfer hose described in requirement #13.
   - WRS-2 RIP "Pretreated Urine Supply" connection port shall be fire hose connector.
   - WHC connection to remain low-fi stub with no change
   - WRS-2 RIP "Pretreated Urine Supply" connection upgraded to fire hose connection and must mate with WRS-2 RIP connection on new PTU T-valve.
   - Labeling for WHC, EDV, and WRS-2 RIP connections added per drawing
5. Manufacture Compressor Air Hose
   - [redacted]
   - Connections can be Fidelity IIIC but must mate with Russian Compressor-M mockup connection and EDV air hose connection. Connection can simply be a "snug" fit ensuring hose won't fall off on its own.
   - Hose length shall be six feet.
6. Manufacture CWC to 3/4" QD adapter for WDS
   - [redacted] fidelity
   - Adapter must mate to CWC-I and WDS Pot/Del hose [redacted] in current SVMF inventory. QD on WDS Hose is [redacted]
   - CWC-I adapter, [redacted] will be GFE.
7. ARFTA tethered Pip pins
   - COTS pins are acceptable.
   - Pip pins between 1" and 1½" inch in length.
   - Pins must be easily inserted and removed from RFTA/ARFTA and hold the unit in place within the rack.
8. Manufacture Sabatier and UPA touch temp constraint labels in a quantity of 3. P/N SDG32105072-001
9. Upgrade WRS-1 RIP "Potable Manual Container" QD connection to IIB fidelity. Shall be able to mate with current WPA Water Xfer hose in current SVMF inventory.
10. Manufacture Node 3 Waste Water line
    - Line segment created with QD connection able to mate with Node 3 WRS-2 mockup RIP "Waste Water" connection port.
    - Opposite end of line should have no connection
    - Line shall be made of flex line.
    - Length of hose shall be 4 ft.
    - Line to be delivered to Loose equipment upon completion

(continued)

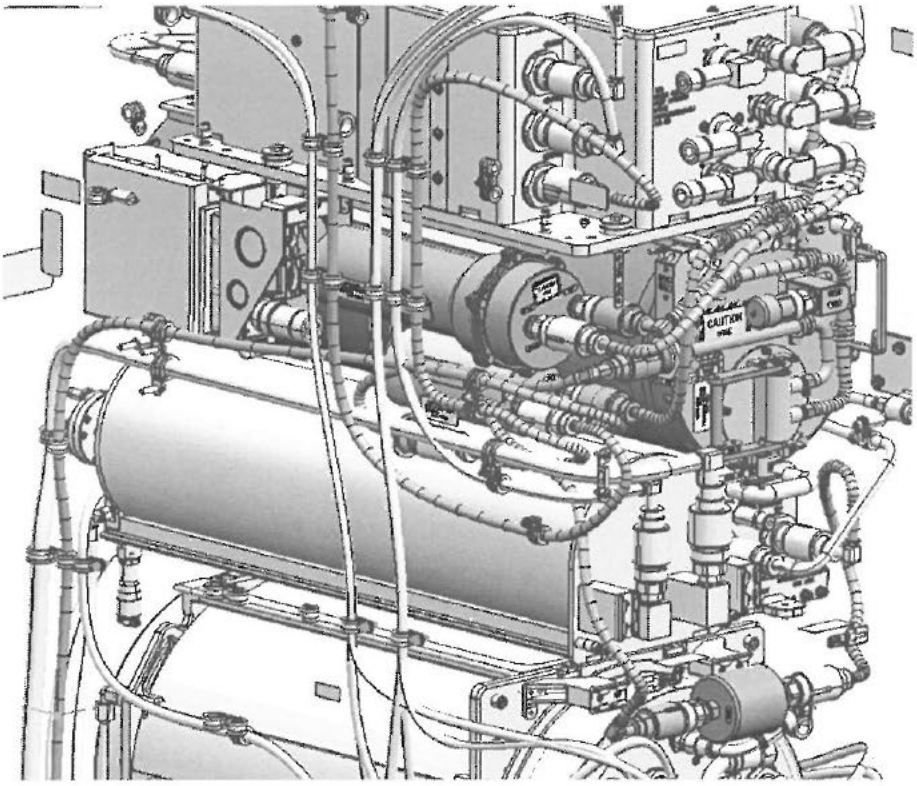
CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

REQUIREMENTS/REFERENCES (continued):

11. Manufacture OGA- DSC Dome Evac Tool
    - [redacted (b) (4)]
    - Fire hose connection required for DSC connection port. No other QDs or connectors required. Fire hose connection will be GFE.
    - Body of unit can be volumetric utilizing non-flight like materials. [Fidelity IIIC]
12. Manufacture H2 sensor in/out QD caps (2)
    - [redacted (b) (4)]
    - Must mate with H2 sensor in/out QDs in OGS mockup.
13. Manufacture PTU xfer hose
    - [redacted (b) (4)]
    - QD and hydroconnector can be scavenged from existing PTU Xfer hose in SVMF inventory
    - Filter [redacted (b) (4)] can be volumetric using non-flight like materials. [Fidelity IIIC]
14. Modify existing ARFTA Tank to have operable valve handle with PiP pin identical to the one on the existing RFTA mock-up.
    - Use handle and PIP Pin from current RFTA
15. Modify existing ARFTA Servicing hardware:
    - Upgrade Brine Transfer hose [redacted (b) (4)] **(Fire hose QDs on both ends)**
    - Upgrade Rodnik/ATV Adapter [redacted] **(Fire hose connection on one end to represent QD→ IIB fidelity hydroconnector capable of connecting to EDV P3 port on other end) One fire hose connector and one hydroconnector will be GFE with delivery expected in Mid-April**
    - Upgrade Compressor Adapter [redacted (b) (4)] **(Fire hose connection on one end to represent QD→ IIB fidelity compressor fitting capable of connecting to EDV air port on other end)**
16. All ARFTA hardware to have **Fire-hose style fluid connections** the same as the coinciding connectors existing in the WRS 2 Rack.
17. All ARFTA hardware to have Flight-like labeling.
18. Incremental acceptance is preferred to use new hardware as soon as possible for training.

Reference:

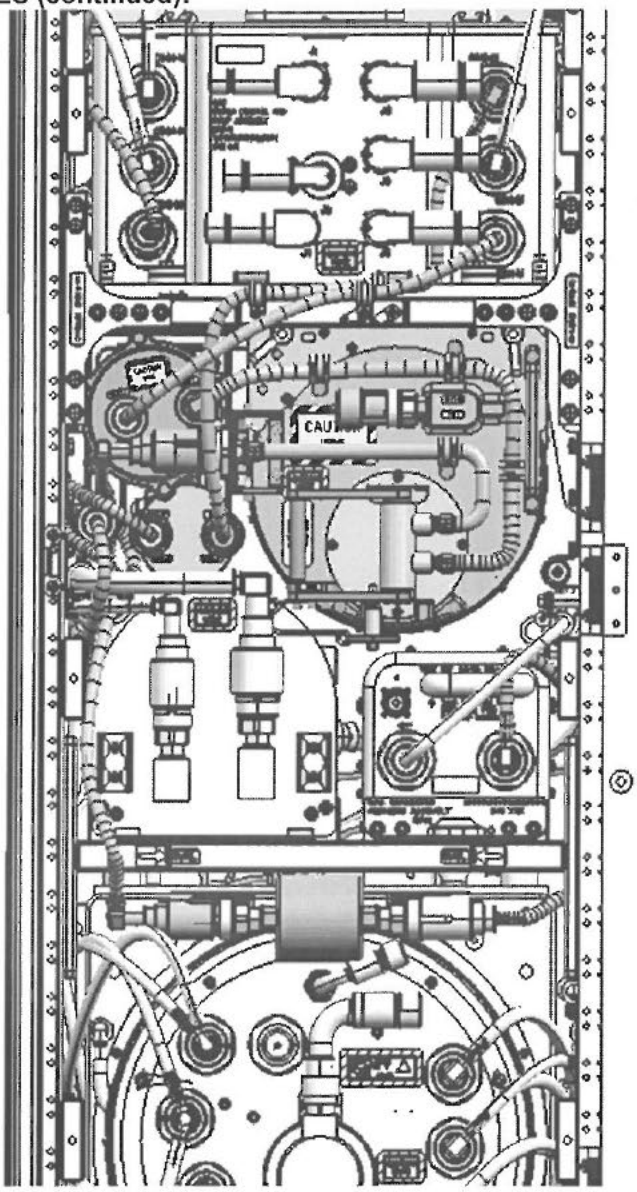


(continued)

CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

REQUIREMENTS/REFERENCES (continued):



(b) (4)	MODIFICAION KIT, ARFTA, WRS-2
	TANK LAUNCH ASSEMBLY, ARFTA - Upgraded with fire hose connections
	BRINE FILTER ASSY - Upgraded with fire hose connections
	FILTER ASSY, 100 MICRON, ARFTA - Upgraded with fire hose connections
	FILTER ASSY, 20 MICRON, ARFTA - Upgraded with fire hose connections
	HOSE ASSEMBLY - Upgraded with fire hose connections
	HOSE ASSEMBLY - Upgraded with fire hose connections
	HOSE ASSEMBLY - Upgraded with fire hose connections

CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

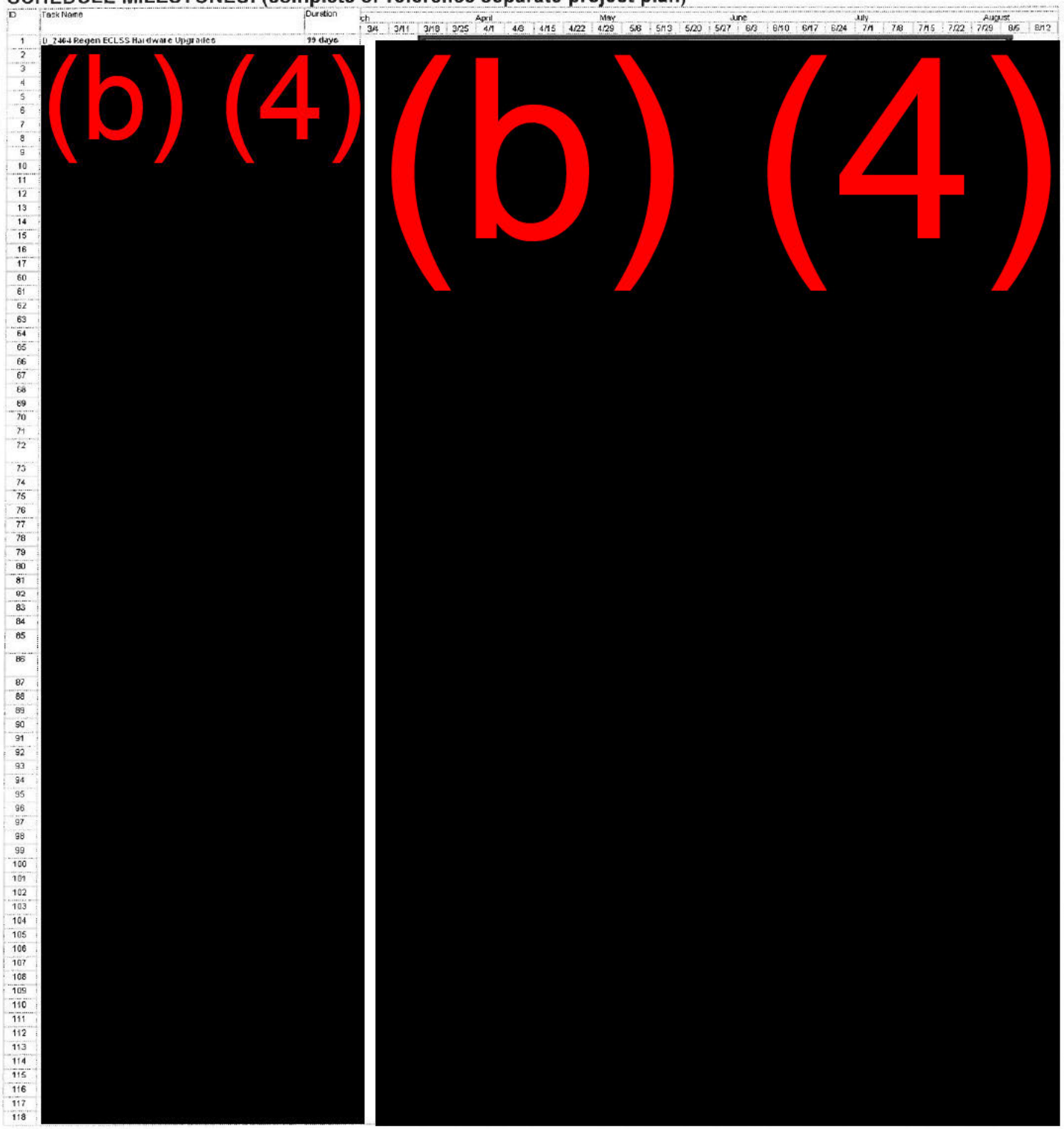
Acceptance of Regen ELCSS hardware will be segmented as follows, to allow incremental acceptance. Each incremental acceptance will have an independent acceptance test script:

- Condensate/Fluid pump/manifold
- Potable water tee-hose, Valve and associated QDs
- UPA Depress hose and associated QDs
- PTU T-Valve (b) (4)
- Compressor Air Hose
- CWC to ¾"QD adapter for WDS
- ARFTA tethered Pip pins and ARFTA hand handle
- WRS-1 RIP upgrade
- NODE3 Waste water line
- OGA-DSC Dome Evac Tool
- H2 Sensor in/out QD caps
- PTU Xfer hose
- ARFTA servicing hardware(Brine transfer hose)
- Rodnik/ATV Adapter
- Compressor Adapter
- ARFTA hardware (ARFTA tank, Brine Filter, Filter 100 micron, Filter 20 micron, hose assembly – 3 ea)

CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

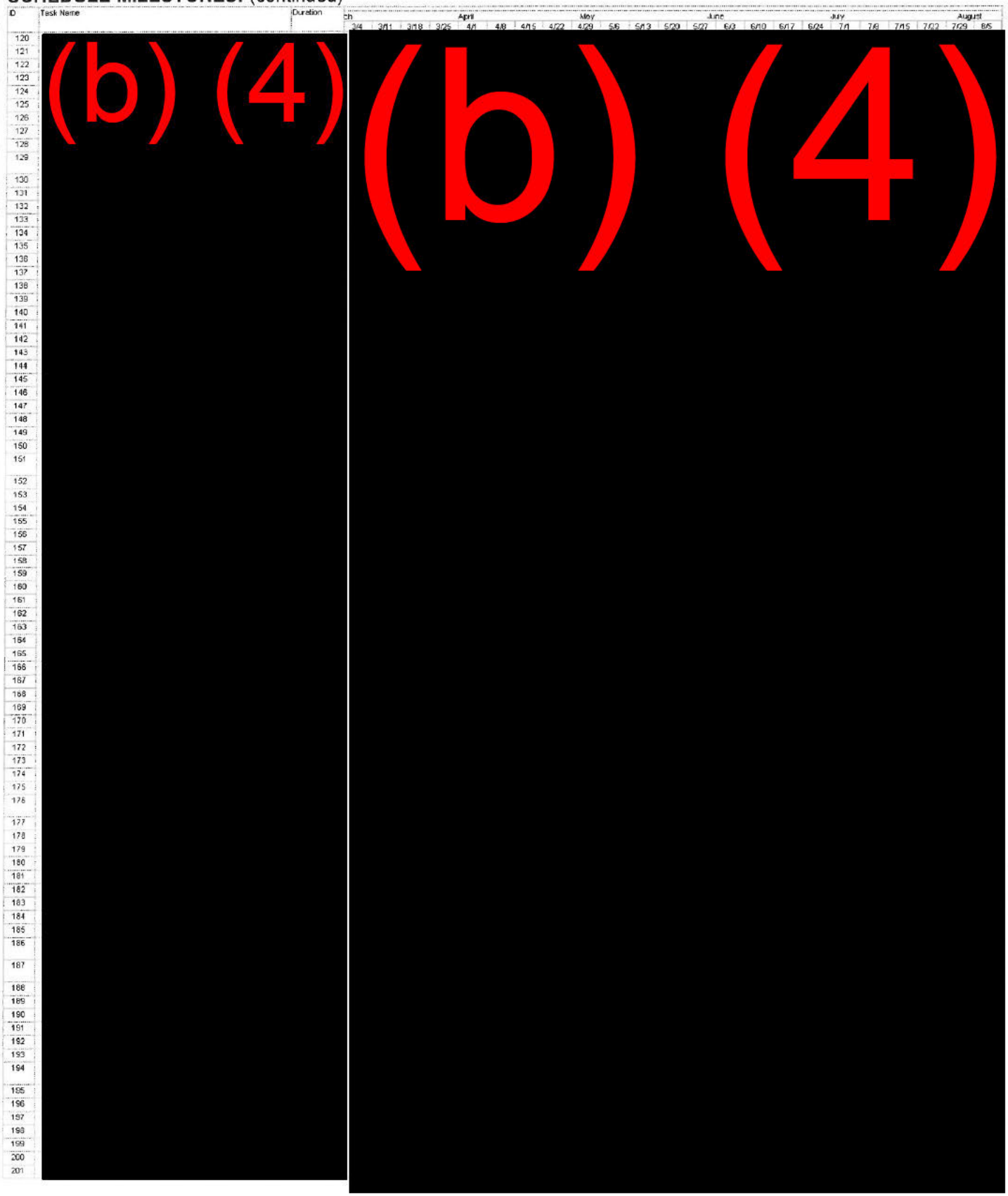
SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

SCHEDULE MILESTONES: (continued)



CR NO.: 2464	DX CHANGE REQUEST

CR TITLE: Regen ECLSS hardware Upgrades

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
		(b) (4)		

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO933	04/11/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO933

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 27, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO933

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO933

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia W Maclean 4/12/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 933 is to: Power for Crew Quarters CO3, CR-2209 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $88,221.29 Work is to be completed by November 27, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	88,221.29	88,221.29	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 88,221.29

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

Power for Crew Quarters CQ3
CR-2209 Cost

H060 CR 2209 - Power for Crew Quarters CQ3

		TOTAL					
		GFY 12	GFY 12	GFY12	GFY12	TOTAL	GFY 12
SLC	bor Categ	Hours	Rate	Hours	OT Rate	LABOR HOURS	Total
(b) (4)		(b) (4)					
Material							
Material Handling							
G&A							
Subtotal Material							
Travel							
Non Labor G&A							
Subtotal Travel							
Total Estimated Cost							
Total Available Fee							
Award Fee	(b) (4) of Tot						
Target Incentive Fee	(b) (4) of Tot						
Max Incentive Fee	Target mult						
Total Cost Plus Fee							

H060 CR 2209 - Power for Crew Quarters CQ3

		TOTAL						Total
		GFY 13	GFY 13	GFY13	GFY13	TOTAL	GFY 13	
SLC	Labor Category	Hours	Rate	Hours	OT Rate	LABOR HOURS	Total	
(b) (4)		(b) (4)						
Material								
Material Handling								
G&A								
Subtotal Material								
Travel								
Non Labor G&A								
Subtotal Travel								
Total Estimated Cost								
Total Available Fee								
Award Fee	(b) (4) of Total Fee							
Target Incentive Fee	(b) (4) of Total Fee							
Max Incentive Fee	Target multiplied by (b) (4)							
Total Cost Plus Fee								

CR NO.: 2209	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

1. REQUESTOR: Glenn Johnson	2. PHONE: x39329	3. E-MAIL: glenn.f.johnson@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION 3.6.1
☐ CONSTELLATION ☐ OTHER: (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Upgrade the fidelity of the Crew Quarters 3 per the requirements below.

7. RATIONALE
The port Crew Quarters in B9 Node 2 mockup needs to be powered to allow crew and engineering training of the equipment, situational awareness of operations, repairs and cleaning.

8. REQUIREMENTS AND REFERENCES:

See requirements on Page 2

Note: Per the Safety Review conducted 03/21/12 no TRR required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 11/1/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntire Date:04/21/11

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: FY12 $53,900; FY13 $22,500 (total $76,400)	20. NEGOTIATED DELIVERY DATE: 11/27/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2209	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

REQUIREMENTS/REFERENCES (cont.):

1. Provide IIA CQ Electrical panel [redacted] Panel shall be outfitted with all electrical connectors (IIA);hinged panels (IIB, [redacted], Electrical panel connector plates (IIB, [redacted], battery and fuse compartment (IIA, [redacted] Provide power from NODE2 power cables to J10, J11 and J13 connectors. Fidelity IIA Electrical connectors J22, J23, J24, J25, J20, J16, J17, J18 and J21 shall provide power to GLA assembly (not yet installed and not part of this CR), Fans (already installed) and Speed Control Assembly (see below), Egress light assembly (not yet installed and not part of this CR), Rack power switch below) and Test panel (not yet installed and not part of this CR). Internal wiring is not required to be flight-like. J22 and J23 must be able to interface with UOP. Drawings for cables have been placed in the CR2209 folder on the SVMF server. Provide captive fasteners for closeout panel mounting (IIA, SDG32110321-301,-303,and -305). Provide caps for electrical connectors (IIIA, similar to PN 660-024M15H5-09).
2. Fabricate and install a functional Fan Speed Control Assembly
3. Install IIIA mockup of Rack power switch. The switch will turn off power of the rack when the rack is not in use.
4. Modify Bump-out blankets to have openings for fan speed control (installed by this CR) and connector plate
5. Add bump out connector plate, mark as J30, J31, J32, J33
6. J16 mates to J30 to provide fan control.
7. Review the Hazard Analysis(s) to cover the design changes, SVMF 120vdc Hazard analysis, Node-2 Hazard Analysis to determine if an update is required.
8. Update the Hazard Analysis to cover the design changes, if required.
9. Add power control switch to panel to control the power to J22 and J23.
10. Add LED indicators to the J22, J23 connectors to show if outlets are powered.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

A separate acceptance test plan shall be provided at the time of the test.

CR NO.: 2209	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Task Name	Duration	Mar '12	Apr '12	May '12	Jun '12	Jul '12	Aug '12	Sep '12	Oct '12	Nov '12	Dec '12	Jan

(b) (4)

CR NO.: 2209	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

SCHEDULE MILESTONES: (continued)

ID	Task Name	Duration	Mar '12	Apr '12	May '12	Jun '12	Jul '12	Aug '12	Sep '12	Oct '12	Nov '12	Dec '12	Jan

(b) (4)

(continued)

CR NO.: 2209	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

SCHEDULE MILESTONES: (continued)

ID	Task Name	Duration	Mar '12	Apr '12	May '12	Jun '12	Jul '12	Aug '12	Sep '12	Oct '12	Nov '12	Dec '12	Jan

(b) (4)

CR NO.: 2209	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design Cost	PE Cost	Administrative	Tech Cost	Material Cost
FY12	(b) (4)				

Fiscal Year	Design Cost	PE Cost	Administrative	Tech Cost	Material Cost
FY13	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO934	04/12/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO934

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO934

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO934

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 4/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 934 is to: Share Point Architecture. CR-0471 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $199,984.81 Work is to be completed by September 30, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	199,984.81	199,984.81	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 199,984.81

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR- 0471 – SharePoint Architecture Cost

H060 CR 471-Share Point Architecture					
		TOTAL			
		GFY 12	GFY 12	TOTAL	GFY 12
SLC	Labor Category	Hours	Rate	LABOR HOURS	Total
		(b) (4)		(b) (4)	
Material					
Material Handling					
G&A					
Subtotal Material					
Travel					
Non Labor G&A					
Subtotal Travel					
Total Estimated Cost					
Total Available Fee					
Award Fee	(b) (4) of Total Fee				
Target Incentive Fee	(b) (4) of Total Fee				
Max Incentive Fee	Target multiplied by (b) (4)				
Total Cost Plus Fee					

CR NO.: 471	DX CHANGE REQUEST

CR TITLE: SharePoint Architecture

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4)@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER (IT Systems)

6. DESCRIPTION OF CHANGE:
Consolidate existing NASA intellectual property assets in CDM to an existing and maintained SharePoint infrastructure.

- SharePoint Portal Roadmap
- Governance Template
- Migrate CDM platform to SharePoint
- Native SharePoint Dashboards

7. RATIONALE
The purpose of the SharePoint Architecture project is to better utilize NASA's intellectual property assets through consolidation. SharePoint and the supporting infrastructure currently exist at the NBL facility and hosts many legacy dashboards and tools that do not interact or take advantage of SharePoint other than a hosting page. SharePoint is designed to cut costs with a unified infrastructure while providing a model that allows users to respond to business needs. In an effort to further simplify NBL IT infrastructure, many opportunities exist to consolidate custom people and paper intensive processes into an existing platform that is maintained under NSOC. The SharePoint platform will be used to consolidate existing critical IT infrastructural pieces of technology while injecting automation to improve or surface key performance indicators (KPI). Overall, this project will increase the discoverability of existing intellectual property in use on the NSOC contract while providing a means to use it more efficiently.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
** NO SAFETY REVIEW OR TRR REQUIRED **

1. Management
- Provide active direction, periodically review interim results, and identify and execute adjustments to ensure achievement of the planned outcome
2. Requirements Creation
3. SharePoint Portal Roadmap
- Information Architecture
- Logical Architecture
- Physical Architecture
- Functional Architecture
4. Governance Template
- Define and implement a structure within which to execute program management and administration
5. Complete CDM migration to SharePoint solution
- Solution will add the ability to bring more documentation under control and surface more data from existing siloes of documentation (for example: CR folder share)
- To include necessary workflows where required
6. Native SharePoint Dashboards and KPIs
7. User Interface enhancements with an emphasis on human factors
8. Mentorship and training from a Microsoft Gold Partner
- Support the SharePoint skills maturation of the NSOC Technology Solution resources, by ensuring knowledge transfer and industry best practices.
- Workflow automation
-- Example deployment of a technology area

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 3/26/2012
4/20/2012	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: [signature]
Date: 3/26/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
Edgar J Turcotte	281-483-5730	edgar.j.turcotte@nasa.gov

CR NO.: 471	DX CHANGE REQUEST

CR TITLE: SharePoint Architecture

15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: [redacted]	16. PHONE: [redacted]	17. E-MAIL: [redacted]@nasa.gov

18. Formal Project Plan Required:

☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$200,141.00	9/30/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

CR NO.: 471	DX CHANGE REQUEST

CR TITLE: SharePoint Architecture

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verifica ion	Verified	Technical Contact
1.	Management	EA	1	Inspection		(b) (4)
2.	Requirements Creation	EA	1	Inspection		
3.	SharePoint Portal Roadmap	EA	1	Inspection		
4.	Governance Template	EA	1	Inspection		
5.	Complete CDM migration to SharePoint solution	EA	1	Inspection		
6.	Native SharePoint Dashboards and KPIs	EA	1	Inspection		
7.	User Interface enhancements	EA	1	Inspection		
8.	Microsoft Gold Partner Mentorship	EA	1	Inspection		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 471	DX CHANGE REQUEST

CR TITLE: SharePoint Architecture

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO935	04/24/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO935

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 06, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO935

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO935

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer
4/24/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 935 is to: TA Clamp Modification and Procurement The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $213,840.87 Work is to be completed by September 06, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	213,840.87	213,840.87	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 213,840.87

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: CR_NBL_465	DX CHANGE REQUEST

CR TITLE:NBL TA Clamp Modification and Procurement

1. REQUESTOR: John Haas	2. PHONE: 281-792-5925	3. E-MAIL: john.haas-1@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
1. Modify the latest design revision of the 1", 1.5" and 2" and 2.5" TA Clamps to eliminate the open slot that allows the spring to pass into the volume occupied by hoses or cables.
2. Procure spares inventory of the redesigned TA clamps.
3. Design and procure a stainless steel insert to retrofit existing inventory and assemble those parts by welded installation per the revised drawing (SHI-NCOUT-D170)..

7. RATIONALE
The flight bushing normally prevents cable interference with the springs. The prescribed modification will prevent cable interference with the springs. It is not necessary, desired or practical to add bushings to existing clamps. The current design leads to snag hazards as documented in NBL DR 09504.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Safety Review Not required as this is a Procurement CR.
1. Revise drawing SHI-NCOUT-D5170 (latest revision) per attached red-lines.
2. Procure quantity 50 of
3. Procure quantity 100 o
4. Procure quantity 150 o
5. Procure quantity 300 o
6. Procure quantity 150 of stainless steel insert for use in retrofitting existing inventory
7. Retrofit/assemble stainless steel insert to existing critical spares inventory per the new revision of drawing (b) (4)

(b) (4)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: _____
9-30-12	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: ___/s/ John Hass_____
Date:03/08/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
John Haas	281-792-5925	John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$214,900	09/06/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

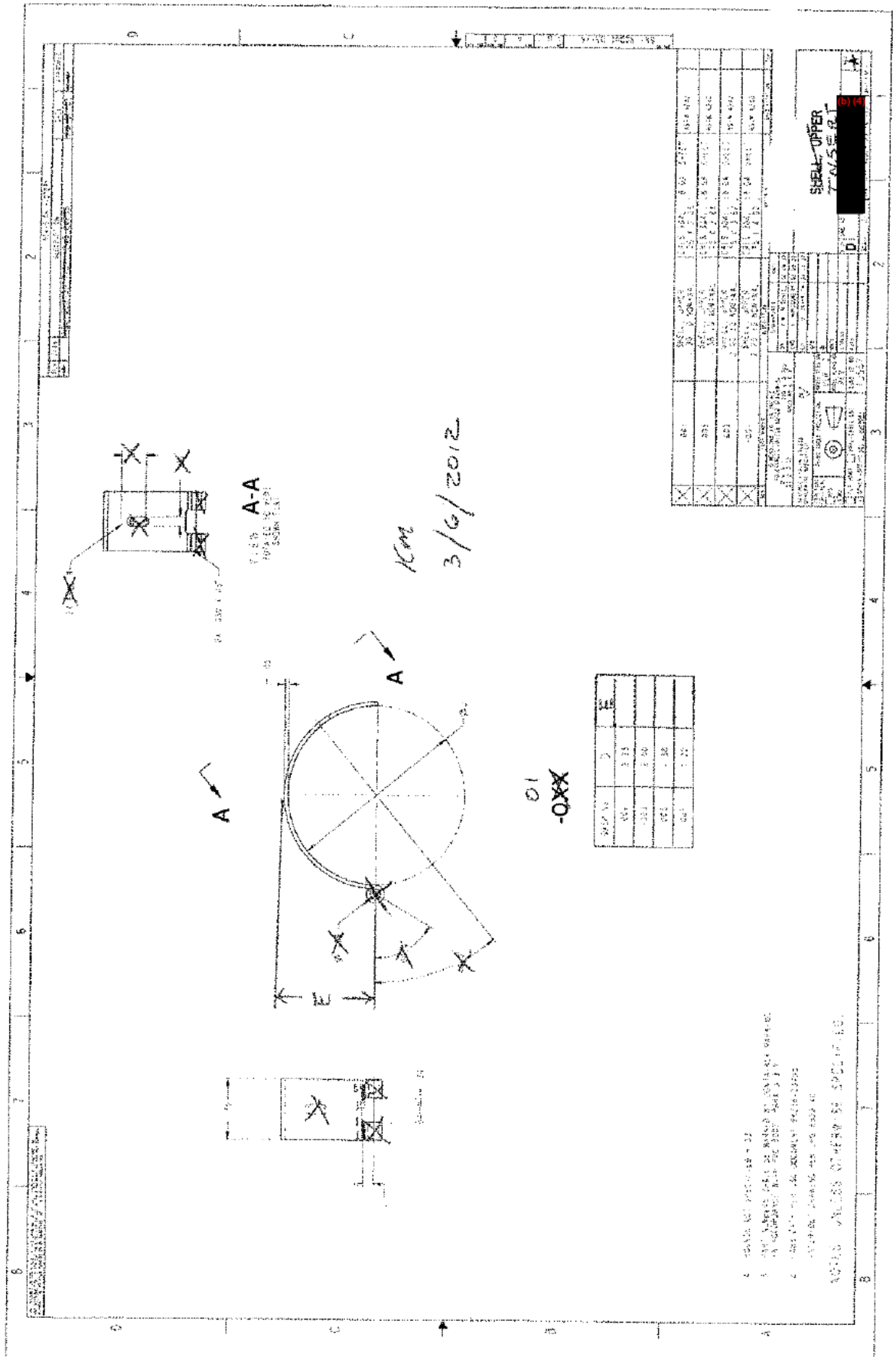
Closed by:_____ **Date:** _____

Form: DX-FRM-001

CR NO.: CR_NBL_465	DX CHANGE REQUEST

CR TITLE:NBL TA Clamp Modification and Procurement

REQUIREMENTS/REFERENCES (cont.):



CR NO.: CR_NBL_465	DX CHANGE REQUEST

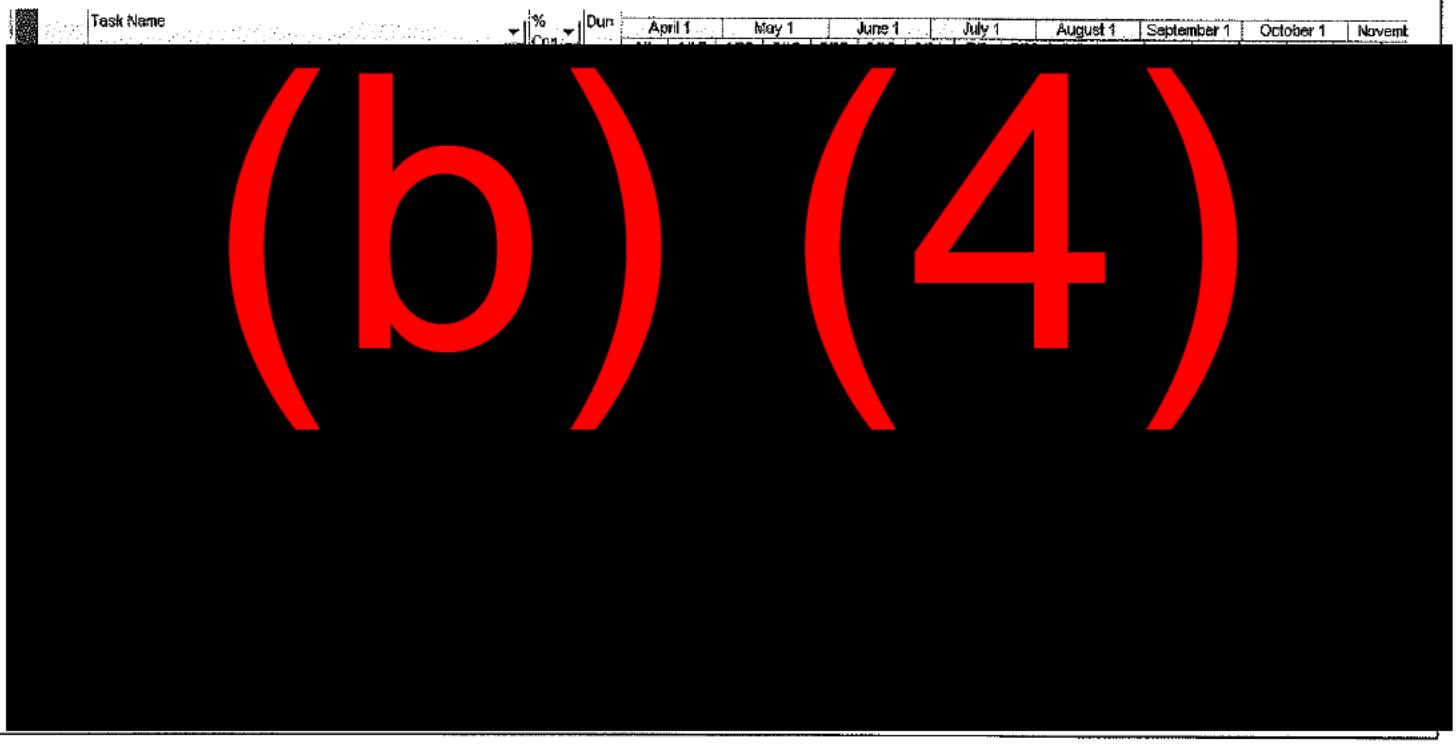
CR TITLE:NBL TA Clamp Modification and Procurement

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Revise drawing SHI-NCOUT-D5170 (latest revision)	EA	1	Inspection		(b) (4)
2.	Procure SHI-NCOUT-D5170-701 (2.50")	EA	50	Inspection		
3.	Procure SHI-NCOUT-D5170-703 (2.00")	EA	100	Inspection		
4.	Procure SHI-NCOUT-D5170-705 (1.50")	EA	150	Inspection		
5.	Procure SHI-NCOUT-D5170-707 (1.00")	EA	300	Inspection		
6.	Procure stainless steel insert for use in retrofitting existing inventory.	EA	150	Inspection		
7.	Retrofit/assemble stainless steel insert to existing critical spares inventory per the new revision of drawing SHI-NCOUT-D5170	JOB	1	Inspection		

1. per attached red-lines.

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: CR_NBL_465	DX CHANGE REQUEST

CR TITLE:NBL TA Clamp Modification and Procurement

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.: NNJ10HD35C DO936
2. Date of Order: 04/24/12

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO936

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO936

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO936

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 4/24/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 936 is to: NBL Safety Diver Proficiency Program and Preventative Maintenance of Mockups (Ops Scope Increase) CR-0473 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $174,698.11 Work is to be completed by September 30, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	174,698.11	174,698.11	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total: 174,698.11

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 473	DX CHANGE REQUEST

CR TITLE: NBL Safety Diver Proficiency Program and Preventative Maintenance of Mockups

1. REQUESTOR: Ed Turcotte	25874	3. E-MAIL: Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCK-UP ☒ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

ADD THE FOLLOWING CONTENT TO THE NSOC II CONTRACT:

1.) Enhance the current NBL Safety Diver Proficiency Program. The program addition would verify an accepted proficiency standard - as derived from a scenario (or scenarios) determined to simulate worst-case physical requirements for a primary NBL Safety Diver. This addition would also provide the capability to maintain/sustain such physical proficiency with a corresponding physical training component.

2.) Enhance the inspections and preventative maintenance of mockups to allow for their use through CY 2020. This enhancement would provide for an increased number and frequency of engineering assessments on the existing ISS mockups. It is expected that the increase in inspections will result in an increase in the number of defects (both mechanical and material) that will need to be addressed. The mitigation for these defects will be through an increased level of preventative maintenance.

Provide more resources to meet the ever-increasing demands associated with:

- Disposition of Discrepancy Reports (DR): Latest far-reaching problem associated with the thousands of TA Clamps, Facility equipment R&R
- Unanticipated Sustaining Engineering: Address such needs (1) deteriorating FRP mock-ups, (2) maintenance not identified in CR's
- Technical Support for increased CR/IDIQ work

NOTE: Annual (fiscal year) funding would be necessary so as to ensure sustenance of these programs through the end of the existing NSOC II contract. Assume CY3 and the option years will include contract value in the baseline to support these activities.

7. RATIONALE

ITEM NO. 1: The current NBL Safety Diver Certification Work Instruction (NBL-DIVE-W0037) contains several physical activities the trainee must demonstrate they can perform prior to certification. The intent of these requirements is to ensure that a safety diver would be able to get an incapacitated crew member (or other subject) to the surface in a safe and timely manner so that proper medical treatment can be provided. The current annual re-certification process does not require that the ability to perform these physically demanding tests be verified. This program would serve to maintain and annually confirm the on-going safety service capability of our primary Safety Diver Corp.

ITEM NO. 2: Many of the existing mockups are at or approaching their current life expectancy. As the mockups age, an increase in the number of DRs has been noted along with material defects not previously seen. Recent examples include:

- Areas of de-lamination on mockups constructed with FRP
- Damaged springs on TA clamps (initial estimates are that 50% - 80% of existing clamps have some damage and pose a snag hazard)
- Prior to 2011, an increase in the number of DRs opened against mockups increased for each of the previous three years

Additionally, many of the recent CRs and IDIQs did not address the long term maintenance needs of the mockups being built under them and as such resources were not allocated for this function.

CR NO.: 473	DX CHANGE REQUEST

CR TITLE: NBL Safety Diver Proficiency Program and Preventative Maintenance of Mockups

8. REQUIREMENTS AND REFERENCES: (continue on Page 3)
Safety Review waived per Robert Durkin

ITEM NO. 1:

1. Determine an in-water test(s) that approximates the physical skills outlined in NBL-DIVE-W0037
2. Determine objective requirements for passing the test(s) in 1.
3. Institute and document the requirement for annual recertification via the test(s) in 1. Current primary Safety Divers would be allowed a 12 month grace period – from the date of program inception – to demonstrate such proficiency.
4. Document the requirement to provide time (not to exceed one hour per day) for physical fitness training as part of the primary Safety Diver's normal work day. This training is recommended so that Safety Divers can maintain the physical strength and stamina to perform the activities described in NBL-DIVE-W0037.
5. Determine and provide to DX12 management the increase in manpower required (if any) to allow for the physical and proficiency training described in 3 and 4.
6. TMS shall track this proficiency compliance.

ITEM NO. 2:

1. Provide the current inspection intervals for all existing in water ISS mockups and support equipment
2. Provide the current preventative maintenance schedule for all existing in water ISS mockups and equipment
3. Determine the appropriate intervals for items 1 and 2 above to allow for the use of said mockups through CY 2020.
4. Determine the additional manpower and required skill mix to provide the increased rate of inspections.
5. Determine the additional manpower and required skill mix to provide the increased level of preventative maintenance.

9. NEED DATE: (support date in block 7 rationale) 4-30-12	**10. CR SUBMISSION DATE:** 2-29-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas
Date: 3/29/2012

12. NASA POC: Robert Durkin	**13. PHONE:** 281-792-5836	**14. E-MAIL:** Global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $174,700	**20. NEGOTIATED DELIVERY DATE:** 9/30/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 473	DX CHANGE REQUEST

CR TITLE: NBL Safety Diver Proficiency Program and Preventative Maintenance of Mockups

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Perform Deliverable Verification as indicated below:

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Delivery of items contained in the requirements section	job	1	Inspection		(b) (4)

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 473	DX CHANGE REQUEST

CR TITLE: NBL Safety Diver Proficiency Program and Preventative Maintenance of Mockups

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO937	04/25/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO937

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO937

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO937

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 4/25/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 937 is to: Database Platform Upgrade CR-0462 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $62,250.49 Work is to be completed by September 30, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	62,250.49	62,250.49	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 62,250.49

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 462	DX CHANGE REQUEST

CR TITLE: Database Platform Upgrade

1. REQUESTOR: Janna Dake	2. PHONE: 281-483-6538	3. E-MAIL: janna.j.dake@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Procure 64bit SQL Server 2012 Enterprise to replace an existing 32bit SQL Server 2005 Enterprise database engine and procure training for [redacted] people to attend MS SQL Server 2012 training.

7. RATIONALE
Existing 32bit SQL Server 2005 database platform is in need of upgrading to 64bit SQL Server 2012 Enterprise. This new SQL Server 2012 platform will allow Technology Solutions to consolidate the remaining Microsoft SQL Server platforms into one database engine leading to a 50% reduction in SQL instances. The migrations required to move existing SQL platforms to the new database engine will occur after application compatibility verification. It is already known that the SQL Server platform used to house SharePoint 2010 will be compatible and it shall move under the context of an additional CR.

SQL Server 2005 Upgrade high-level benefits

Database Engines
Work more efficiently with hardware, large tables, and server resources.

Data and backup compression
Increase storage capacity; maximize data availability.

Manageability
Efficiently run multiple instances; automate tasks; monitor performance.

Security
Encrypt an entire appliance; improve audit capabilities.

Reporting Services
Run and deliver richly formatted reports with Microsoft Visual Studio.

Special data types
Handle FILESTREAM, hierarchical, and spatial data.

Database development
Gain a full-text architecture, Transact-SQL enhancements, and improved tools.

Single-query syntax LINQ
Access a wide range of data stores.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No safety review required for procurement and IT CR.

1. Procure 64bit MS SQL Server 2012 Enterprise
2. Procure training for [redacted] TS members to attend MS SQL Server 2012 training.

CR NO.: 462	DX CHANGE REQUEST

CR TITLE: Database Platform Upgrade

9. NEED DATE: (support date in block 7 rationale) 9/30/2012	**10. CR SUBMISSION DATE:** 4/13/12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Robert Durkin (ICE) Date:4/16/2012

12. NASA POC: Janna Dake	**13. PHONE:** 36538	**14. E-MAIL:** janna.j.dake@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $63,600	**20. NEGOTIATED DELIVERY DATE:** 9/30/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

CR NO.: 462	DX CHANGE REQUEST

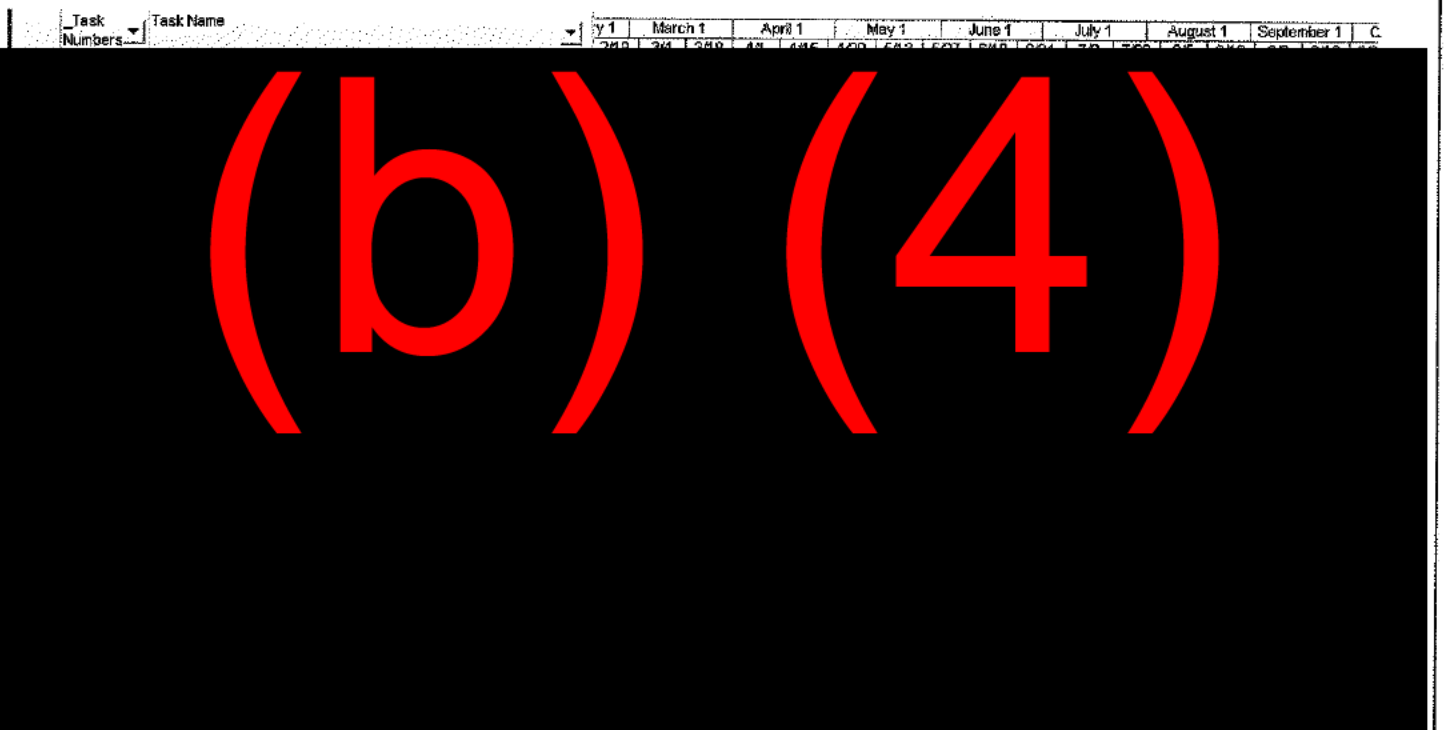
CR TITLE: Database Platform Upgrade

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Perform Deliverable Verification as indicated below:

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Procure 64bit MS SQL Server 2012 Enterprise.	EA	1	Inspection		(b) (4)
2.	Procure training for 4 TS members to attend MS SQL Server 2012 training.	EA	1	Inspection		

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

CR NO.: 462	DX CHANGE REQUEST

CR TITLE: Database Platform Upgrade

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO938	05/02/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO938

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 10, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO938

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO938

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 938 is to: PORT Cleat Outfitting CR-0470 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $19,362.15 Work is to be completed by September 10, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	19,362.15	19,362.15	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY Jennifer Krause 5/3/12
Authorized U.S. Government Representative Date

CR NO.: CR-NBL-470	DX CHANGE REQUEST

CR TITLE: PORT Cleat Outfitting

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) 1@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONST ☒ OTHER: 2.6.3 L&R (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Add sea anchor and flotation collar attachment cleats to PORT. Cleats must be capable of taking and transferring structural loads as required.

7. RATIONALE
PORT is to be used for training and evaluation related to Multi-Purpose Crew Vehicle (MPCV) Exploration Flight Test 1 (EFT-1) recovery. DoD recovery personnel will train using this hardware in the NBL in January 2013. The need date for this CR supports use of existing FY2012 funds and allows time for a post fabrication TRR.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Fabricate and install Orion-like tow and tag-line attachment cleats on the PORT mockup. Fidelity Code II-B.
   a. Structural design loads that shall be imparted into the cleats and transferred into the PORT are defined by CEV-LD-11-012A_Towing_Loads which is located in the CR-NBL-470 folder.
   b. The cleat design for estimation and planning purposes is defined by tag_line_cleat_offset_25in.pdf and tow_cleat_offset_25in.pdf which are located in the CR-NBL-470 folder. The actual flight designs are pending and will be provided no later than 4-30-12 for reference. The methods of incorporating the cleat structural attachment to PORT are PORT specific and therefore open to designer/engineer preference, subject to design review influence. The receptacle portion of the cleat that the recovery team interfaces with is not expected to vary significantly.
   c. The cleat locations for estimation and planning purposes are defined by the latest Orion Pro/e models used by the NBL designers to build the PORT. Exact cleat location will be available no later than 4-30-12.
   d. The Cleats shall be constructed of Grade 5 Titanium, as are the flight units, to provide appropriate factors of safety given the cross sectional area of the hardware. Material to be provided at no cost from NBL SSRMS left over stock.
   e. The cleats shall be mechanically attached using threaded fasteners.
2. Design Reviews, and PORT Mockup Delta Test Readiness Review to be conducted as part of this CR. Note that the Operational TRR for DoD swimmer training shall be conducted in GFY2013.

NOTE 1: Safety Review deemed as being conducted as part of PORT CRs and not required. (John Haas on 4/3/12).
NOTE 2: Mockup TRR is required.
NOTE 3: Operations TRR will NOT be conducted under this CR.

9. NEED DATE: (support date in block 7 rationale) 9-10-12	10. CR SUBMISSION DATE: 3-23-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _JHaas/ICE Date: 4/2/12

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

CR NO.: CR-NBL-470	DX CHANGE REQUEST

CR TITLE: PORT Cleat Outfitting

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$19,400	09/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

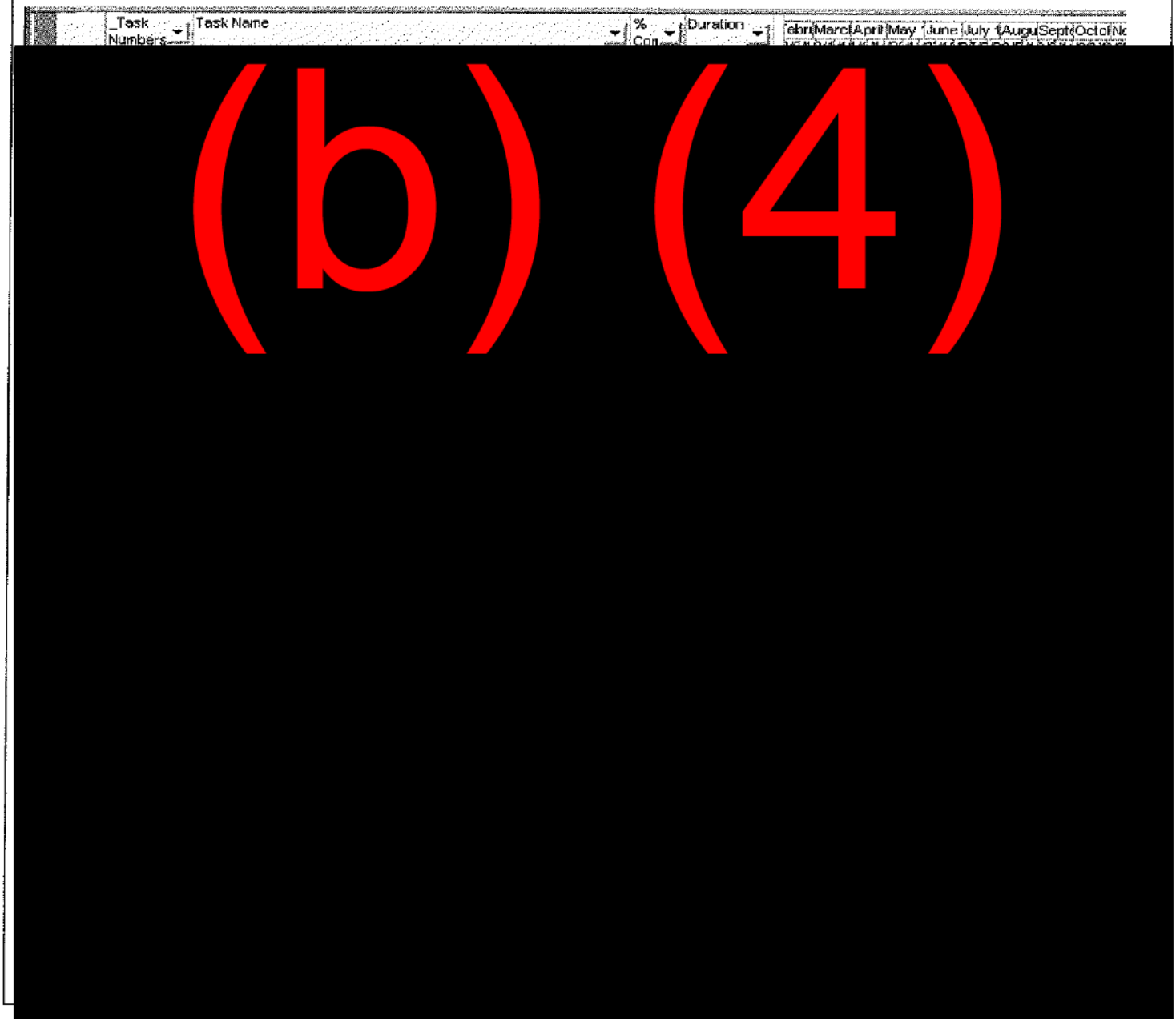
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	VERIFICATION
1	Fabricate and install Orion-like tow and tag-line attachment cleats on the PORT mockup.	3	II.B	
2	PORT Mockup Delta Test Readiness Review	1	N/A	

CR NO.: CR-NBL-470	DX CHANGE REQUEST

CR TITLE: PORT Cleat Outfitting

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: CR-NBL-470	DX CHANGE REQUEST

CR TITLE: PORT Cleat Outfitting

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY12: Total Cost $19,400

DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO939	05/03/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: Chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO939

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO939

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO939

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 5/8/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 939is to: SSMTF Portable Computer System Re-architecture CR-2502 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $182,846.90 Work is to be completed by September 27, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	182,846.90	182,846.90	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 182,846.90

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2502	DX CHANGE REQUEST

CR TITLE: PCS Architecture Update

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Replace the Sun-server function of the SSMTF PCS training environment. Provide a new operating system supported by the flight software.

7. RATIONALE
The Sun hardware is obsolete, and beginning to fail, and Boeing's flight software no longer supports the Solaris operating system. Replacement of the Sun hardware and Solaris operating system will eliminate the obsolete components. A new flight-supported operating system will provide a platform for current and future flight software releases. Rehosting the SSMTF custom Sun software onto the new operating system will preserve the present crew training capabilities.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See Page 2

Note: Safety Review waived 04/19/12.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 10/11/2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 10/11/2011

12. NASA POC: Ernie Prado	13. PHONE: x34902	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $ 182,850	20. NEGOTIATED DELIVERY DATE: 09/27/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2502	DX CHANGE REQUEST

CR TITLE: PCS Architecture Update

REQUIREMENTS/REFERENCES (cont.):

Rqmt #	Requirement Description	Primary Data Reference Spec / Drawing)	Data Source	QTY	Fidelity Code	Technical Contact
8.1	Provide Linux PC replacements for the existing Sun/Solaris servers.			1		
8.2	Provide Linux OS for the PCS laptops.					
8.3	Provide PCS-Display Only load, running on Linux, that displays flight PCS pages on the PCS laptops.			1		
8.4	Provide interaction between those PCS controls and displays that are operational for SSMTF training as of 09/01/11, and the SSMTF mockup hardware.			1		
8.5	Provide a document detailing the procedure used to process Boeing's PCS display-only load into the working SSMTF training PCS load.			1		
8.6	Provide an Interface Control Document for the PCS-to-PLC interface.			1		
8.7	Provide a procedure defining the steps required for Ops personnel to setup the PCS for class.			1		

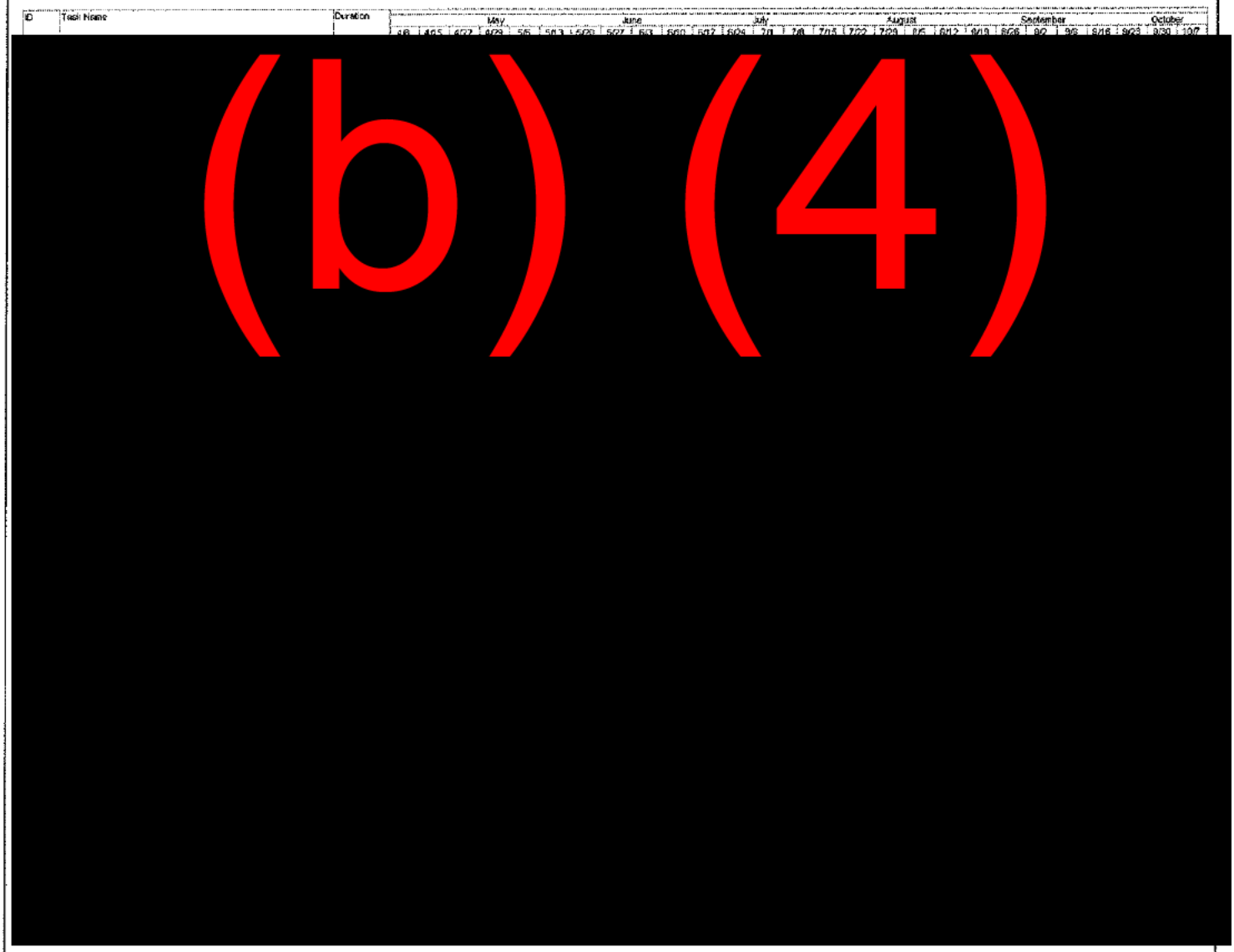
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

A separate acceptance procedure will be supplied.

CR NO.: 2502	DX CHANGE REQUEST

CR TITLE: PCS Architecture Update

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2502	DX CHANGE REQUEST

CR TITLE: PCS Architecture Update

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2502	DX CHANGE REQUEST

CR TITLE: PCS Architecture Update

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Project Engineering	Management	Technicians	Material
		(b) (4)		

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 940A	09/27/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 940A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 940A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO940A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/27/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 940A is to: Payload Development Laboratory Reconfiguration The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Revision is $29,299.52 The total value of this Delivery Order is $246,062.30 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	29,299.52	29,299.52	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 29,299.52

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

1. REQUESTOR: June Huhn	2. PHONE: 281-792-5837	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides for relocation of the Payload Development Laboratories (PDL) I and II, controlled access platform, and ancillary equipment within the Space Vehicle Mockup Facility (SVMF). **Rev A** incorporates approved SCIF 1,2,4,&5

7. RATIONALE
Relocation is required to complete FY 2012 ISS mockup reconfiguration which plans for relocation of the PDL mockups to the current Full Fuselage Trainer (FFT) location after the FFT is removed from the SVMF.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Provide support for one each of a CR Safety, Acceptance and Test Readiness Review.
2. Update electrical and network drawings to reflect preparatory move modifications performed by Lockheed.
3. Disconnect the vacuum pump and cap tubing. Vacuum pump will not be relocated with PDLs.
4. A floor plan layout shall be prepared and approved by DX14 prior to relocation of items specified in this CR.
5. Prior to moving the PDLs, document (current internal configuration will need to be restored after move), remove, and secure all loose hardware (computers, UPS, power supplies, tables, etc.). Remove all items from seat track.(continued on next page)
6. Prior to moving the PDLs, remove the following racks:
   PDL I: HRF1 (S2) and HRF2 (P2) – on frog stands, PDL II: ARIS (S2) – can be placed horizontal on blocks, CIR and FIR racks will also need to be removed for maintenance (this is TBD so verify prior to removal)

   (continued on page 2)

Note: Per the Safety Review conducted 03/21/12, a TRR is required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale) 09/26/12	10. CR SUBMISSION DATE: 02/16/12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 02/24/12

12. NASA POC: June Huhn	13. PHONE: x25837	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$216,700~~ **Rev. A:** $246,100	20. NEGOTIATED DELIVERY DATE: 09/14/12 – PDL Readiness For Training 09/24/12 – Final CAR

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (continued):

7. Prior to moving the PDLs, ensure that all rack lower torque rods are fully engaged and securely cable all upper rack fittings to standoffs or provide equivalent form of restraint. Coordinate with riggers to ensure that there are no mockup lift or center of gravity issues.
8. Relocate PDLs to current FFT location. PDLs will share entry stairs and platform. PDL I is to be in the West location if a linear arrangement is chosen.
9. Relocate current platform assembly and controlled access stairs. Stairs and handrails may need altered access point depending on final PDL configuration. All platforms and stairs shall have safety hand rails.
10. After PDL relocation, install loose hardware and racks removed in requirements 5 and 6 to restore the original internal configuration and remove upper rack fitting temporary restraints. HRF1 and HRF2 installation locations need to be reversed such that final locations are HRF1 (P2) and HRF2 (S2).
11. Relocate and reconnect the nitrogen system (tanks, regulators, etc.) to match current capability. System recertification will not be performed at this time.
12. Reroute and reconnect the current Building 30 ethernet lines (9).
13. Reroute and reconnect the video cables (4) from the VICON .
14. Reroute and reconnect the audio cables (9) from the computer room.
15. Reroute and reconnect the SMTF LAN network cable from the computer room.
16. Reconfigure the 3-phase, 100 Amp power feeds that supply each of the PDLs. Upgrade to standard AC connectors.
17. Provide a powered quad outlet at the PDL II S1 location.
18. Relocate and reconnect the air conditioning unit, any external manifolds and ducting to supply both PDLs.
19. Relocate and reconnect the DC power cabinet.
20. Relocate and reconnect both the 2-phase and 3-phase UPS units.
21. Relocate and reconnect the RFID system (2 antennae, computer, switch, shelf, etc.). One ethernet cable will need to be routed from Airlock switch to the PDL switch and another from the Loose Equipment to the Node2 switch.
22. Relocate and reconnect the system racks (3).
23. Relocate and reconnect current banks of control panels (2). Provide a privacy barrier for the area housing these panels.
24. Relocate and reconnect ECN rack. Eliminate water sensor interfaces.
25. Relocate MARES and LMM racks.
26. Relocate CARD unit.
27. Relocate HRF and Payloads storage cabinets. Can be used to create privacy wall.
28. Verify functional operation of all systems
29. Perform HRF acceptance test with Lockheed personnel
30. Update affected drawings.
31. PDLs need to be operational by 9/1/12 to support training. July 23rd through August down-time is optimum period for minimal training impact for PDL I/HRF and PDL II/Payloads activities. PDL II has ARIS training scheduled in March and Payloads training scheduled in July
32. Reconnect the PDL I and PDL II smoke detectors to the building fire alarm system.

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

REQUIREMENTS/REFERENCES (continued):

Rev. A:

SCIF01:

33. Provide support for the DVICE system installation to consist of the following:Support coordination meetings with DVICE personnel, Run a new fiber optic cable from the Mechnical room to the Computer room, Install a new T3 fiber switch into the computer room, Run 8 new cables from the T3 fiber mux I/F panel to the new keyset locations,and Install 8 new DVICE keysets replacing the existing 8 DVIS keysets.

SCIF02:

34. Provide a replacement PC for the existing unit that has failed. The replacement unit shall meet or exceed all of the original operating characteristics of the existing unit. The new unit shall be able to support controlling power, gas, and monitoring the PDL System Racks. The new unit shall have Win 7 operational software loaded on it, and be able to support the Win 7 RSView-32 software. Note the PC will be provided GFE thu DA37

SCIF 04:

35. HRF MARES Utilities - Provide 208VAC, 3 PH power for mockup activation
    a) HRF will provide 6' GFE umbilical to connect from outlet to MARES trainer
    b) Use existing SVMF/PDL relays and breakers
    c) Procure cable, connectors, conduit, junction box w/ outlet materials
    d) Route cable; install conduit, junction box, knife switch in old Kitting room

36. 110VAC Conditioned Power from Central UPS to old Kitting Room (MARES PC & BDC power feed)
    1) Existing breakers and relays will be used where necessary
    2) Procure cable, connectors, conduit, junction boxes, and local knife switch materials
    3) Route cable; install conduit, junction boxes w/ quad outlets, knife switch in old Kitting room
    4) A main junction box for the BDC and other equipment wil be installed along the front, inside wall
    5) A branch junction box for the MARES trainer PC will be installed along the rear, inside wall

SCIF 05:

37. Route 110VAC Power to the Two PDL Meeting Tables New Floor Location
    1) Use existing two SVMF tables with round outlets on top
    2) Use existing utility outlets
    3) Purchase cable covers to reduce trip hazard

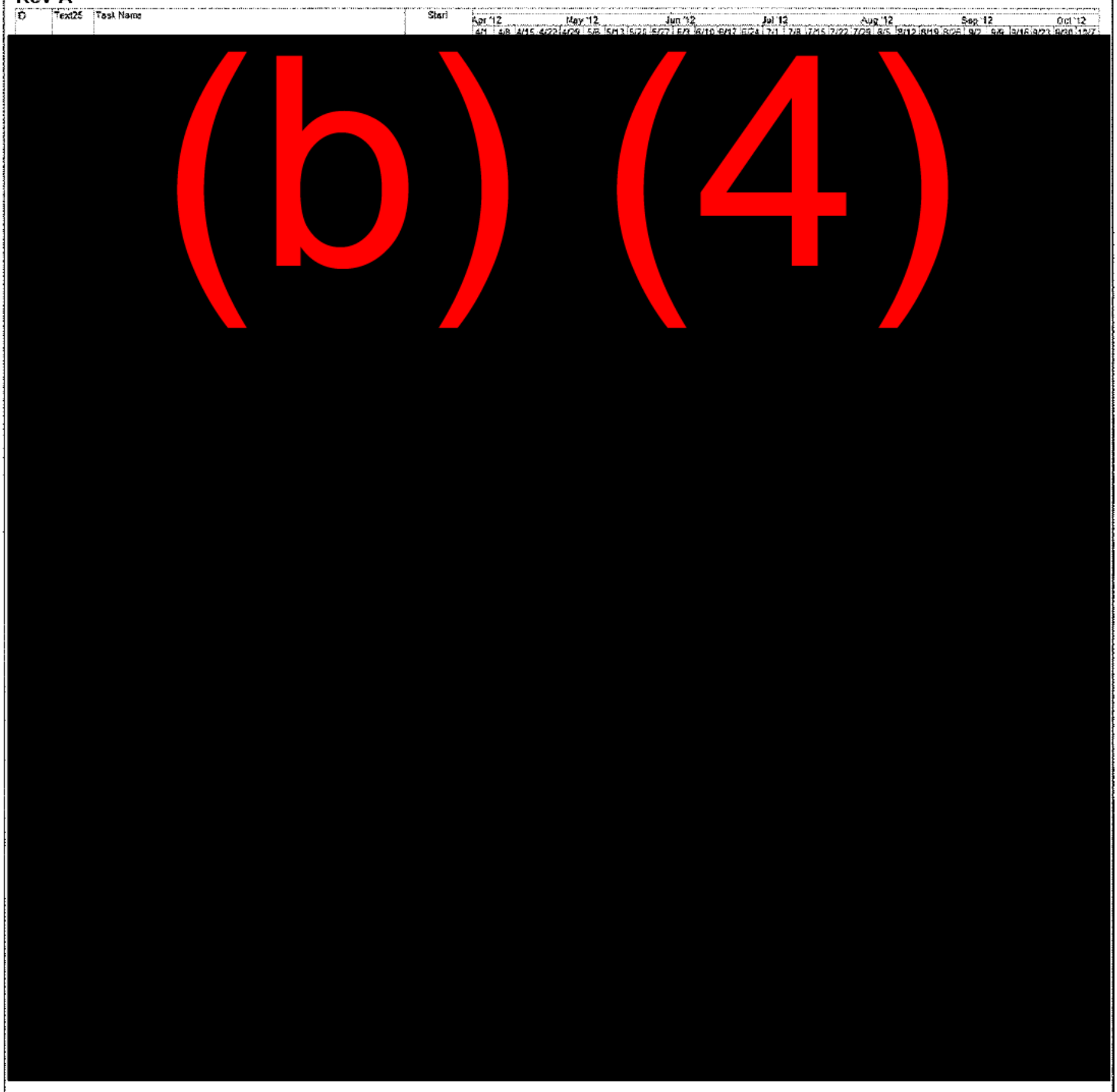
CR NO.: 2524A	DX CHANGE REQUEST
CR TITLE: Payload Development Laboratory Reconfiguration	
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan) A separate acceptance test procedure will be provided.	

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

SCHEDULE MILESTONES

Rev A



CR NO.: 2524A	DX CHANGE REQUEST

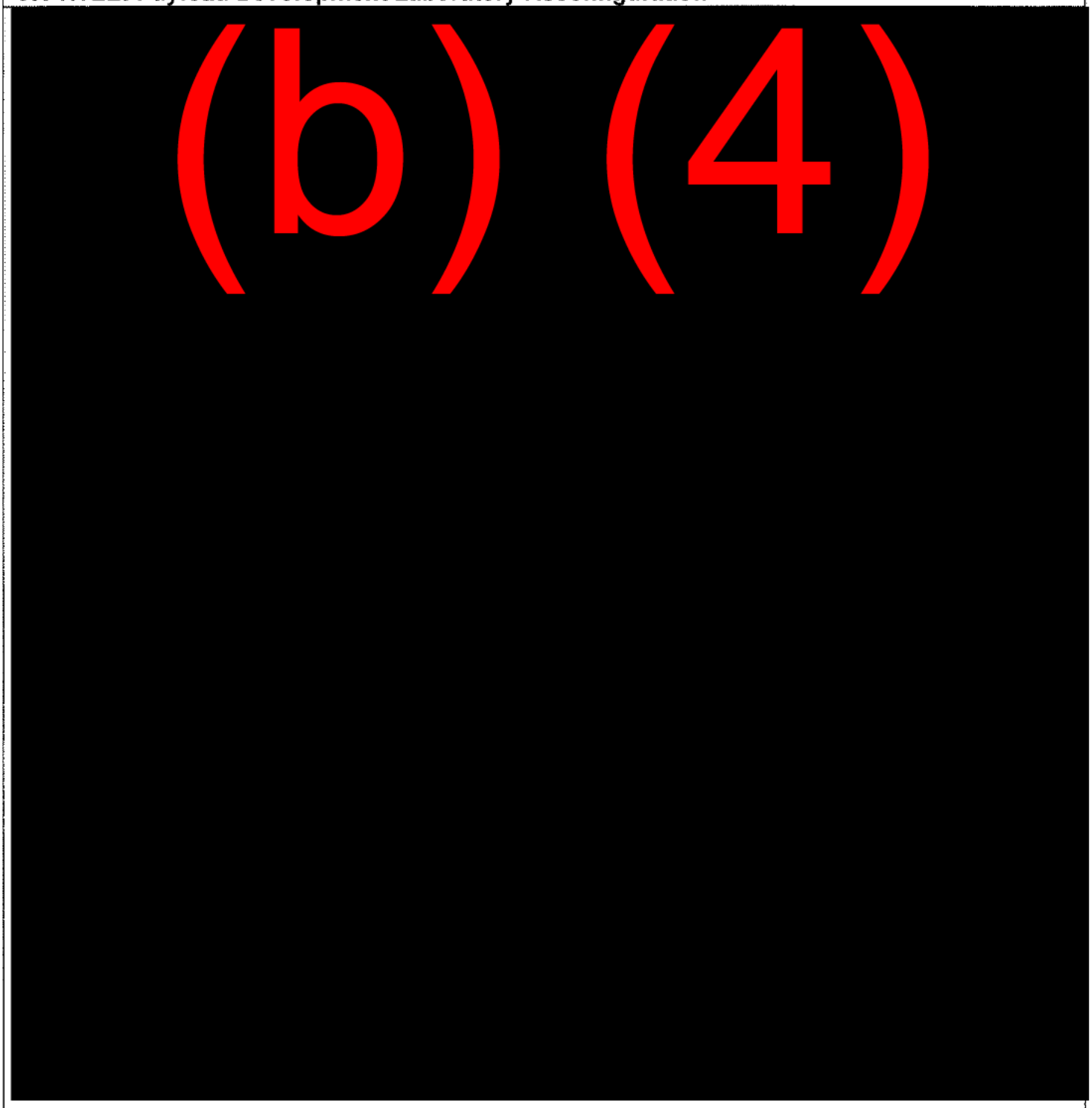
CR TITLE: Payload Development Laboratory Reconfiguration

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration



CR TITLE: Payload Development Laboratory Reconfiguration

ASSUMPTIONS (continued)

(b) (4)

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

BOE Summary

(b) (4)

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

BOE Summary (Continued)

(b) (4)

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

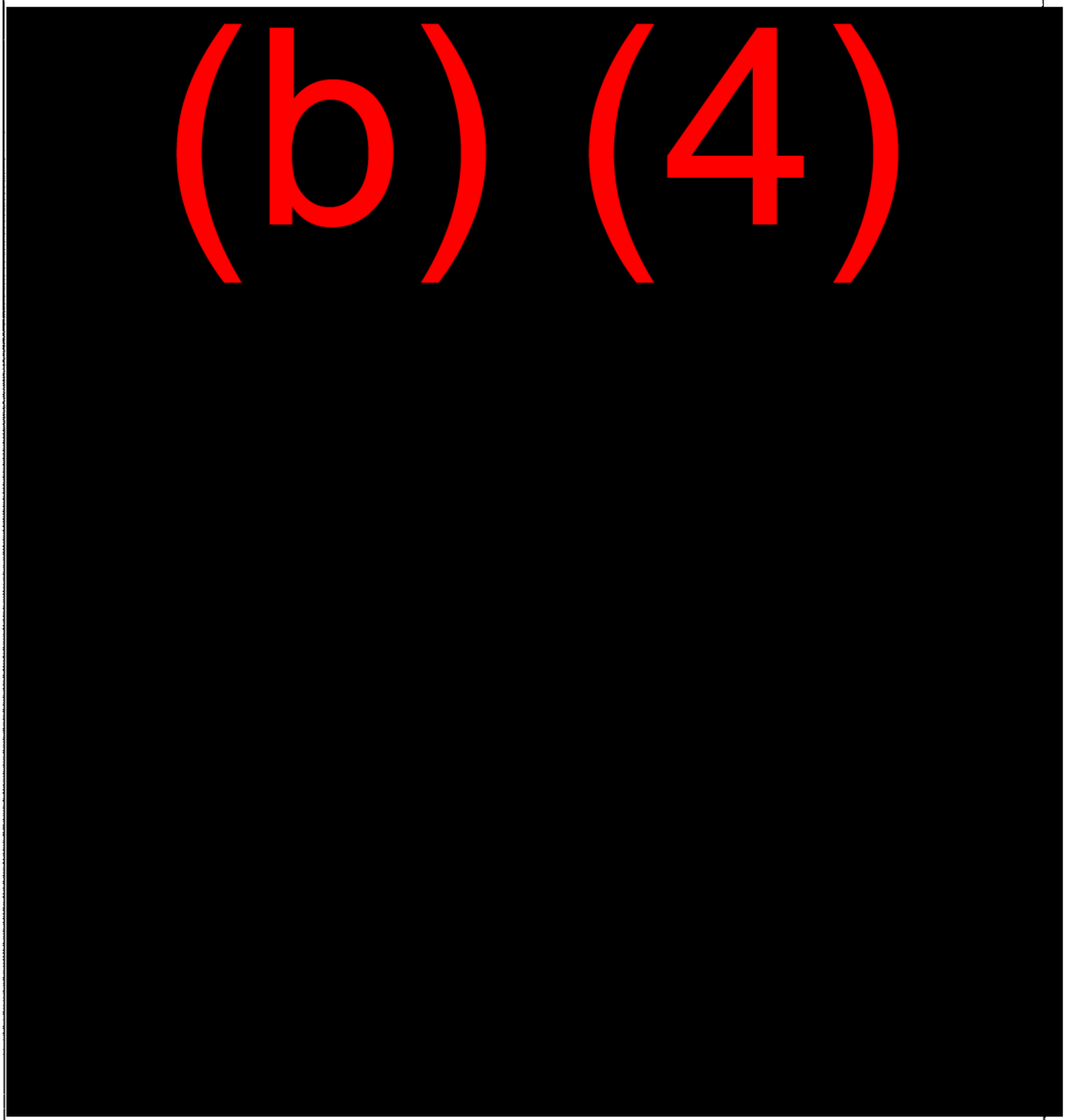
RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

RISK ASSESSMENT (Continued) (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)



CR NO.: 2524A	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

RISK ASSESSMENT (Continued)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

	Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 940	05/07/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 940

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 24, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 940

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 940

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 5/7/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 940 is to: Payload Development Laboratory Reconfiguration CR-2524 The estimated cost is (b) (4) The estimated award fee is $ (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $216,762.77 Work is to be completed by September 24, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	216,762.77	216,762.77	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 216,762.77

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

1. REQUESTOR: June Huhn	2. PHONE: 281-792-5837	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
This CR provides for relocation of the Payload Development Laboratories (PDL) I and II, controlled access platform, and ancillary equipment within the Space Vehicle Mockup Facility (SVMF).

7. RATIONALE
Relocation is required to complete FY 2012 ISS mockup reconfiguration which plans for relocation of the PDL mockups to the current Full Fuselage Trainer (FFT) location after the FFT is removed from the SVMF.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Provide support for one each of a CR Safety, Acceptance and Test Readiness Review.
2. Update electrical and network drawings to reflect preparatory move modifications performed by Lockheed.
3. Disconnect the vacuum pump and cap tubing. Vacuum pump will not be relocated with PDLs.
4. A floor plan layout shall be prepared and approved by DX14 prior to relocation of items specified in this CR.
5. Prior to moving the PDLs, document (current internal configuration will need to be restored after move), remove, and secure all loose hardware (computers, UPS, power supplies, tables, etc.). Remove all items from seat track.(continued on next page)
6. Prior to moving the PDLs, remove the following racks:
   PDL I: HRF1 (S2) and HRF2 (P2) – on frog stands, PDL II: ARIS (S2) – can be placed horizontal on blocks, CIR and FIR racks will also need to be removed for maintenance (this is TBD so verify prior to removal)
   (continued on page 2)

Note: Per the Safety Review conducted 03/21/12, a TRR is required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale) 09/26/12	10. CR SUBMISSION DATE: 02/16/12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 02/24/12

12. NASA POC: June Huhn	13. PHONE: x25837	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $216,700	20. NEGOTIATED DELIVERY DATE: 09/14/12 – PDL Readiness For Training 09/24/12 – Final CAR

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

REQUIREMENTS/REFERENCES (continued):

7. Prior to moving the PDLs, ensure that all rack lower torque rods are fully engaged and securely cable all upper rack fittings to standoffs or provide equivalent form of restraint. Coordinate with riggers to ensure that there are no mockup lift or center of gravity issues.
8. Relocate PDLs to current FFT location. PDLs will share entry stairs and platform. PDL I is to be in the West location if a linear arrangement is chosen.
9. Relocate current platform assembly and controlled access stairs. Stairs and handrails may need altered access point depending on final PDL configuration. All platforms and stairs shall have safety hand rails.
10. After PDL relocation, install loose hardware and racks removed in requirements 5 and 6 to restore the original internal configuration and remove upper rack fitting temporary restraints. HRF1 and HRF2 installation locations need to be reversed such that final locations are HRF1 (P2) and HRF2 (S2).
11. Relocate and reconnect the nitrogen system (tanks, regulators, etc.) to match current capability. System recertification will not be performed at this time.
12. Reroute and reconnect the current Building 30 ethernet lines (9).
13. Reroute and reconnect the video cables (4) from the VICON .
14. Reroute and reconnect the audio cables (9) from the computer room.
15. Reroute and reconnect the SMTF LAN network cable from the computer room.
16. Reconfigure the 3-phase, 100 Amp power feeds that supply each of the PDLs. Upgrade to standard AC connectors.
17. Provide a powered quad outlet at the PDL II S1 location.
18. Relocate and reconnect the air conditioning unit, any external manifolds and ducting to supply both PDLs.
19. Relocate and reconnect the DC power cabinet.
20. Relocate and reconnect both the 2-phase and 3-phase UPS units.
21. Relocate and reconnect the RFID system (2 antennae, computer, switch, shelf, etc.). One ethernet cable will need to be routed from Airlock switch to the PDL switch and another from the Loose Equipment to the Node2 switch.
22. Relocate and reconnect the system racks (3).
23. Relocate and reconnect current banks of control panels (2). Provide a privacy barrier for the area housing these panels.
24. Relocate and reconnect ECN rack. Eliminate water sensor interfaces.
25. Relocate MARES and LMM racks.
26. Relocate CARD unit.
27. Relocate HRF and Payloads storage cabinets. Can be used to create privacy wall.
28. Verify functional operation of all systems
29. Perform HRF acceptance test with Lockheed personnel
30. Update affected drawings.
31. PDLs need to be operational by 9/1/12 to support training. July 23rd through August down-time is optimum period for minimal training impact for PDL I/HRF and PDL II/Payloads activities. PDL II has ARIS training scheduled in March and Payloads training scheduled in July
32. Reconnect the PDL I and PDL II smoke detectors to the building fire alarm system.

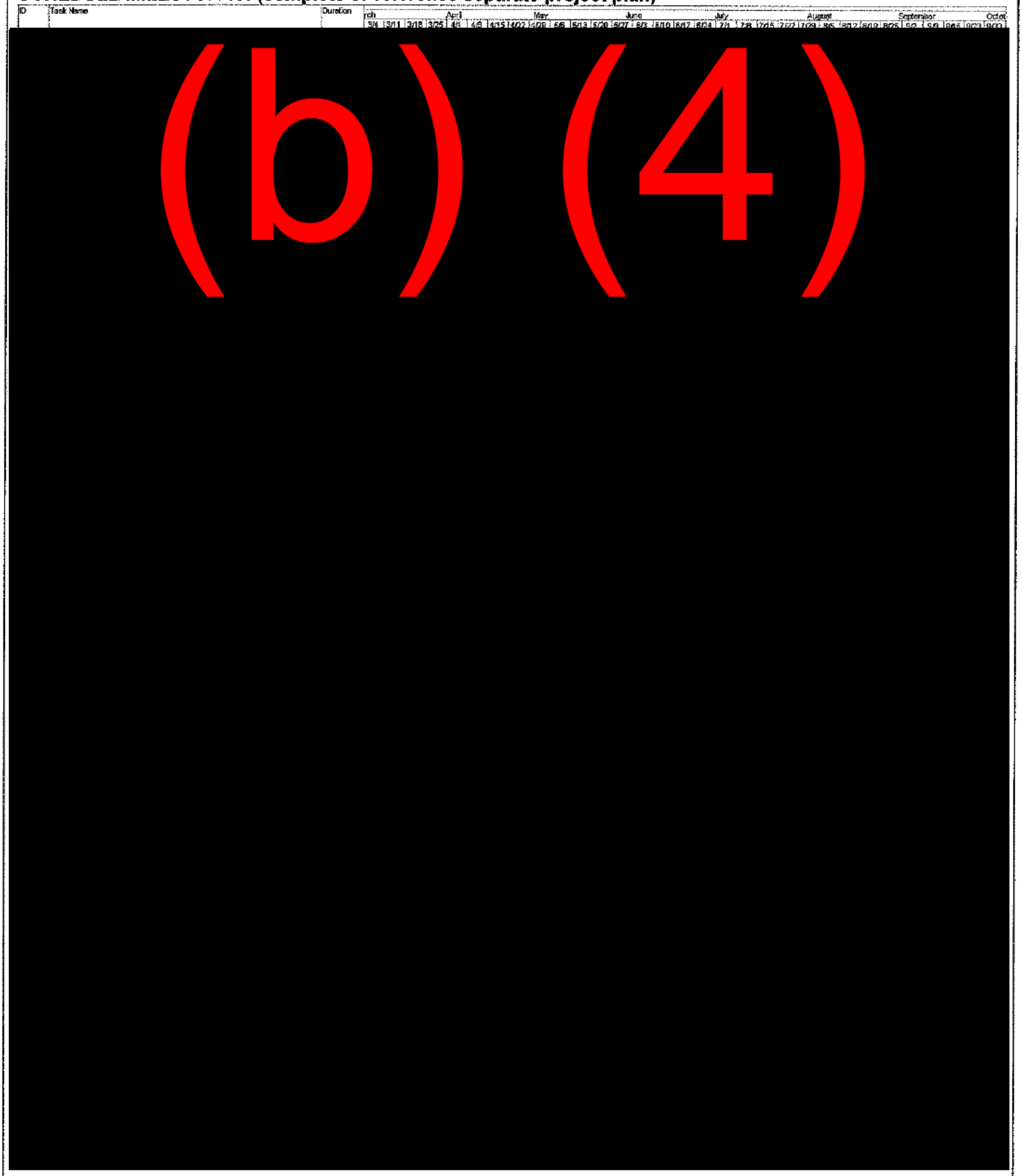
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

A separate acceptance test procedure will be provided.

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

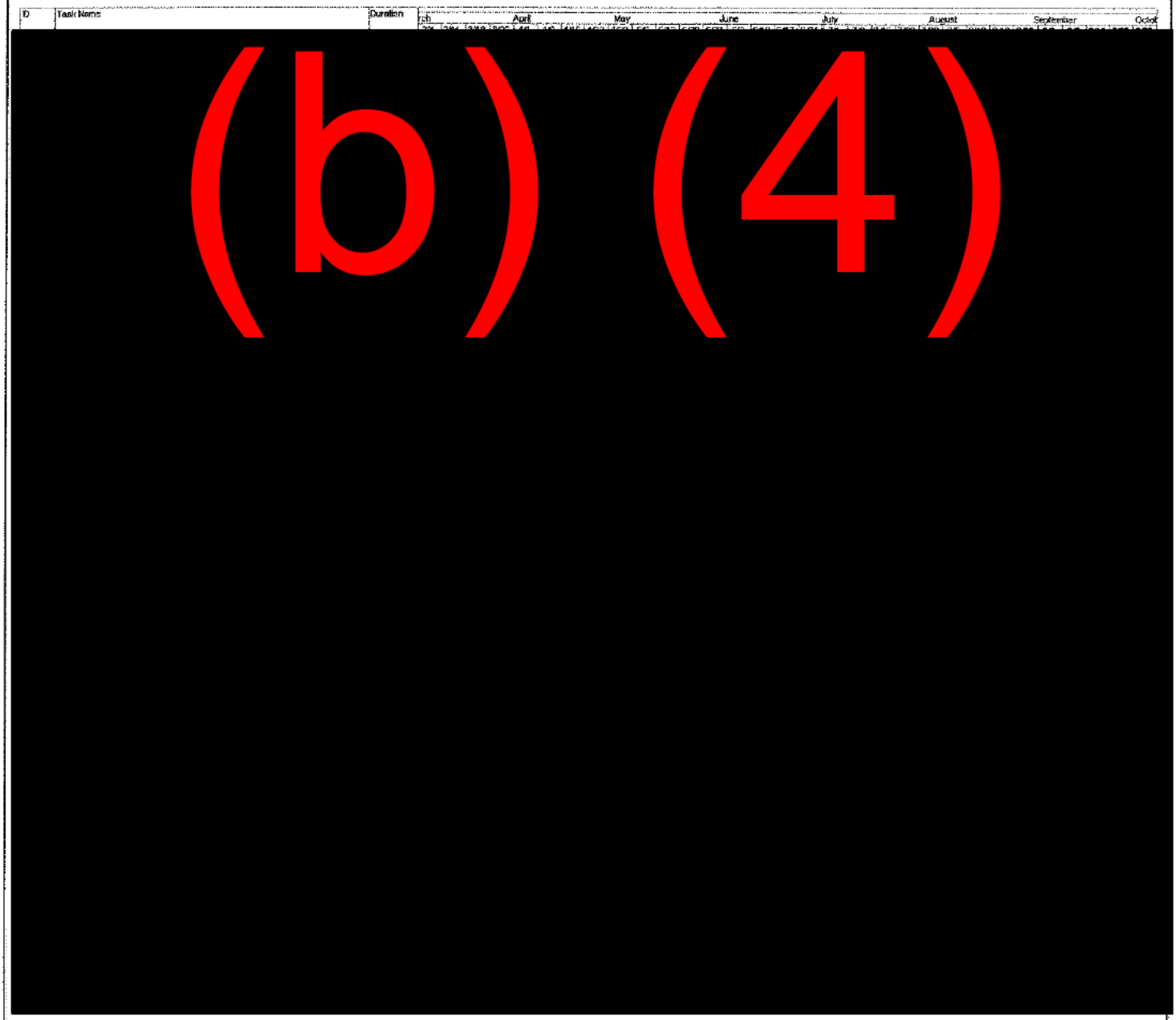
SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

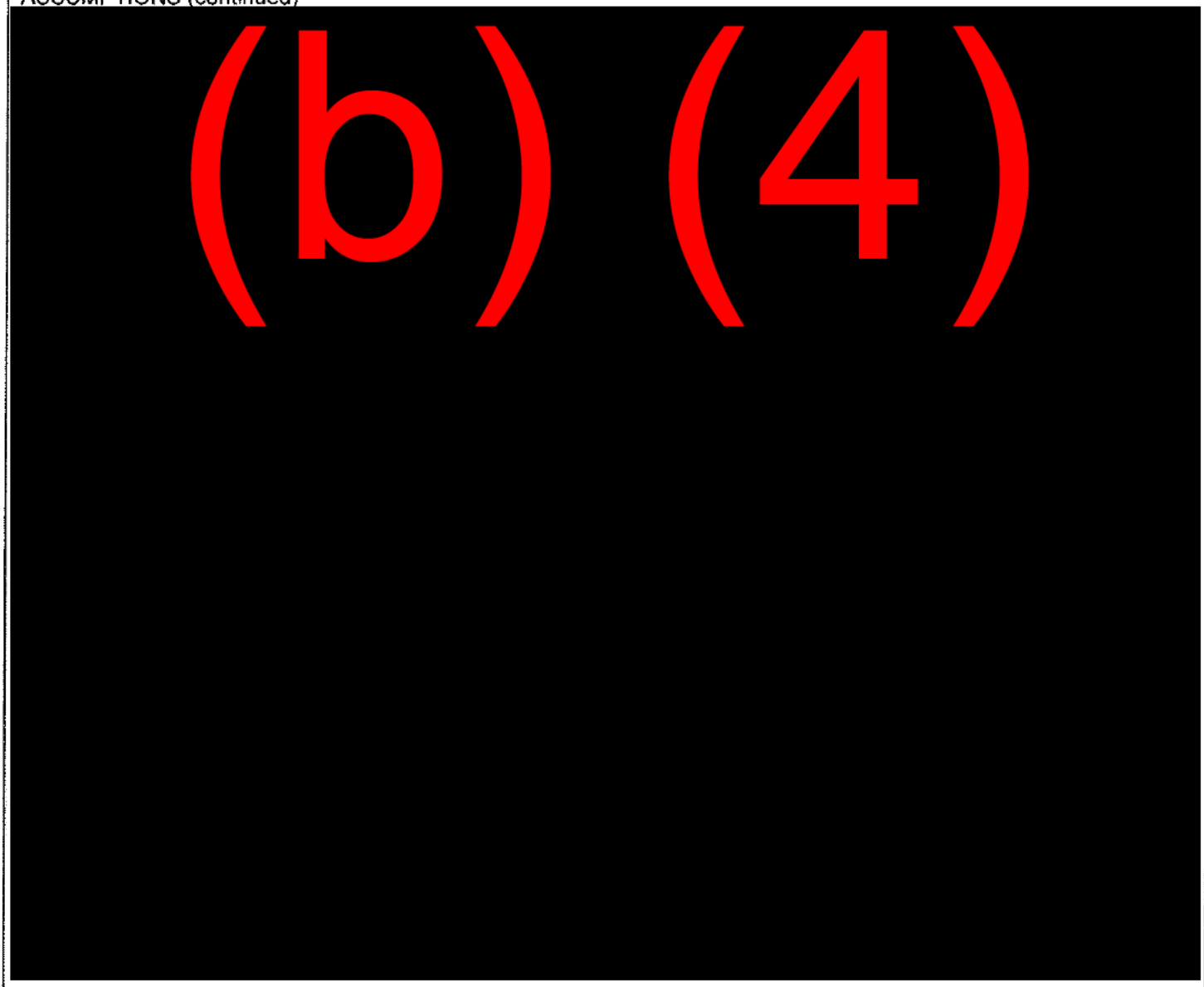
ASSUMPTIONS (Cont'd)

[redacted]

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

ASSUMPTIONS (continued)



CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

BOE Summary

(b) (4)

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

BOE Summary (Continued)

(b) (4)

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

RISK ASSESSMENT (Continued) (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2524	DX CHANGE REQUEST

CR TITLE: Payload Development Laboratory Reconfiguration

RISK ASSESSMENT (Continued)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 941A	09/27/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 941A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 941A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO941A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/27/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 941A is to: National Museum of the Air Force (NMAF) project to Transition CCT1: The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Revision is -$47,562.55 The total value of this Delivery Order is $352,665.44 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	-47,562.55	-47,562.55	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total -47,562.55

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2525 Rev A	DX CHANGE REQUEST	Page: 2 of 8

CR TITLE: CCT1 transition to USAF RIAA project

1. REQUESTOR: Ronny Newman	2. PHONE: x31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION T&R 3.6.3
☐ CONSTELLATION ☒ OTHER: ~~(485310)~~ 158912 **Rev A**

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
National Museum of the Air Force (NMAF) project for NSOC portion of RIAA funded tasks to transition the CCT-1 Shuttle Artifact. **Rev A incorporates SCIFs 1-4**

7. RATIONALE
Implement a portion of the RIAA between NMAF and NASA in FY12

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. NSOC shall Provide CCT reassembly mechanical and electrical Instructions for NMAF technicians use
2. NSOC shall provide to COD the power, video, and audio consoles for crating and packaging
3. NSOC shall provide to COD loose items from the CCT-I for crating and packaging
4. NSOC shall provide electronic media of CCT-I photos, drawings and documents
5. NSOC shall protect the CCT-I crew section, access platform, and stairs with marine style shrink wrap and desiccant
6. NSOC shall design, analyze, reinforce and package the CCT-I crew section for Super Guppy transport requirements
7. NSOC shall provide Engineering and Technician supervision of the CCT-I reassembly
8. NSOC shall support DX14 in coordination with all parties, AOD and COD to aid in the execution of the RSAA with NMAF.
9. NSOC shall prepare the access platform, stairs, forward base, and rear base for truck transport

Note: A safety review conducted 3/1/12 determined a TRR is not required for this project, but an additional safety review is needed prior to crew compartment lift.

9. NEED DATE: (support date in block 7 rationale) 9/28/12	10. CR SUBMISSION DATE: 02/09/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Allison McIntyre Date: 02/14/12

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractors procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$400,300~~ **Rev A $352,700**	20. NEGOTIATED DELIVERY DATE: 9/26/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR For CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR TITLE: CCT1 transition to USAF RIAA project

REQUIREMENTS/REFERENCES (cont.):

Rev A:

10. NSOC shall conduct design and analysis for a CCT-1 Nose fwd flight orientation in the Super Guppy aircraft, unless data is presented to DX and AOD showing that orientation will not meet flight requirements. SCIF-01

11. Test fit CCT1 on adapter between FFT flights 2 and 3 SCIF-03

CR TITLE: CCT1 transition to USAF RIAA project

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Description	Expected Results	RQMT	Comment
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.		
4	Inspect Reassembly instruction package	Package contains electrical and mechanical reassembly instructions	8.1	
5	Inspect packing list for COD packaged items. Verify items are no longer in SVMF	Paperwork lists power, video, and audio consoles and loose items transferred to COD for crating and packaging. Items are removed from SVMF	8.2, 8.3	
6	Inspect CCT-1 Electronic media package	Media contains drawings, photos , and documents for the CCT-1	8.4	
7	Inspect CCT-1 crew compartment pre-shipment, or photos taken pre-shipment	Shrink wrap was used with internal desiccant to protect artifact	8.5	
8	Inspect CDR, Analysis report, AOD acceptance document, and drawing package. Inspect photo of packaged artifact	Evidence shows design meets requirements, and was packaged for transport	8.6	
9	Inspect NMAF email verifying reassembly support	Email from NMAF acknowledges reassembly support was provided	8.7	
10	Inspect minutes of meetings	Minutes show attendance and coordination with AOD and COD	8.8	
11	Inspect packing list for stairs, access platform, and base sections. Verify items are no longer in SVMF	Paperwork lists stairs, access platform, and base sections transferred to NMAF. Items are removed from SVMF	8.9	
12	Inspect Safety Review records for crew compartment lift	Records show SR was conducted	SR	
13	Inspect Presentation or minutes of Nose fwd eval	Record of Nose fwd design shows it was presented	8.10	**Rev A**
14	Inspect Photo of fit check	Photo shows fit check occurred	8.11	**Rev A**

CR TITLE: CCT1 transition to USAF RIAA project

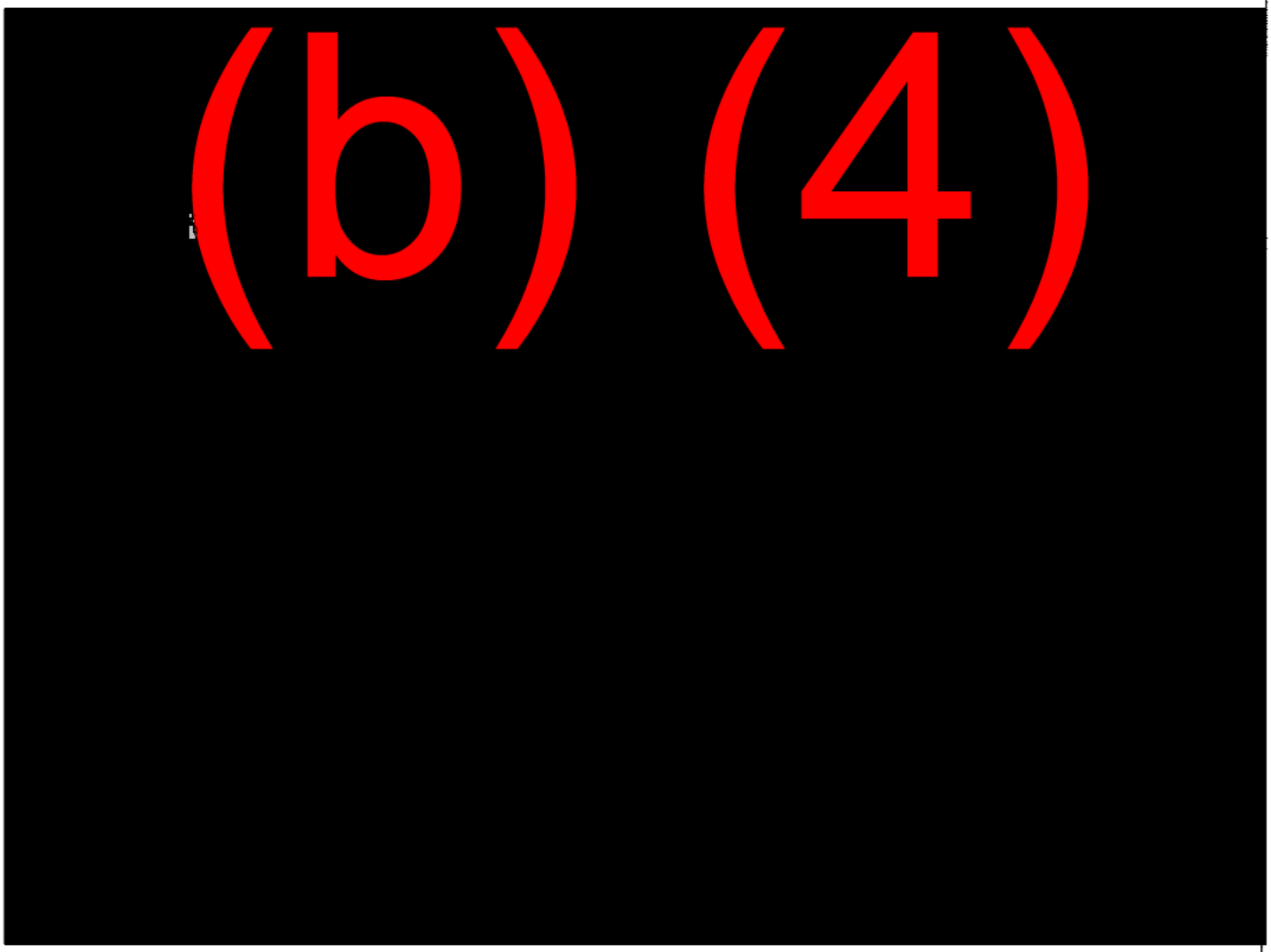
SCHEDULE MILESTONES:
Rev A

ID	Text25	Task Name	Start	June	July	August	September	Octo

(b) (4)

CR TITLE: CCT1 transition to USAF RIAA project

BASIS OF ESTIMATE (include and identify significant assumptions):



CR TITLE: CCT1 transition to USAF RIAA project

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR TITLE: CCT1 transition to USAF RIAA project

RISK ASSESSMENT: (include risk associated with facility cost for maintenance in out years) (continued)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 941	05/22/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 941

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 941

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 941

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 5/22/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 941 is to perform: CCT1 Transition to USAF RIAA project CR-2525 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $400,227.99 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	400,227.99	400,227.99	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 400,227.99

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2525	DX CHANGE REQUEST	

CR TITLE: CCT1 transition to USAF RIAA project

1. REQUESTOR: Ronny Newman	2. PHONE: x31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION T&R 3.6.3
☐ CONSTELLATION ☒ OTHER: (485310)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
National Museum of the Air Force (NMAF) project for NSOC portion of RIAA funded tasks to transition the CCT-1 Shuttle Artifact.

7. RATIONALE
Implement a portion of the RIAA between NMAF and NASA in FY12

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. NSOC shall Provide CCT reassembly mechanical and electrical Instructions for NMAF technicians use
2. NSOC shall provide to COD the power, video, and audio consoles for crating and packaging
3. NSOC shall provide to COD loose items from the CCT-I for crating and packaging
4. NSOC shall provide electronic media of CCT-I photos, drawings and documents
5. NSOC shall protect the CCT-I crew section, access platform, and stairs with marine style shrink wrap and desiccant
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7. NSOC shall provide Engineering and Technician supervision of the CCT-I reassembly
8. NSOC shall support DX14 in coordination with all parties, AOD and COD to aid in the execution of the RSAA with NMAF.
9. NSOC shall prepare the access platform, stairs, forward base, and rear base for truck transport

Note: A safety review conducted 3/1/12 determined a TRR is not required for this project, but an additional safety review is needed prior to crew compartment lift.

9. NEED DATE: (support date in block 7 rationale) 9/28/12	10. CR SUBMISSION DATE: 02/09/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Allison McIntyre Date: 02/14/12

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractors procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $400,300	20. NEGOTIATED DELIVERY DATE: 9/26/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date:_____

COTR For CRs with Cost Impact Only

COTR:_____

Date: _____

Closed by:_____ **Date:**_____

CR NO.: 2525	DX CHANGE REQUEST	
CR TITLE: CCT1 transition to USAF RIAA project		
REQUIREMENTS/REFERENCES (cont.):		

CR NO.: 2525	DX CHANGE REQUEST	

CR TITLE: CCT1 transition to USAF RIAA project

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Description	Expected Results	RQMT	Comment
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.		
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5	Inspect packing list for COD packaged items. Verify items are no longer in SVMF	Paperwork lists power, video, and audio consoles and loose items transferred to COD for crating and packaging. Items are removed from SVMF	8.2, 8.3	
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8	Inspect CDR, Analysis report, AOD acceptance document, and drawing package. Inspect photo of packaged artifact	Evidence shows design meets requirements, and was packaged for transport	8.6	
9	Inspect NMAF email verifying reassembly support	Email from NMAF acknowledges reassembly support was provided	8.7	
10	Inspect minutes of meetings	Minutes show attendance and coordination with AOD and COD	8.8	
11	Inspect packing list for stairs, access platform, and base sections. Verify items are no longer in SVMF	Paperwork lists stairs, access platform, and base sections transferred to NMAF. Items are removed from SVMF	8.9	
12	Inspect Safety Review records for crew compartment lift	Records show SR was conducted	SR	

CR NO.: 2525	DX CHANGE REQUEST	

CR TITLE: CCT1 transition to USAF RIAA project

SCHEDULE MILESTONES:

ID	Task Name	12	May 2012	June 2012	July 2012	August 2012	September 2012	Octobe

(b) (4)

(continued)

CR NO.: 2525	DX CHANGE REQUEST	
CR TITLE: CCT1 transition to USAF RIAA project		

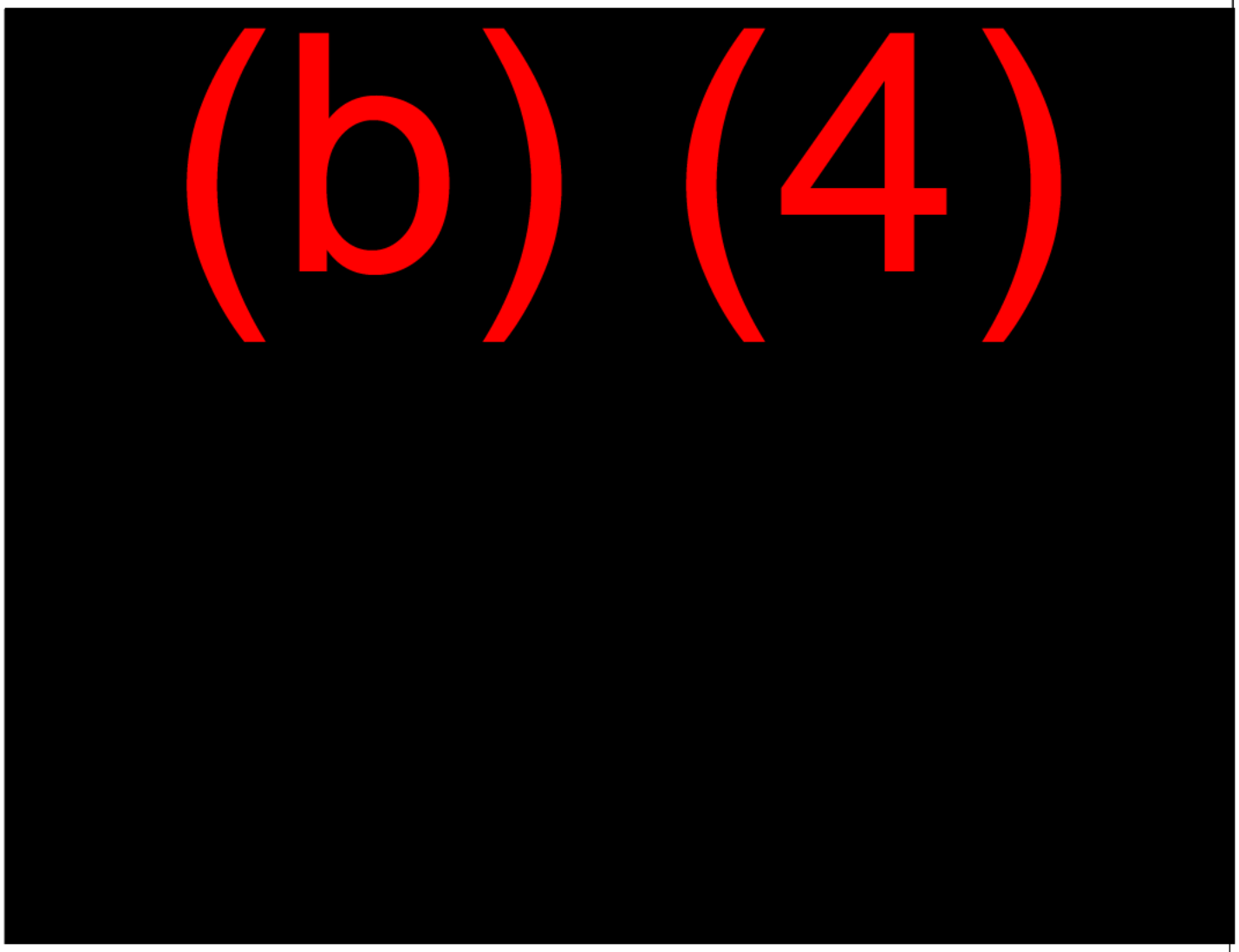
SCHEDULE MILESTONES: (continued)

ID	Task Name	12	May 2012	June 2012	July 2012	August 2012	September 2012	Octobe

(b) (4)

CR NO.: 2525	DX CHANGE REQUEST	
CR TITLE: CCT1 transition to USAF RIAA project		

BASIS OF ESTIMATE (include and identify significant assumptions):



CR NO.: 2525	DX CHANGE REQUEST	
CR TITLE: CCT1 transition to USAF RIAA project		

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2525	DX CHANGE REQUEST	
CR TITLE: CCT1 transition to USAF RIAA project		

RISK ASSESSMENT: (include risk associated with facility cost for maintenance in out years) (continued)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35CDO 942	06/01/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35CDO 942

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 8, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35CDO 942

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO942

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer
6/1/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 942 is to: Provide CCT Forward Lifting and Structure CR-2439B The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $33,460.10 Work is to be completed by June 8, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	33,460.10	33,460.10	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 33,460.10

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 3.6.1 (485310)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide CCT forward lifting structure to remove the CCT from Building 9N. Provide a floor stand to hold CCT on the high bay floor, so the CCT vertical and horizontal structures can be removed from Building 9N. This is a follow on CR for CR-2407.

Rev A: CR costs changed to align with IDIQ proposal per COTR direction, and revised Risk 9 to match IDIQ proposal
Rev B: Incorporates SCIFs 02 thru 04, and 06 thru 09, and reduces scope by moving requirements to CR-2518 and CR-2525. Requests development of an estimate to support CR-2525.

7. RATIONALE
These items are required to safely remove the CCT and support structure from Building 9N in support of the Shuttle Transition and Retirement activities.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Provide the design of the CCT forward lifting structure based on the Rockwell drawing MK369-80083 Rev. -..
2. Provide the analysis of the forward lifting structure based on NSOC-ENG-3300 Rev. - .
3. Fabricate the CCT forward lifting structure per drawings 20-231-20-0020 Rev. A and from step 1 (MK369-80083).
4. Weigh the CCT forward lifting structure.
5. Install the CCT forward lifting structure.
6. ~~Provide the design of the CCT floor stand to hold the CCT, FFT and CCT II.~~ **Requirement moved to CR-2518 Rev. B (work started prior to Rev B direction)**

Continued on page 2.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 05/20/11
ASAP	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Ronny Newman
Date: 05/20/11

12. NASA POC:	13. PHONE:	14. E-MAIL:
~~Ronny Newman~~ **Rev B:** (b) (4)	(b) (4) **Rev B:** (b) (4)	global
15. IMPLEMENTING CONTRACTOR	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: Volker Trent	X30457	global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$110.4K ($74.7K FY11, $35.7K FY12)~~ ~~**Rev A:** $110.4K ($69.4K FY11, $41.0K FY12)~~ **Rev B:** $143.9K ($69.4K FY11, $74.5K FY12)	~~10/31/11~~ **Rev. B:** 06/01/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

REQUIREMENTS/REFERENCES (cont.):

7. ~~Provide the analysis of the stand to support the weight of the CCT II, 4.5 G static down load.~~ **Requirement moved to CR-2518 Rev. B (work started prior to Rev B direction)**
8. ~~The CCT floor stand shall meet the following requirements:~~
   a. ~~The width of the stand shall be 104.5 inches wide~~
   b. ~~The height of the stand shall be 26 to34 inches high depending on analysis~~
   c. ~~The length of the stand shall be 216 inches long~~
   d. ~~The weight of the stand and CCT II shall not exceed 1460 pounds/ft length.~~
   e. ~~The stand shall be designed with to yield (SF 1.1) at 4.5 times the static load (26,000 pound) but not fail (SF 1.3 Ult.) in the vertical direction.~~ **Requirements moved to CR-2518 Rev. B.**
9. ~~Fabricate the CCT floor stand.~~ **Requirement moved to CR-2518 Rev. B.**
10. ~~Weigh the CCT floor stand~~. **Requirement moved to CR-2518 Rev. B.**
11. ~~Deliver the CCT floor stand to Bldg. 9N high bay.~~ **Requirement moved to CR-2518 Rev. B.**
12. ~~Place CCT on floor stand.~~ **Requirement moved to CR-2518 Rev. B.**
13. ~~Remove CCT support structure from the building.~~ **Requirement moved to CR-2525 Rev. B.**
14. ~~Remove CCT and floor stand from the building.~~ **Requirement moved to CR-2525 Rev. B.**
15. Per the Safety Review conducted 07/07/11 a second Safety Review is required. Documentation to be presented includes the lift plan, hazard analysis, and structural analysis **of the forward lifting structure**. - **Requirement revised by Rev. B.**
21. **Provide estimate and proposal package for CCT 1 RSAA Tasks including requirements moved from CR-2439 to CR-2525. New requirement added by Rev. B.**
22. **Provide 3G forward crash load case simple analysis of the beams as they attach to the CCT-1 tilt frame. – Rev B (SCIF 06)**
23. **Provide spacer concept design and initial floor loading calculations for CCT-1 NMAF estimate – Rev B (SCIF 07)**
24. **Provide estimate of cost for medium fidelity analysis of CCT-I crash load cases side, forward, and up to include the vertical support beam structure and their immediate attachments only. Do not estimate modeling the entire CCT-I structure. – Rev B (SCIF 08)**
25. **Perform a simple analysis similar to that performed on SCIF 06. The mass of the CCT-I shall be estimated as Shuttle portion, omitting blue tilt frame and lifting assembly. The model shall be enhanced to add the aft center beam missing under SCIF 06. Provide stress values and deformation similar to SCIF 06 for 3G forward and 3G aft, and 4.5G down cases. – Rev B (SCIF 09)**
    Note: The video system will not be installed, it was removed for future program use.
    ---------- RSAA tasks to be included in CR-2525 estimate and removed from CR-2439 ----------
16. *Package all loose items for shipment, place in shipping crate.*
17. *Shipping crates shall be contractor supplied/built.*
18. *Package CCT power console and Audio and Video console for shipping, place in shipping crate.*
19. *Provide documentation/Photo CD of all items being shipped with CCT*
20. *Provide assembly instructions/drawings for re-installing the CCT. These instructions to include: Installing the CCT on the tilt base structure, re-installing the CMDR and Pilot seats on the flight deck, installing Mission Specialist seats, re-installing the lockers and other loose equipment items, electrical drawings to power the trainer and install the audio.*

Rev B:

SCIF 02: Pauses work on stand specific fabrication activities through October-November, and restarts fabrication in time to deliver for use on CR 2478 FFT retirement. Restarts CCT 1 retirement fabrication activities leading to removal from the SVMF, expected April-May 2012. Scope and budget increased to accommodate ongoing management activities during fabrication dwell period.

SCIF 03: Pauses work on stand specific design/analysis activities through October-November, and restarts stand specific design and analysis activities when authorizations for FFT driven, transport specific requirements can be received. Scope and budget increased to accommodate SCIF preparation effort, ongoing studies and reviews necessary to support FFT retirement driven transport requirements in time to deliver stand for FFT transport readiness on (assumed date) 02/15/2012.

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

REQUIREMENTS/REFERENCES (cont.):

SCIF 04: Reallocates CR 2479 (FFT retirement estimate) effort to CR 2439 scope of work. Three data Deliverables packages prepared and submitted including:

- Estimate and proposal package for CR 2478, FFT Transition and Retirement **(approved by the DX CCB for implementation)**
- Spreadsheet summary of individual line item estimates associated each RSAA task to be completed for the MOF
- Estimate and proposal package for CR 2497, Shuttle Loose Equipment Retirement **(approved by the DX CCB for implementation)**

NASA directed change to reduce scope and requirements for Shuttle Transition and Retirement tasks. Requirements removed from this CR shall be levied against CR-2518 FFT MOF and CR-2525 National Museum of the US Air Force. Provide estimate and proposal package for CR-2525.

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (cont'd)

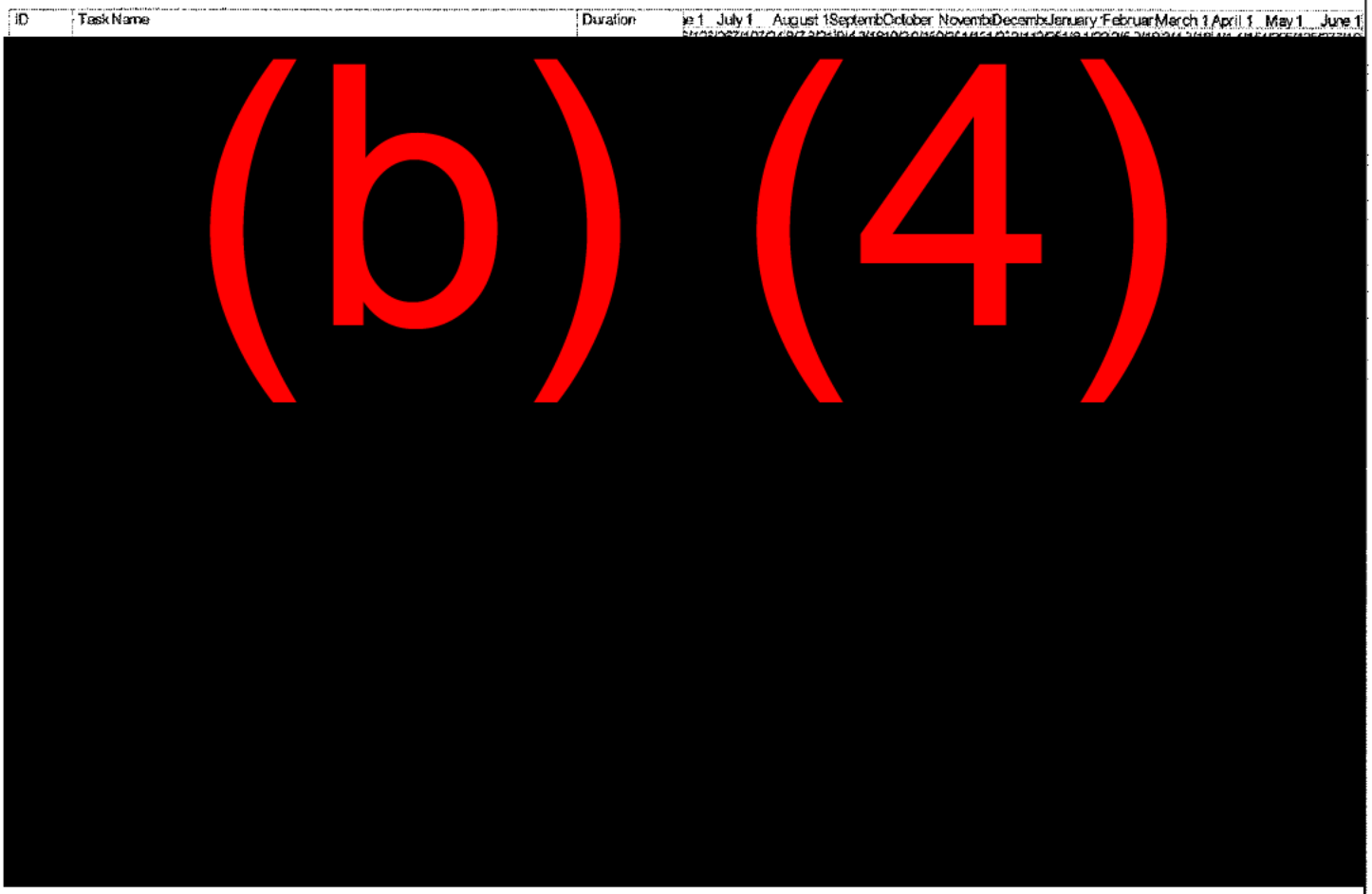
STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqt #	Comment
1	Verify no exposed sharp edges, machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.			
2	Verify there are no unidentified pinch points.	Finished product is safe for use.			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.			
6	Inspection – The FWD Lifting Extension drawing 20-231-20-0020 and associated subassembly drawings have been updated to reflect new CR 2439 features.			1	
7	Inspection – A strength analysis of the FWD Lifting Extension has been generated, demonstrating results consistent with safety factor requirements			2	
8	Inspection – The FWD Lifting Extension has been fabricated, weighed, and installed to the CCT 1.			3, 4, 5	
9	~~Inspection – Drawings have been generated which reflect the configuration, and fabricated details of the floor stand.~~			6	**Deleted by Rev B**
10	~~Inspection – A strength analysis of the floor stand has been generated, demonstrating results consistent with safety factor requirements.~~			7, 8e	**Deleted by Rev B**
11	~~Inspection – The floor stand reflects general envelope dimension requirements, with consideration for variance agreements.~~			8a-8d	**Deleted by Rev B**
12	~~Inspection – The floor stand has been fabricated, weighed, transferred to the B9N high bay, & is capable of accepting the CCT 1.~~			9, 10, 11, 12	**Deleted by Rev B**
13	Inspection – The AFT Lifting Lugs (20-231-20-0023) have been fabricated and weighed.			3	
14	Inspection – The Tie-Down plates (20-231-20-0024) have been fabricated and weighed.			3	
15	Inspection – The lifting diagram has been updated to reflect weight and CG changes resulting from new Lifting Extension ~~and floor stand features~~.			1, 6	**Modified by Rev B**
16	Inspection – An updated Hazard Analysis has been generated and released prior to release and transport of the CCT1.			2, 7	
17	~~Demonstration – Auxiliary items (platform, stairs, AFT stands) have been removed from the building~~.			13	**Deleted by Rev B**
18	~~Demonstration – The CCT 1 and its floor stand have been removed from the building~~.			14	**Deleted by Rev B**
19	**Rev B:** Individual cost breakdown RSAA items: • Assembly instructions • Power, video, audio consoles • Package loose items • Photos and documents • Shrink wrap • Debris net			SCIF 04	

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

SCHEDULE MILESTONES: (complete or reference separate project plan)

Rev B



CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

(b) (4)

Op

CR NO.: 2439 Rev B	DX CHANGE REQUEST
CR TITLE: CCT Forward Lifting Structure ~~and Stand~~	

(b) (4)

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

(b) (4)

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

(b) (4)

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

(b) (4)

CR NO.: 2439 Rev B	DX CHANGE REQUEST
CR TITLE: CCT Forward Lifting Structure ~~and Stand~~	

(b) (4)

CR NO.: 2439 Rev B	DX CHANGE REQUEST

CR TITLE: CCT Forward Lifting Structure ~~and Stand~~

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

	Design	Project Engineering	Management and Support	Technicians	Material
~~Baseline FY11~~	(b) (4)				
~~Baseline FY12~~					
Rev A FY11					
~~Rev A FY12~~					
Rev B FY12					

RSAA Cost estimates (not included in CR cost)

Requirement Number	Description	Estimated stand-alone IDIQ cost
19	Assembly Instructions and drawings	(b) (4)
18	Photos, Documents and Drawings	
15, 16	Package loose items in crates	
16, 17	Package Power, audio, and video consoles in crates	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 943	06/05/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 943

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 6, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 943

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO943

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 6/5/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 943 is to: Provide High Airlock Hatch Trainer CR-2499 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $81,127.70 Work is to be completed by November 6, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	81,127.70	81,127.70	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 81,127.70

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2499	DX CHANGE REQUEST	

CR TITLE: Build High Fidelity Airlock Hatch Trainer

1. REQUESTOR:	2. PHONE:	3. E-MAIL
DX32/Alex Kanelakos (b) (4)	281-483-8687 (Alex) (b) (4)	alexandros.d.kanelakos @nasa.gov (b) (4) @nasa.gov

4. PROGRAM /PROJECT:	5. FUNCTIONAL AREA:
☐ SHUTTLE ☒ STATION ☐ CONSTELLATION ☒ OTHER: 2.6.2 (401769)	☒ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS ☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Build a new high fidelity 1G Airlock EVA Hatch Trainer using existing a spare hatch at the SVMF. The trainer is to be designed for use in the NBL South high bay.

7. RATIONALE

There is currently no high fidelity EVA hatch trainer. Crewmembers are instructed 1G on the hatch via photos and then in the NBL, where the hatch operation is difficult and has a lot of overhead due to the suit umbilicals. Construction of the hatch trainer will allow instructors to teach crewmembers on the operations of the on-orbit EVA hatch and its mechanisms. A spare Space Shuttle hatch is available at the SVMF for modification. This hatch is similar to the ISS EVA hatch and can be used for this specific trainer. Trainer is required to be delivered in FY12 to utilize FY12 funding.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

EVA Hatch Train Concept 2.doc

1. Build an " L" shaped ISS EVA A/L Hatch Trainer (reference the attached drawing and photos)
   - 1a. The trainer shall have two orientations (See EVA Hatch Concept 2.doc)
     - i. One for training hatch ops: Hatch in closed position on the ground and then rotates into the stowed position vertical. Height should allow for operation in a horizontal position (reference attached – Slide #5 in the Pics.ppt file)
     - ii. One for training mechanisms operations (hatch latch and hatch hinge release) Hatch in open, locked position against "endcone end". Trainer rotated so the mechanisms on the bottom of the hatch can be studied from a standing position.
   - 1b. Use existing Space Shuttle hatch hardware from the SVMF:
     - i. Hatch catch, latch, hinge, hinge disconnect, and latch disconnect
     - ii. Crank, valve switches, gauges, labels, and handle
     - iii. Hatch cut-out (want to seat hatch on sealing surface for closure)
     - iv. Crewlock internal handle and D-ring on cutout/structure (not on hatch)
   - 1c. - 1j. Are small additional details to be added to accentuate the A/L trainer for operations or safety

9. **NEED DATE:** (support date in block 7 rationale)	10. CR SUBMISSION DATE:
September 30, 2012	April 19, 2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Randy McDaniel Date: 04/19/12

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ronny Newman	x31793	Global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:

☐ Yes – prepare per contractors procedures and attach ☒ No – completion of this form is adequate for planning

CR NO.: 2499	DX CHANGE REQUEST	

CR TITLE: Build High Fidelity Airlock Hatch Trainer

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Fabricate an ISS EVA A/L Hatch Trainer (Use existing Space Shuttle hatch hardware from the SVMF)	V075-332603_-D V829-593001_-C UIA-Hatch closed.jpg UIA-hatch stowed.jpg UIA-hatch stowed 2.jpg Pics.ppt SODF_EV Hatch Hinge Disconnect.pdf SODF_EV Hatch Latch Disconnect.pdf	VMDB IO EVA Lesson Plan EVA SODF	1	IIA	(b) (4)
1a.	"L" shaped trainer with two- preferred orientations: 1. Hatch Operations Orientation: Hatch in closed position on the ground and then rotates into the stowed position vertical. Height should allow for operation in a horizontal position (reference attached – Slide #5 in the Pics.ppt file) 2. Hatch Mechanisms Orientation: Hatch in open, locked position against "endcone end". Trainer rotated so the mechanisms on the bottom of the hatch can be studied from a standing position. NOTE: DX3 instructors should be allowed to rotate the trainer on their own or have a technician assist in rotation.	Reference EVA Hatch Train Concept 2.doc		1	N/A	(b) (4)

CR NO.: 2499	DX CHANGE REQUEST	

CR TITLE: Build High Fidelity Airlock Hatch Trainer

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1b	Use existing Space Shuttle hatch hardware from the SVMF: EVA hatch details: i. Hatch catch, latch, hinge, hinge disconnect, latch disconnect, ii. Crank, valve switches, gauges, labels, handle iii. Hatch cut-out iv. Representative sealing surface v. Crewlock internal circular handrail and D-ring on cutout/structure (not on hatch)		High fidelity hardware from the FFT or CCT	1	IIA	(b) (4)
1c.	D-ring extender on A/L D-ring extender (plastic NBL version is acceptable)			1	IIB	(b) (4)
1d.	A flight-like hatch catch shall operate with hatch latch, depressing lever shall release hatch	Pics.ppt		1	II.B	
1e	Attach a tether point located to the hatch CG for use with ARGOS. Tether point shall not interfere with turn crank	EVA Hatch Train Concept 2.doc		1	III.C	
1f.	If not present, add grounding wire to PIP pins on EVA hatch arms.	hatch_grounding_wires.pdf		2	III.C	
1g.	A 1-G safety lock should be placed on the same side as the hatch catch to assist in holding the hatch weight in a 1G environment	Pics.ppt		1	N/A	
1h.	The EVA A/L Hatch Trainer shall be equipped with locking casters to provide mobility within the facility	Pics.ppt		4	N/A	
1i.	In Orientation 2, the EVA A/L Trainer shall have anti-slip feet	Pics.ppt		4	N/A	
1j.	A/L picture of EVA bags along "endcone" end of the trainer	Slide 2 Pic.PPT		1	N/A	
2	per the Safety Review conducted on 02/16/12 a Mockup TRR is required prior to final acceptance		PDR and CDR Hazard Analysis			

CR NO.: 2499	DX CHANGE REQUEST	

CR TITLE: Build High Fidelity Airlock Hatch Trainer

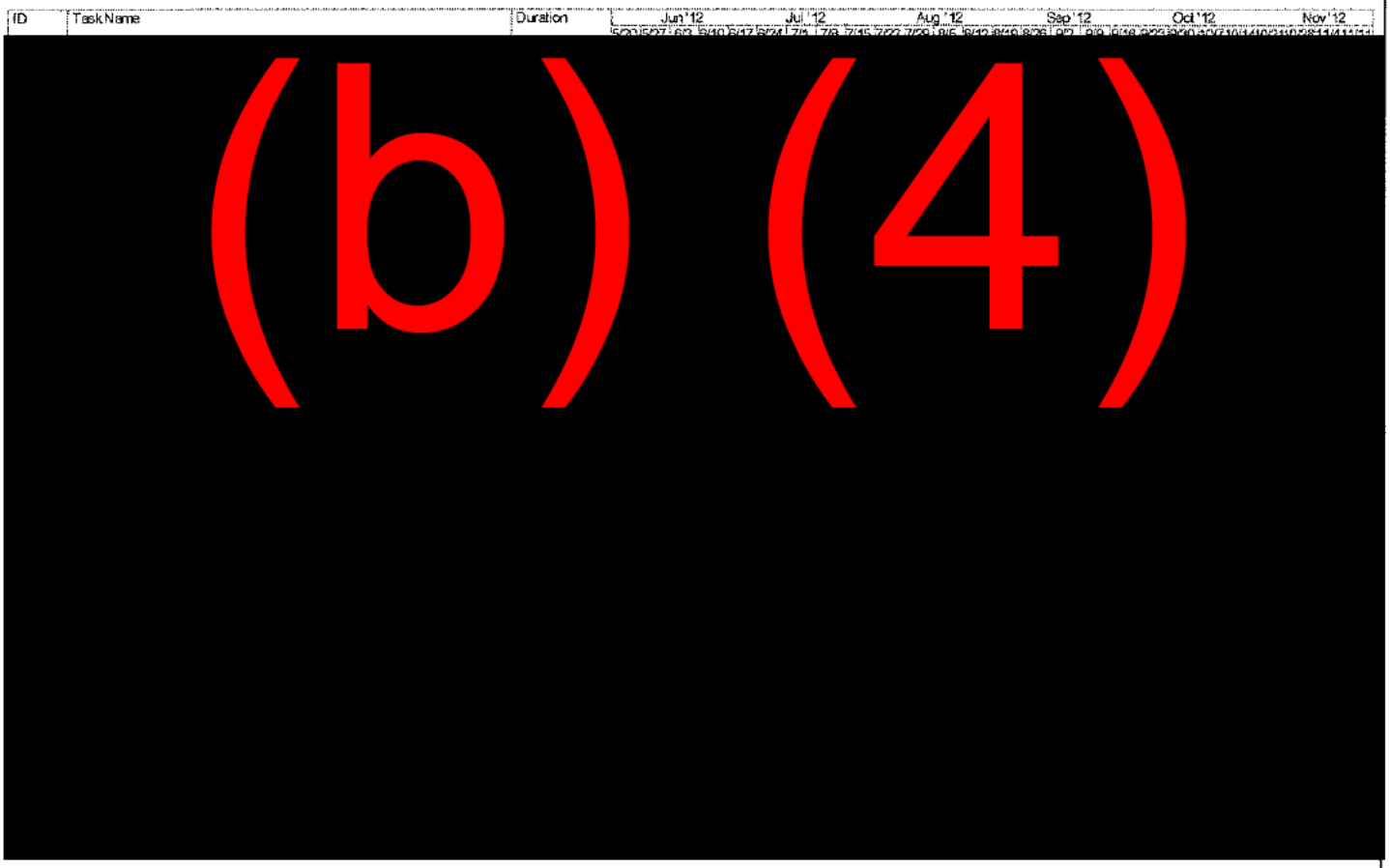
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	VERIFICATION
1	Fabricate an ISS EVA A/L Hatch Trainer (Use existing Space Shuttle hatch hardware from the SVMF)	1	IIA	
1a.	"L" shaped trainer with two- preferred orientations: 1. Hatch Operations Orientation: Hatch in closed position on the ground and then rotates into the stowed position vertical. Height should allow for operation in a horizontal position (reference attached – Slide #5 in the Pics.ppt file) 2. Hatch Mechanisms Orientation: Hatch in open, locked position against "endcone end". Trainer rotated so the mechanisms on the bottom of the hatch can be studied from a standing position. NOTE: DX3 instructors should be allowed to rotate the trainer on their own or have a technician assist in rotation	1	N/A	
1b	Use existing Space Shuttle hatch hardware from the SVMF: EVA hatch details: i. Hatch catch, latch, hinge, hinge disconnect, latch disconnect, ii. Crank, valve switches, gauges, labels, handle iii. Hatch cut-out iv. Representative sealing surface v. Crewlock internal circular handrail and D-ring on cutout/structure (not on hatch)	1 of each	IIA	
1c.	D-ring extender on A/L D-ring extender (plastic NBL version is acceptable)	1	IIB	
1d.	A flight-like hatch catch shall operate with hatch latch, depressing lever shall release hatch	1	II.B	
1e	Attach a tether point located to the hatch CG for use with ARGOS. Tether point shall not interfere with turn crank	1	III.C	EXCEPTION 01
1f.	If not present, add grounding wire to PIP pins on EVA hatch arms	2	III.C	
1g.	A 1-G safety lock should be placed on the same side as the hatch catch to assist in holding the hatch weight in a 1G environment	1	N/A	
1h.	The EVA A/L Hatch Trainer shall be equipped with locking casters to provide mobility within the facility	4	N/A	
1i.	In Orientation 2, the EVA A/L Trainer shall have anti-slip feet	4	N/A	
1j.	A/L picture of EVA bags along "endcone" end of trainer	1	N/A	

CR NO.: 2499	DX CHANGE REQUEST	

CR TITLE: Build High Fidelity Airlock Hatch Trainer

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): **(complete or reference separate project plan)**

CR NO.: 2499	DX CHANGE REQUEST	
CR TITLE: Build High Fidelity Airlock Hatch Trainer		

BASIS OF ESTIMATE (cont'd)

(b) (4)

CR NO.: 2499	DX CHANGE REQUEST	
CR TITLE: Build High Fidelity Airlock Hatch Trainer		

BASIS OF ESTIMATE (cont'd)

(b) (4)

CR NO.: 2499	DX CHANGE REQUEST	
CR TITLE: Build High Fidelity Airlock Hatch Trainer		

BASIS OF ESTIMATE (cont'd)

(b) (4)

CR NO.: 2499	DX CHANGE REQUEST	
CR TITLE: Build High Fidelity Airlock Hatch Trainer		

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years)**: (complete or reference separate project plan)**

(b) (4)

CR NO.: 2499	DX CHANGE REQUEST	

CR TITLE: Build High Fidelity Airlock Hatch Trainer

RISK ASSESSMENT (cont'd)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

	Design	Project Engineering	Management and Support	Technicians	Material
Baseline FY12		(b) (4)			
Baseline FY13					

CR NO.: 2499	DX CHANGE REQUEST	
CR TITLE: Build High Fidelity Airlock Hatch Trainer		

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR For CRs with Cost Impact Only Signature :	Date:

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 944 Rev.1	06/08/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 944 Rev.1

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012
F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 944 Rev.1

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO944

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer
6/8/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Revistion 1 to Delivery Order 944 is to delete pages 2 thru 7 in their entirety and replace with the attached pages 2 thru 7. This delivery order incorporates CR 2532A. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.					

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2532 Rev A	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

1. REQUESTOR: DX14	2. PHONE:	3. E-MAIL:

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 609524

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Evaluate aging SVMF systems and propose replacement projects.
Rev A: Cost increase to include appropriate reviews of project plans developed under this CR.

7. RATIONALE
Several SVMF systems are obsolete, raising significant risk to future training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 NSOC shall study the industry's available audio components/systems, and provide an estimate and project plan for replacement of the obsolete **Quintron** audio equipment. Options are to be benchmarked with MCC plans for similar systems.

8.2 ~~NSOC shall study the industry audio components/systems, and provide an estimate and project plan for replacement of the obsolete Peavey **CAB** audio equipment. Options are to be benchmarked with MCC plans for similar systems.~~

8.3 ~~NSOC shall study the industry available components/systems, and provide an estimate and project plan for replacement of obsolete **PLC** equipment.~~

8.4 NSOC shall study the industry available components/systems, and provide an estimate and project plan for replacement of the obsolete **Video PC** (serving Photo-TV functions).

Note: Safety Review was waived per Allison McIntyre, 05/04/12.

(continued next page)

9. NEED DATE: 15 August, 2012	10. CR SUBMISSION DATE: 04/13/12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 04/13/12

12. NASA POC: Allison McIntyre	13. PHONE: x47115	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$70,700~~ Rev A: $76,000	09/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

REQUIREMENTS/REFERENCES (cont.):

8.5 ~~NSOC shall study the industry available video components/systems, and provide an estimate and project plan for replacement of the obsolete **Vicon** switch and video distribution system. The study should consider the following:~~

1. ~~Operate the new system in parallel with the existing system, which can be gradually removed as the need for standard definition diminishes,~~
2. ~~Select a standard HD format for the SVMF (e.g. 1080p30 or …),~~
3. ~~Provide 4 HD PTZ hi bay cameras,~~
4. ~~Provide ability to feed 2 HD video with audio outside of the SVMF, either direct to viewers by IP or via the JSC cable TV system,~~
5. ~~Provide a new HD video switching system sized to fit our current needs plus 20%,~~
6. ~~Provide HD cameras (possibly PTZ option) in all current mockup locations,~~
7. ~~Provide ability to view 1 ea HD video at suit rooms, 4 ea @OCC, 1 ea @ 3100, 1 ea at 3102, 3101, 2102, & 3100a,~~
8. ~~Provide 2 ea HD cameras for MFM Orion to the system,~~
9. ~~Provide 1 new HD TV cart,~~
10. ~~Provide HD recording capability for 8 sources,~~
11. ~~Provide media for distribution of recorded HD video,~~
12. ~~Support 2 audio inputs from ISS comm system to the new video system that can be isolated from leaving the SVMF,~~
13. ~~Support HD ETVCG input, if allowed by HD ETVCG system and related training.~~
14. ~~Support 6 feeds to IOS, with 1 feed quad split from 4 sources,~~
15. ~~Provide one HD PTZ camera external to building.~~
16. ~~The study shall attempt compatibility with the systems developed for B30 video, identify and justify differences.~~

8.6 System architecture revisions shall be considered in each requirement above.

Need date is to allow funding and tech planning for FY 13 implementation of some or all of these projects.

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

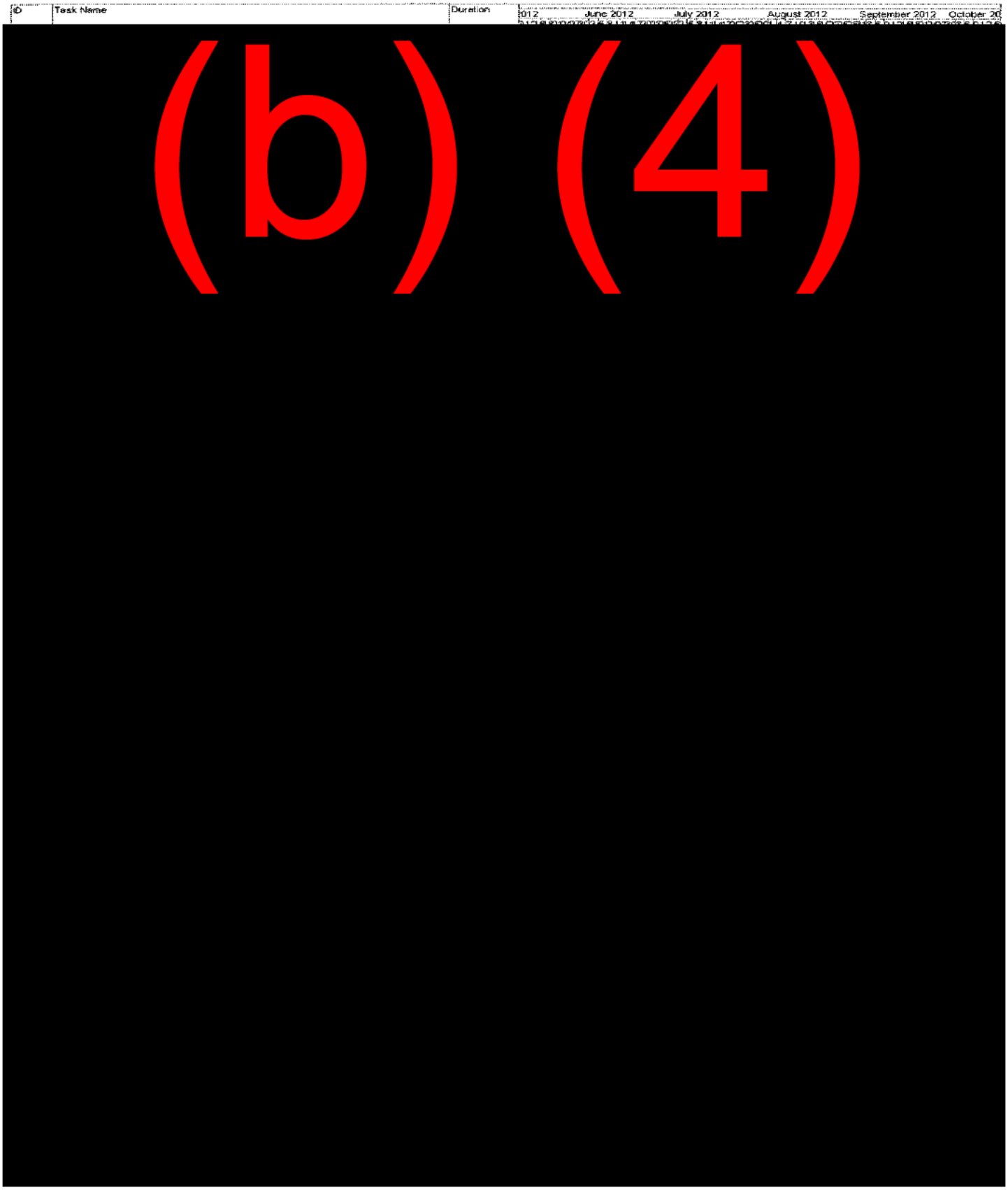
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify Quintron Replacement Study Report (DAR) is provided		Inspection	Study report is provided		
5	Verify Quintron Replacement Project Plan ROM is provided		Inspection	Project Plan is provided		
6	Verify Video PC Replacement Study Report (DAR) is provided		Inspection	Study report is provided		
7	Verify Video PC Replacement Project Plan ROM is provided		Inspection	Project Plan is provided		

CR NO.: 2532 Rev A	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

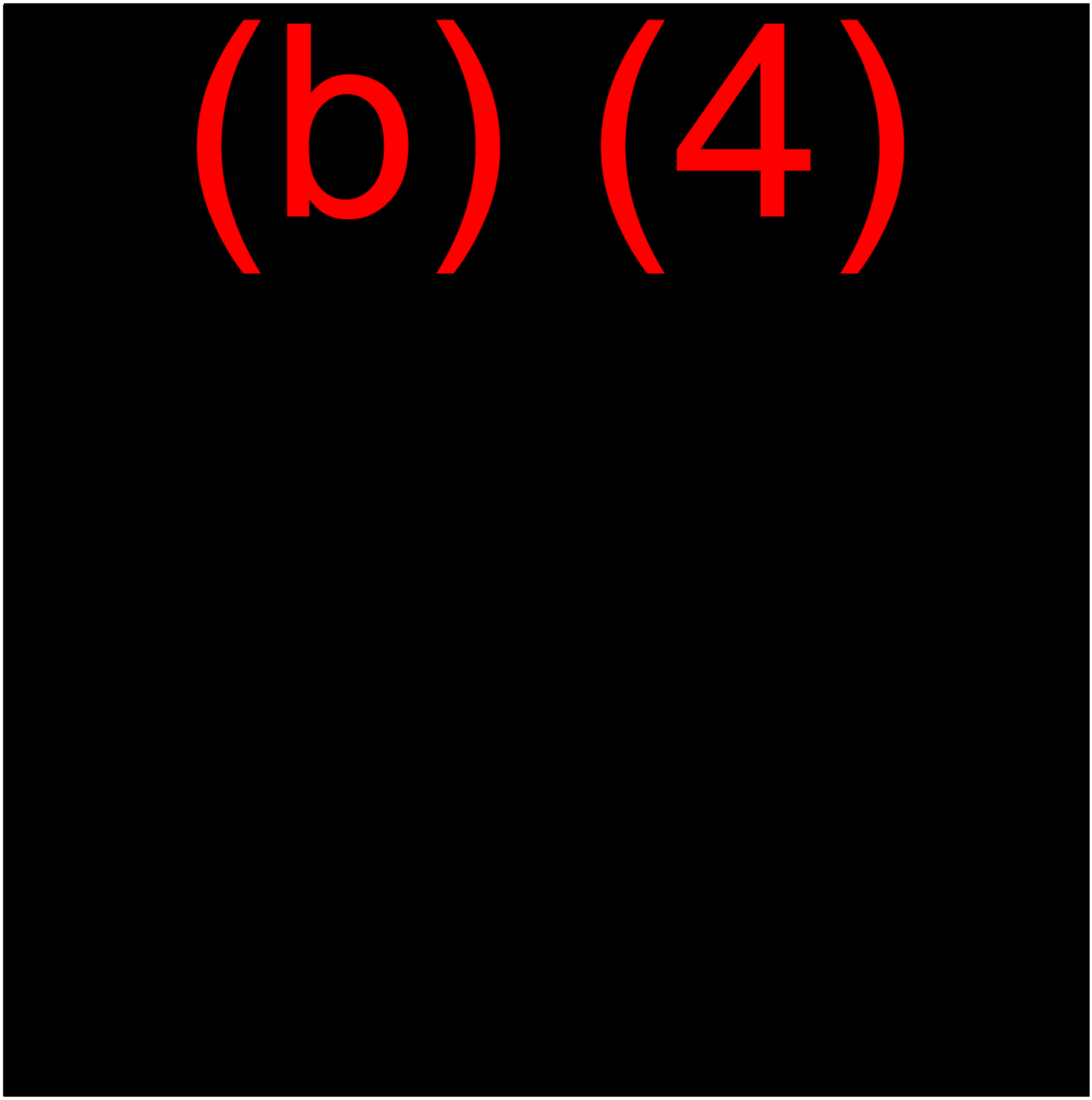
SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2532 Rev A	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

BASIS OF ESTIMATE (include and identify significant assumptions):



CR NO.: 2532 Rev A	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

BASIS OF ESTIMATE (continued)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years):

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
FY12	(b) (4)				
Rev A					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 944	06/06/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 944

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 944

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO944

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean — Contracting Officer
6/8/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 944 is to: SVMF audio/video Obsolete Equipment Replacement Study CR-2532 The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $76,010.93 Work is to be completed by September 28, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	76,010.93	76,010.93	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 76,010.93

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2532	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

1. REQUESTOR: DX14	2. PHONE:	3. E-MAIL:

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 609524

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Evaluate aging SVMF systems and propose replacement projects.

7. RATIONALE
Several SVMF systems are obsolete, raising significant risk to future training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

8.1 NSOC shall study the industry's available audio components/systems, and provide an estimate and project plan for replacement of the obsolete **Quintron** audio equipment. Options are to be benchmarked with MCC plans for similar systems.

8.2 ~~NSOC shall study the industry audio components/systems, and provide an estimate and project plan for replacement of the obsolete Peavey **CAB** audio equipment. Options are to be benchmarked with MCC plans for similar systems.~~

8.3 ~~NSOC shall study the industry available components/systems, and provide an estimate and project plan for replacement of obsolete **PLC** equipment.~~

8.4 NSOC shall study the industry available components/systems, and provide an estimate and project plan for replacement of the obsolete **Video PC** (serving Photo-TV functions).

Note: Safety Review was waived per Allison McIntyre, 05/04/12.

(continued next page)

9. NEED DATE: 15 August, 2012	10. CR SUBMISSION DATE: 04/13/12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 04/13/12

12. NASA POC: Allison McIntyre	13. PHONE: x47115	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $70,700	20. NEGOTIATED DELIVERY DATE: 09/28/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2532	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

REQUIREMENTS/REFERENCES (cont.):

8.5 ~~NSOC shall study the industry available video components/systems, and provide an estimate and project plan for replacement of the obsolete **Vicon** switch and video distribution system. The study should consider the following:~~

1. ~~Operate the new system in parallel with the existing system, which can be gradually removed as the need for standard definition diminishes,~~
2. ~~Select a standard HD format for the SVMF (e.g. 1080p30 or ...),~~
3. ~~Provide 4 HD PTZ hi bay cameras,~~
4. ~~Provide ability to feed 2 HD video with audio outside of the SVMF, either direct to viewers by IP or via the JSC cable TV system,~~
5. ~~Provide a new HD video switching system sized to fit our current needs plus 20%,~~
6. ~~Provide HD cameras (possibly PTZ option) in all current mockup locations,~~
7. ~~Provide ability to view 1 ea HD video at suit rooms, 4 ea @OCC, 1 ea @ 3100, 1 ea at 3102, 3101, 2102, & 3100a,~~
8. ~~Provide 2 ea HD cameras for MFM Orion to the system,~~
9. ~~Provide 1 new HD TV cart,~~
10. ~~Provide HD recording capability for 8 sources,~~
11. ~~Provide media for distribution of recorded HD video,~~
12. ~~Support 2 audio inputs from ISS comm system to the new video system that can be isolated from leaving the SVMF,~~
13. ~~Support HD ETVCG input, if allowed by HD ETVCG system and related training.~~
14. ~~Support 6 feeds to IOS, with 1 feed quad split from 4 sources,~~
15. ~~Provide one HD PTZ camera external to building.~~
16. ~~The study shall attempt compatibility with the systems developed for B30 video, identify and justify differences.~~

8.6 System architecture revisions shall be considered in each requirement above.

Need date is to allow funding and tech planning for FY 13 implementation of some or all of these projects.

CR NO.: 2532	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
4	Verify Quintron Replacement Study Report (DAR) is provided		Inspection	Study report is provided		
5	Verify Quintron Replacement Project Plan ROM is provided		Inspection	Project Plan is provided		
6	Verify Video PC Replacement Study Report (DAR) is provided		Inspection	Study report is provided		
7	Verify Video PC Replacement Project Plan ROM is provided		Inspection	Project Plan is provided		

CR NO.: 2532	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Task Name	Duration	2012	June 2012	July 2012	August 2012	September 2012	October 20

(b) (4)

CR NO.: 2532	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

BASIS OF ESTIMATE (include and identify significant assumptions):

(b) (4)

CR NO.: 2532	DX CHANGE REQUEST

CR TITLE: SVMF audio/video Obsolete Equipment Replacement Study

BASIS OF ESTIMATE (continued)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years):

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering and	Management	Technicians	Material
FY12	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 945	07/03/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 945

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 945

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO945

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Jennifer Krause — Contracting Officer — 7/5/12 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 945 is to: KU-band voice channel additions CR-2475 The estimated cost is (b) (4) The estimated award f The estimated incenti The total value of this Delivery Order is $23,397.70 Work is to be completed by September 28, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	23,397.70	23,397.70	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 23,397.70

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: CR-2475	DX CHANGE REQUEST

CR TITLE: Ku-band voice channel additions

1. REQUESTOR: Carolina De Carvalho	2. PHONE: 281-244-6429	3. E-MAIL: carolina.decarvalho-1@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 3.6.1 FC 609524

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Modify the audio model in the SVMF to accommodate the new operational usage of public calls post deployment of the new Ku-band equipment (ICU). This includes the creation of two new voice channels, and the relocation of the RSA2 channel.

7. RATIONALE
Early in 2013, the addition of voice channels available via Ku-band will greatly impact the overall ops concept behind the use of each public call available onboard, including ISS ICOM. Since all of the crew's routine ops training happens in the SVMF, having these channels available is imperative to ensure familiarity with their usage.
The addition of these channels is expected to create new and potentially confusing call configurations and nomenclature for the crew. If these channels are not available in B9, the crew will require extra training in other facilities, thus increasing the time already allocated to their training flow.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
1a- Modify the RSA2 channel to allow it to be moved between public calls 2 and 5. (currently RSA2 moves between public calls 2 and 3)
1b- Update the button on the malfunction laptop display to indicate the change described in 1a.
1c- Verify public call 3 audio does NOT reach the Russian segment anymore (on any comm panel).
1d- Verify audio from public call 2 or 5 (depending on where RSA2 is) reaches the Russian segment.
2a- Create two new DVICE loops, named S/G3 and S/G4.
2b- Connect audio from public call 3 to S/G3 and audio from public call 4 to S/G4.
2c- Fail S/G-3 and S/G-4 when the RAIU is failed. Public Call 3 and 4 still function, only the uplink/downlink is failed.
See page 2 for an illustration of the public call changes.
Note a safety review was conducted 5/23/12 and no TRR was required

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 4/1/2012
Sept 28, 2012.	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _/s/ Allison McIntyre_____
Date:6/8/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
Jill MacGregor	30839	global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE: 9/28/12
$23,400	

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: CR-2475	DX CHANGE REQUEST

CR TITLE: Ku-band voice channel additions

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Current stage ops public call configuration:

Public 1	Public 2	Public 3	Public 4	Public 5
S/G1	S/G2	RSA2		
RSA1	ATU's	ATU's		
UHF				
ATU's				

Future stage ops public call configuration:

Public 1	Public 2	Public 3	Public 4	Public 5
S/G1	S/G2	Ku-1	Ku-2	RSA2
RSA1	ATU's	ATU's	ATU's	ATU's
UHF				
ATU's				

CR NO.: CR-2475	DX CHANGE REQUEST

CR TITLE: Ku-band voice channel additions

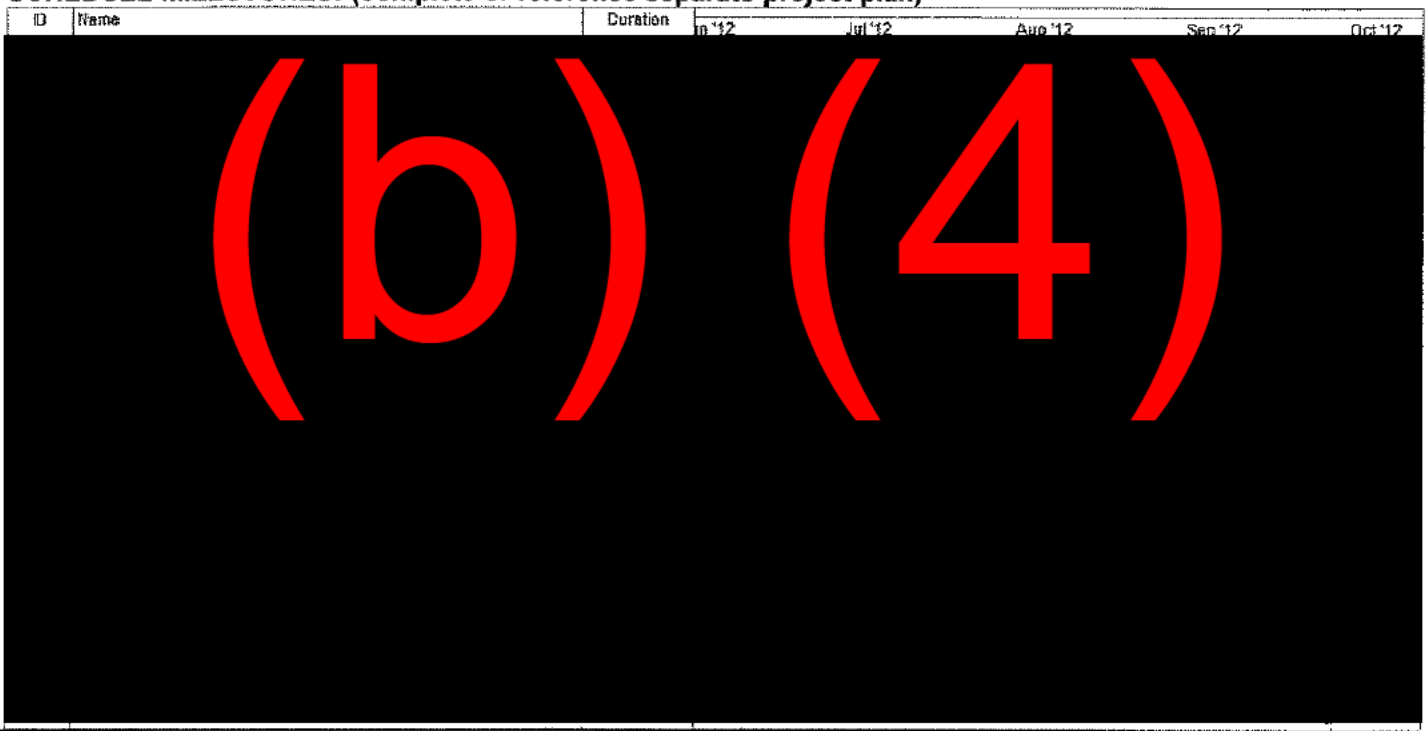
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

STEP	Operator / Equip. Action	Expected Results	Observed Results	Rqmt #	Comment
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.			
2	Verify there are no unidentified pinch points.	Finished product is safe for use.			
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.			
4	On the malfunction laptop audio control page select Conf-2 and talk between Public Call -2 and RSA-2.	Verify the malfunction laptop audio control page conference select switches between Public Call -2 and 5		1a, 1b, 1d	
5	On the malfunction laptop audio control page select Conf-5 and talk between Public Call -5 and RSA-2.	Verify the malfunction laptop audio control page conference select switches between Public Call -2 and 5		1a, 1b, 1d	
6	Select PC-3 on the ATU and talk, verify PC-3 audio does NOT reach the Russian segment	Verify public call 3 audio does NOT reach the Russian segment anymore		1c	
7	On the ATU select PC-3 and select S/G-3 on the DVICE keyset and talk	Verify the new S/G-3 loop by selecting Public Call-3 on the ATU and S/G-3 on the CapCom DVIS keyset and talk to each other		2a, 2b	
8	Fail the RAUI and talk	PC-3 functions to other ATUs but loses communication between the ATU and DVICE keyset S/G-3		2c	
9	On the ATU select PC-4 and select S/G-4 on the DVICE keyset and talk	Verify the new S/G-4 loop by selecting Public Call-4 on the ATU and S/G-3 on the CapCom DVIS keyset and talk to each other		2a, 2b	
10	Fail the RAUI and talk	PC-4 functions to other ATUs but loses communication between the ATU and DVICE keyset S/G-4		2c	
11	end of test				

CR NO.: CR-2475	DX CHANGE REQUEST

CR TITLE: Ku-band voice channel additions

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

interfaces.

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

None identified

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design Cost	PE Cost	Administrative	Tech Cost	Material Cost
FY12		(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 946	07/12/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 946

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phon (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 946

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO946

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
for Cindy Madden 7/16/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 946 is to: 12 Facility Support Purchases CR-2536 The estimated cost is $ (b) (4) The estimated award fe The estimated incentiv The total value of this Delivery Order is $212,448.13 Work is to be completed by September 27, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	212,448.13	212,448.13	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 212,448.13

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2536	DX CHANGE REQUEST

CR TITLE: SVMF FY 12 Facility Support Purchases

1. REQUESTOR: Allison McIntyre	2. PHONE: 47115	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE X STATION
☐ CONSTELLATION ☒ OTHER:
Fund code: 3.6.1 (609524)

5. FUNCTIONAL AREA:
X SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Purchase various items for use in the SVMF including forklift, electrical equipment, stanchions, and carpet. Reference detailed list in Section 8.
The SVMF Chief shall approve final selections of stanchions, forklift, and connex boxes prior to ordering.

7. RATIONALE
These items will provide spares and supplies to help operate the facility through 2020. New stanchions are to improve personnel access control. Cameras are based on JSC Security request to improve safety and security in the building. Items must be invoiced and CR accepted/closed by the end of FY12.
Purchased items are consistent with 4/16/12 NASA Administrator memo titled "Authorized Promotional and Personal Use Items"

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. QTY 100 retractable black belt stanchions with black base, post, and belt. Stainless bases, minimum of 4 attachment points, subset should allow for inserting signs
2. QTY 20 stanchion sign frames
3. QTY 2 Hydraflow hose [redacted (b) (4)]
4. QTY 1 Forklift 5-6K lb capacity with charging station (if required), tyne extensions, 15' lift, for indoor service
5. QTY 2 Connex Boxes to replace existing
6. 15 security cameras (reference NBL similar purchase) - 6 fixed for entrances, 9 PTU
7. 4 iPads for camera control (32 wifi only)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 6/4/12
9/30/12	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s/ Allison McIntyre
Date: 6/4/12

12. NASA POC:	13. PHONE:	14. E-MAIL:
Allison McIntyre	X47115	global
15. IMPLEMENTING CONTRACTOR	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: [redacted (b) (4)]	[redacted (b) (4)]	global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$212,500	9/27/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2536	DX CHANGE REQUEST

CR TITLE: SVMF FY 12 Facility Support Purchases

REQUIREMENTS/REFERENCES (cont.):

8. Electrical Equipment for stock as follows:
   a. UL AWM 1180, CSA or UL 1371 hook up wire
      - 10 AWG X BLACK,WHITE, RED, GREEN Orange TEFLON, = 500 ft each color
      - 12AWG X BLACK,WHITE, RED, GREEN, Orange TEFLON, =200FT 500 ft each color
      - 14 AWG X BLACK,WHITE, RED, GREEN, Orange TEFLON,=200FT.500 ft each color
      - 16 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON,=200FT.500 ft each color
      - 18 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON, =200FT.500 ft each color
      - 20 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON, =200FT.500 ft each color
      - 22 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON,, = 200FT.500 ft each color
      -

      SOW Power Cords:
      - 12 AWG 3CONDUCTOR, SO CORD=500FT.
      - 12AWG 5CONDUCTOR, SO CORD=.500 ft
      - 10 AWG 3CONDUCTOR, SO CORD=500FT.
      - 10AWG 5CONDUCTOR, SO CORD= 500 ft
      - 8 AWG 3CONDUCTOR, SO CORD=500 ft
      - 8 AWG 5CONDUCTOR, SO CORD=500 ft

   b. Sleeving ¼", ½", ¾" 300 ft each
   c. CGB's # 195 10 each
   d. Power connectors

NEMA	Box Receptacle	Plug	Corded receptacle
115VAC:	Code		
15A 5-15	3ea	3ea	3ea
20A 5-20	1ea	1ea	1ea

   e. 250VAC Twist Locks (1 each)

: 20A 1ph L6-20 HBL2320 HBL2321 HBL2323
30A 1ph L6-30 HBL2620 HBL2621 HBL2623
20A 2ph L14-20 HBL2410 HBL2411 HBL2413
30A 2ph L14-30 HBL2620 HBL2621 HBL2623
20A 3ph L21-20 HBL2510 HBL2511 HBL2513
30A 3ph L21-30 HBL2810 HBL2811 HBL2813

9. NSOC shall provide a 1080P LCD monitor capable of HDMI and VGA input, maximum 50" width, with rolling floor stand with max depth of 32" and 60' HDMI cable. It shall be assembled and located in Building 4N/121A"

10. 8 handheld radios programmed for SVMF channels

11. Wireless handheld Mic unit and Wireless lapel mic unit

12. Qty 1,000 SVMF logo patches, 2,500 SVMF logo elevated relief pins, 2,500 SVMF logo decals

13. FDM machine consumables: QTY 5 support cartridges and QTY 20 build (5 grey, 5 black, 5 white, 5 natural)

14. QTY 1 Dell 6248 managed switch with router/filter capability

15. PA base station with four hand held receivers

16. QTY 1 Epson EX5210 Business Projector or better

NOTE Safety Review Waived 6/29/12

CR NO.: 2536	DX CHANGE REQUEST

CR TITLE: SVMF FY 12 Facility Support Purchases

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)
All listed items delivered to SVMF by 9/27/12

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 946A	08/30/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 946A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 946A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO946A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/13/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 946A is to: 12 Facility Support Purchases CR-2536A The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Revision is $28,155.35 The total value of this Delivery Order is $240,603.49 Work is to be completed by September 27, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	28,155.35	28,155.35	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 28,155.35

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2536 Rev A	DX CHANGE REQUEST

CR TITLE: SVMF FY 12 Facility Support Purchases

1. REQUESTOR: Allison McIntyre	2. PHONE: 47115	3. E-MAIL: global

4. PROGRAM /PROJECT:
☐ SHUTTLE X STATION
☐ CONSTELLATION ☒ OTHER:
Fund code: 3.6.1 (609524)

5. FUNCTIONAL AREA:
X SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Purchase various items for use in the SVMF including forklift, electrical equipment, stanchions, ~~and carpet.~~ **Rev A**
Reference detailed list in Section 8.
The SVMF Chief shall approve final selections of stanchions, forklift, and connex boxes prior to ordering.

7. RATIONALE
These items will provide spares and supplies to help operate the facility through 2020. New stanchions are to improve personnel access control. Cameras are based on JSC Security request to improve safety and security in the building. Items must be invoiced and CR accepted/closed by the end of FY12.
Purchased items are consistent with 4/16/12 NASA Administrator memo titled "Authorized Promotional and Personal Use Items"

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. QTY 100 retractable black belt stanchions with black base, post, and belt. Stainless bases, minimum of 4 attachment points, subset should allow for inserting signs
2. QTY 20 stanchion sign frames
3. ~~QTY 2 Hydraflow hose (part number 55114-10-3000)~~ **Rev A**
4. QTY 1 Forklift 5-6K lb capacity with charging station (if required), tyne extensions, 15' lift, for indoor service
5. QTY 2 Connex Boxes to replace existing
6. ~~15~~ 19 security cameras (reference NBL similar purchase) - ~~6 fixed for entrances, 9 PTU~~ 10 fixed indoor, 2 fixed outdoor, 6 PTZ indoor, 1 PTZ outdoor **Rev A**
7. 4 iPads for camera control (32 wifi only)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 6/4/12
9/30/12	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s/ Allison McIntyre
Date: 6/4/12

12. NASA POC:	13. PHONE:	14. E-MAIL:
Allison McIntyre	X47115	global
15. IMPLEMENTING CONTRACTOR	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: (b) (4)	(b) (4)	global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$212,500~~ $247,400 **Rev A**	9/27/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____	**COTR for CRs with Cost Impact Only**
Date: _____	COTR: _____
CCB CHAIR: _____	Date: _____
Date: _____	

Closed by: _____ **Date:** _____

CR NO.: 2536 Rev A	DX CHANGE REQUEST

CR TITLE: SVMF FY 12 Facility Support Purchases

REQUIREMENTS/REFERENCES (cont.):

8. Electrical Equipment for stock as follows:
   a. UL AWM 1180, CSA or UL 1371 hook up wire
      - 10 AWG X BLACK,WHITE, RED, GREEN Orange TEFLON, ~~= 500~~ 1000 ft each color
      - 12AWG X BLACK,WHITE, RED, GREEN, Orange TEFLON, ~~=200FT 500~~ 1000 ft each color **Rev A**
      - 14 AWG X BLACK,WHITE, RED, GREEN, Orange TEFLON,~~=200FT.500~~ 1000 ft each color **Rev A**
      - 16 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON,~~=200FT.500~~ 1000 ft each color **Rev A**
      - 18 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON, ~~=200FT.500~~ 1000 ft each color **Rev A**
      - 20 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON, ~~=200FT.500~~ 1000 ft each color **Rev A**
      - 22 AWG X BLACK,WHITE, RED, GREEN, Orange , TEFLON,, = ~~200FT.500~~ 1000 ft each color **Rev A**
      -

      SOW Power Cords:
      - 12 AWG 3CONDUCTOR, SO CORD=500FT.
      - 12AWG 5CONDUCTOR, SO CORD=500 FT
      - 10 AWG 3CONDUCTOR, SO CORD=500FT.
      - 10AWG 5CONDUCTOR, SO CORD= 500 FT
      - 8 AWG 3CONDUCTOR, SO CORD=500 FT
      - 8 AWG 5CONDUCTOR, SO CORD=500 FT

   b. Sleeving ¼", ½", ¾" 300 ft each
   c. CGB's # 195 10 each
   d. Power connectors

NEMA 115VAC:	Box Receptacle Code	Plug	Corded receptacle
15A 5-15	3ea	3ea	3ea
20A 5-20	1ea	1ea	1ea

   e. 250VAC Twist Locks (1 each)

: 20A 1ph L6-20	HBL2320	HBL2321	HBL2323
30A 1ph L6-30	HBL2620	HBL2621	HBL2623
20A 2ph L14-20	HBL2410	HBL2411	HBL2413
30A 2ph L14-30	~~HBL2620~~ HBL2720	~~HBL2621~~ HBL2720	~~HBL2623~~ HBL2720
20A 3ph L21-20	HBL2510	HBL2511	HBL2513
30A 3ph L21-30	HBL2810	HBL2811	HBL2813

9. NSOC shall provide a 1080P LCD monitor capable of HDMI and VGA input, maximum 50" width, with rolling floor stand with max depth of 32" and 60' HDMI cable. It shall be assembled and located in Building 4N/121A"

10. 8 handheld radios programmed for SVMF channels

11. Wireless handheld Mic unit and Wireless lapel mic unit

12. Qty 1,000 SVMF logo patches, 2,500 SVMF logo elevated relief pins, 2,500 SVMF logo decals

13. FDM machine consumables: QTY ~~5~~ 4 support cartridges and QTY ~~20~~ 16 build (~~5~~ 8 grey, ~~5~~ 8 black, ~~5 white, 5 natural~~), 8 packs of tip wipes, and 5 packs of foundations. **Rev A**

14. QTY 1 Dell 6248 managed switch with router/filter capability

15. PA base station with four hand held receivers

16. QTY 1 Epson EX5210 Business Projector or better

17. Qty 3 Belair 100N (or equivalent) wireless access points with power cords and dual band antenna **Rev A**

18. NSOC shall procure an IP video recorder similar to Lenel PC-LNR8-3U-8-2TB **Rev A**

NOTE Safety Review Waived 6/29/12

CR NO.: 2536 Rev A	DX CHANGE REQUEST

CR TITLE: SVMF FY 12 Facility Support Purchases

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)
All listed items delivered to SVMF by 9/27/12

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)
Materials are the major cost driver

	Design	Engineering and Program Support	Management	Technicians	Material
Rev A		(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 947	07/20/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 947

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
October 31, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 947

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO947

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 7/20/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 947is to: Build International Docking Adapter Mockup CR-2535 The estimated cost is $ (b) (4) The estimated award fee is $ (b) (4) The estimated incentive fee is $ (b) (4) The total value of this Delivery Order is $62,082.17 Work is to be completed by October 31, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	62,082.17	62,082.17	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 62,082.17

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2535	DX CHANGE REQUEST	Page: 1 of 7

CR TITLE: Build International Docking Adapter Mockup

1. REQUESTOR: CB/DX3 (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov @nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Build one International Docking Adapter (IDA). The IDA mockup will need to be neutrally weighed out to support crew maneuvering during berthing to PMA2. The PMA2 mockup will be modified in a separate CR to provide fine alignment pins and holes that will interface with this new IDA mockup.

7. RATIONALE:

Required to support NBL development testing (the 1-G class is currently scheduled for 10/31/12) and future crew training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

IDA Overview.pdf

Safety Review Held – 6/28/12, TRR required.

9. **NEED DATE:** (support date in block 7 rationale) **October 31, 2012**	10. CR SUBMISSION DATE: **May 11, 2012**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J Haas Date: 5/21/12

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractors procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $65,400 (FY12-$39,400; FY13-$26,000)	20. NEGOTIATED DELIVERY DATE: 10/31/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date:_____	**COTR For CRs with Cost Impact Only** COTR:_____ Date: _____

Closed by:_____ **Date:**_____

CR TITLE: Build International Docking Adapter Mockup

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	International Docking Adapter	Boeing Provide Step File	Step File	1	III-C	(b) (4)
1.1	Retro Reflector (handholds – TBD)	SEG33108122-301	VMDB	2	II-C	
1.2	Planar Reflector and Bracket	Boeing Step File	Step File	1	III-D	
1.3	NZGL Connector Panel	Boeing Step File	Step File	2	III-D	
1.3a	Size 13 NZGL Receptacle. Mockup may use size 15. (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.3.b	Size 15 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.3.c	Size 17 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	3	II-D	
1.3.d	Size 21 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.3.e	Size 25 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.4	Trunnion Pin – accepts mounting of Retro Reflector	Boeing Provide Step File	Step File	3	II-D	
1.5	Tether Loops	684-017131	VMDB	2	III-D	
1.6	Top Mounted Handrail Assemblies (8" Length)	SEG33106347	VMDB	8	II-D	
1.7	H-fixture and Target (mounting bracket to take EVA loads)	Existing NBL design	Existing NBL Design	1	III-D	
1.8	Alignment Petals to visiting vehicle – these are EVA installable through a bolted interface (TBD)	Boeing Provide Step File	Step File	3	II-B	
1.9	Receptacle Umbilical – volumetric only	Boeing Provide Step File	Step File	1	III-D	
1.10	Plug Umbilical – volumetric only	Boeing Provide Step File	Step File	1	III-D	
1.11	Course alignment guides to PMA	Boeing Provide Step File	Step File	6	II-D	
1.12	Fine alignment holes – interface to PMA 2	Boeing Provide Step File	Step File	2	II-D	
1.13	Fine alignment pins – interface to PMA 2	Boeing Provide Step File	Step File	2	II-D	
1.14	OIWIF Adapter Plate (no WIF loads, make from PVC)	SEG33106862	VMDB	4	III-D	
2	Fit check of IDA to modified PMA2	N/A	N/A	N/A	N/A	

1. Retro reflectors will be EVA installed into trunnion ends.
2. OIWIF plates are not required to handle WIF loads. Used for attaching camera brackets etc. Make from non metallic material (i.e. PVC, Delrin etc.) to signify not intended for WIF loads.
3. Install Kydex panel to obstruct crew visibility through IDA.

CR TITLE: Build International Docking Adapter Mockup

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	International Docking Adapter	1	III-B	
1.1	Retro Reflector	2	II-B	
1.2	Planar Reflector and Bracket	1	III-D	
1.3	NZGL Connector Panel	2	III-D	
1.3a	Size 13 NZGL Receptacle	2	II-D	
1.3.b	Size 15 NZGL Receptacle	2	II-D	
1.3.c	Size 17 NZGL Receptacle	3	II-D	
1.3.d	Size 21 NZGL Receptacle	2	II-D	
1.3.e	Size 25 NZGL Receptacle	2	II-D	
1.4	Trunnion Pins – accepts mounting of retro reflector	3	II-D	
1.5	Tether Loops	2	III-D	
1.6	Top Mounted Handrail Assemblies (TBD Length)	8	II-D	
1.7	H-fixture and Target	1	III-D	
1.8	Alignment Petals to visiting vehicle – these are EVA installable through a bolted interface	3	II-B	
1.9	Receptacle Umbilical – volumetric only	1	III-D	
1.10	Plug Umbilical – volumetric only	1	III-D	
1.11	Course alignment guides to PMA	6	II-D	
1.12	Fine alignment holes – interface to PMA 2	2	II-D	
1.13	Fine alignment pins – interface to PMA 2	2	II-D	
1.14	OIWIF Adapter Plate	4	II-D	
2	Fit check of IDA to modified PMA 2	N/A	N/A	

CR NO.: 2535	DX CHANGE REQUEST	Page: 4 of 7

CR TITLE: Build International Docking Adapter Mockup

SCHEDULE MILESTONES: (complete or reference separate project plan)

Text25	Task Name	Jun '12	Jul '12	Aug '12	Sep '12	Oct '12	Nov '12

(b) (4)

CR NO.: 2535	DX CHANGE REQUEST	Page: 5 of 7
CR TITLE: Build International Docking Adapter Mockup		

BASIS OF ESTIMATE (include and identify significant assumptions): **(complete or reference separate project plan)**

(b) (4)

CR NO.: 2535	DX CHANGE REQUEST	Page: 6 of 7

CR TITLE: Build International Docking Adapter Mockup

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): **(complete or reference separate project plan)**

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY12: Total Cost (b) (4)

DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
	(b) (4)			

FY13: Total Cost (b) (4)

DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
	(b) (4)			

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 948	07/20/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 948

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 15, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 948

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO948

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 7/20/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 948 is to: NBL Mockup Life Expectancy Assessment The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $22,419.45 Work is to be completed by September 15, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	22,419.45	22,419.45	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 22,419.45

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 472	DX CHANGE REQUEST

CR TITLE: NBL Mockup Life Expectancy Assessment

1. REQUESTOR: Robert Durkin	2. PHONE: (281) 792-5836	3. E-MAIL: robert.j.durkin@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONST ☒ Fund Code 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Assess the adequacy of the major NBL mockups to operate through the calendar year 2020 and develop low-fidelity budgetary estimates and schedules for needed refurbishments and replacements. Major mockups for purposes of this CR are those defined as Major Mockups listed on DRD-NSOC-41 which are anticipated to require more than (b) (4) and/or (b) (4) to refurbish or replace.

7. RATIONALE
Extension of the International Space Station (ISS) planned operational life necessitates an assessment of the major NBL Mockups for safe use beyond their planned life expectancy. The need date is driven by the EVA Office's need for budget planning input.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

(b) (4)

9. NEED DATE: (support date in block 7 rationale) 9-15-12	10. CR SUBMISSION DATE: 6-22-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 6/22/2012

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☐ No – completion of this form is adequate for planning

19. COST IMPACT: 22,500	20. NEGOTIATED DELIVERY DATE: 09-15-12

AUTHORIZATION TO PROCEED

CR NO.: 472	DX CHANGE REQUEST

CR TITLE: NBL Mockup Life Expectancy Assessment

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Refer to Section 8, "Requirements and References" above.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Report based on Section 8, "Requirements and References"	NA	NA	Review by Requestor		(b) (4)

CR NO.: 472	DX CHANGE REQUEST

CR TITLE: NBL Mockup Life Expectancy Assessment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Refer to Section 8, "Requirements and References" above.

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 472	DX CHANGE REQUEST

CR TITLE: NBL Mockup Life Expectancy Assessment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks were identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
[redacted] (b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 949A	04/26/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR2/IreneOakley-Johnson
Tel. No.: (281) 792-7972 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 949A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 949A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO949A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

Cynthia Maclean 4/26/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 949A is to: Support EFT-1 Swimmer Training The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $144,500 Work is to be completed by September 25, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	144,500.00	144,500.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 144,500.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) 1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV
☐ OTHER ☐ FUND CODE: 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program and specifically Exploration Flight Test 1 (EFT-1) Landing and Recovery efforts. This CR will fund labor for (b) (4) team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support in the form of a Forward Bay Cover mockup and other ancillary equipment items associated with Navy Recovery Team efforts.

Rev A: This revision adds additional labor, training runs and hardware modification as approved in SCIFs-01, -02 and -03 shown below and extends the duration of the CR to 9-25-13.

7. RATIONALE:
The NBL is to be used in the training evolution of Para Rescue personnel from the Air Force and Navy swimmers supporting the MPCV Program. Preparatory in water evaluations are planned for August 7-9, 2012 and swimmer training is planned for January 2013 and beyond.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
1. Coordinate with the Air Force Detachment 3 and KSC Ground Ops personnel to support the Operational Concepts development and in water evaluations on 8/7-9 for EFT-1 landing and recovery as it relates to training in the NBL.
2. Fabricate an NBL mockup of the Orion Forward Bay Cover (FBC); Fidelity III.D. based on the presentation TPS_CDR_FBC_Design_Rev_D[1][1].pptx located in this CR's Requirements folder. Flight dimensions and models to be supplied as needed. The design concept shall be a rolled stainless steel cone, with deck, that has spot welded studs on the inside surfaces that are used to sandwich floatation foam between the outer Stainless Steel sheet and an inner Kydex plastic or Stainless Steel sheet that incorporates the ability to quickly (<20 min) adjust buoyancy between being negative 20 pounds to positive 20 pounds in 10 pound increments with a total dry weight of 772+/-20 pounds. This construction method shall be representative of the thickness of the FBC. A Safety Review and Preliminary Design Review are required.
4. Prepare materials and conduct Safety Reviews and Test Readiness Reviews to allow NBL training with the FBC, Navy supplied Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
5. Conduct end-to-end evaluation testing in the NBL on 8/7-9, 2012 using Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
6. Procure items on the following ancillary equipment:

Item	Quantity	Source	Need Date
Parachute flotation (anchor ball)	assortment	(b) (4)	8/7/2012 (Parachute procedure development)
Trolling motor batteries (b) (4)	3		8/7/2012 (Parachute procedure development)
Battery charger (b) (4)	1		8/7/2012 (Parachute procedure development)
Zodiac patch/repair kit	2		8/7/2012 (Parachute procedure development)
Carabineer	12		8/7/2012 (Parachute procedure development)

Safety Review Held – 7/5/12 for Mockup, TRR required. Safety Review Held – 7/12/12 for Ops, TRR required.

Rev A: A safety Review is required to support the FBC mods. A TRR is required to support the December run, and a delta TRR will be held to support the modified FBC and the February run.

CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

9. NEED DATE: (support date in block 7 rationale) 9-28-12	10. CR SUBMISSION DATE: 6-6-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: E Turcotte
Date: 6/21/12

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$60,400 (FY12-$43,800; FY13-$16,600)~~ $188,300 (FY12 - $43,800; FY13 - $144,500) **Rev A**	20. NEGOTIATED DELIVERY DATE: ~~11/12/2012~~ **Rev A:** 9/25/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Rev A incorporates SCIF-01, SCIF-02 and SCIF-03 to complete detail planning and support 1 Training Event in each of the following months: December 2012, February 2013, April 2013, and a Training Event in the May/June/July 2013 timeframe. In addition, a Table Top evaluation will be held the last week of January, 2013. All the work identified for Rev A will be performed in GFY 13.

The following tasks will be performed to support this additional effort.

1. Generate an estimate including review of requirements, generate a plan, obtain material quotes, and estimate the hours and cost for executing this revision and 1 additional change.
2. Provide (b) (4) to coordinate with the Air Force Detachment 3 and KSC Ground Ops personnel in support of the Operational Concepts development and training for EFT-1 landing and recovery as it relates to training in the NBL. This support to include weekly telecom support from November, 2012 through the end of September, 2013.
3. Produce mockups of the Octopus prototypes (sewing lab and carabineers). Following the December evaluations, update the prototypes to implement identified improvements.
4. Verify state and functionality of 18" and 24" floatation collars and GFE sea anchors prior to the December Training Run.
5. Identify and make modifications required on the stabilization collar provided by the Prototype Lab such that the collar is suitable for use during the NBL Procedures Development Sessions in December. Include checkout of the PORT Mockup for the December run.
6. Verify functionality of flotation for the Forward Bay Cover Mockup.
7. Consult with Det 3 in advance of the December procedures development session so they understand the capabilities of the various cranes or winches used during this procedures development session.
8. Consult with Det 3 in advance of the procedures development session to refine the agenda and help develop preliminary procedures, as needed.

CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

REQUIREMENTS/REFERENCES (cont.):

Rev A (Continued)

9. Provide NBL support for two rounds of Operational Concepts development and in water events. These evaluations are planned for the first week of December, 2012 and the last week of February, 2013. Each event includes 2 days of evaluation with the Orion Forward Bay Cover Mockup and 1 day of evaluation of the PORT Mockup in the Stable 1 orientation.
10. Participate in a Table Top evaluation the last week of January 2013, consisting of 3 days of support including the [redacted] (b) (4)
11. Provide NBL support for two rounds of wet and dry run Operational Training events. Round 1 is planned for late April 2013 and includes 2 days of training with the Orion Forward Bay Cover Mockup and 1 day of training of the PORT Mockup in the Stable 1 orientation. Round 2 is tentatively planned the May/June/July 2013 timeframe and includes the same activities as the April Training Event.
12. Prepare materials and conduct Safety Reviews and Test Readiness Reviews as required to accommodate changes that are out of scope with prior TRR's and to maintain having had a TRR within a year of the planned events per JPR1700.10.
13. Provide fabrication support for modifications to specialized equipment identified during evaluations following the December development run.
14. Build a desk top crew module cleat mockup to support Operational Training. The objective of this device is to train Navy personnel in a classroom setting.
15. Procure telescoping boat hooks for recovery team use in both the classroom and the pool (procure to support February Training).
16. Determine & procure a suitable supply of line for use during Crew Module Tending Operations and forward bay cover tending operations (procure to support February Training).
17. Procure 4 lifting devices (slings) for the Forward Bay Cover mockup (procure to support February Training).
18. Modify the Forward Bay Cover (FBC) Mockup to increase fidelity in the following areas identified following the December development run. These modifications are shown on the attachment and include:
a) Add 6 LAS Wells to the FBC
b) Add mockups of 3 Parachute Canisters, including 3 key hole cutouts
c) Add mockups of 3 Mortar Tubes
d) Add 2 cutouts for the Pitch Down Thrusters
e) Add 3 Parachute Attach Points
The mockup is to be analyzed for lifting with a single strap through the LAS Well between the 2 Pitch Down Thruster Cutouts. The side load capacity of the mockup Mortar Tubes, Parachute Canisters and attachments as designed will be analyzed and provided. The modifications will be complete in time to support a TRR and test run scheduled for the last week of February, 2013.

CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	Orion Forward Bay Cover (FBC) Mockup, Fidelity IIID	Each	1	Inspection		(b) (4)
2	Mockup Neutral Buoyancy to be adjustable from -20 lb to +20 lb in 10 lb increments	Job	1	Inspection		
3	Procured Items (as listed for Item 6) to support 8/7-9 Test	Job	1	Inspection		
4	Conduct in water parachute evaluation 8/7 -9	Job	1	Inspection		

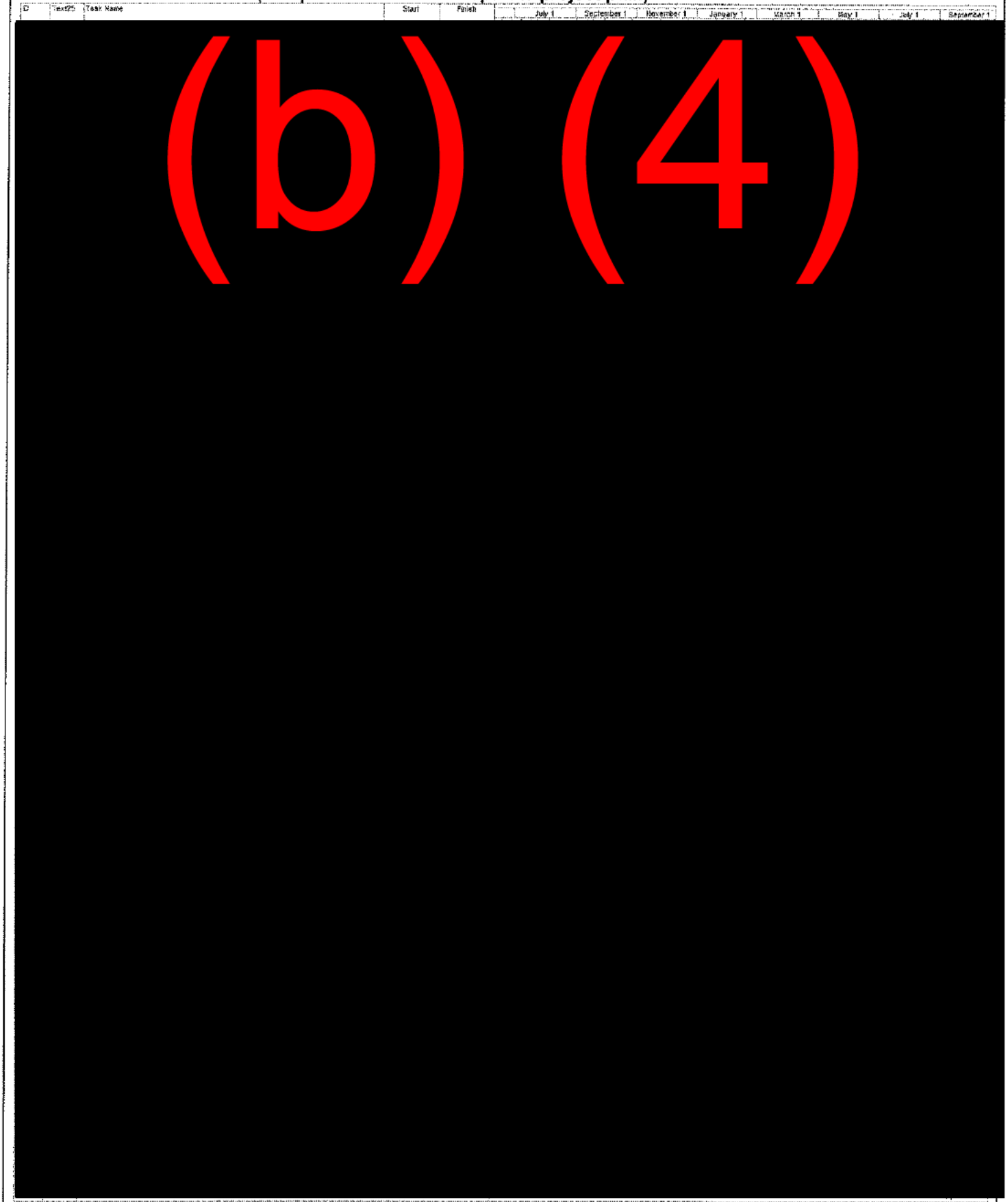
Rev A Acceptance

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
3	Mockups of the Octopus Prototypes, Fidelity IIID	Each	3	Inspection		(b) (4)
6	Mockup Neutral Buoyancy to be adjustable from -20 lb to +20 lb in 10 lb increments (post modification)	Job	1	Inspection		
9	Conduct In-Water Evaluation in December 2012	Job	1	Inspection		
9	Conduct In-Water Evaluation in December 2012	Job	1	Inspection		
10	Conduct Table Top Evaluation in January 2013	Job	1	Inspection		
11	Conduct In-Water Training in April 2013	Job	1	Inspection		
11	Conduct In-Water Training in May/June/July 2013	Job	1	Inspection		
12	Conduct TRR for December Evaluation	Job	1	Inspection		
12	Conduct TRR for February Evaluation	Job	1	Inspection		
12	Conduct TRR for April Evaluation	Job	1	Inspection		
14	Fabricate Desk Top Crew Module Cleat, Fidelity IIID	Each	1	Inspection		
15-18	Procured Items (as listed)	Job	1	Inspection		
19	Modified FBC Per Drawings	Each	1	Inspection		

CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

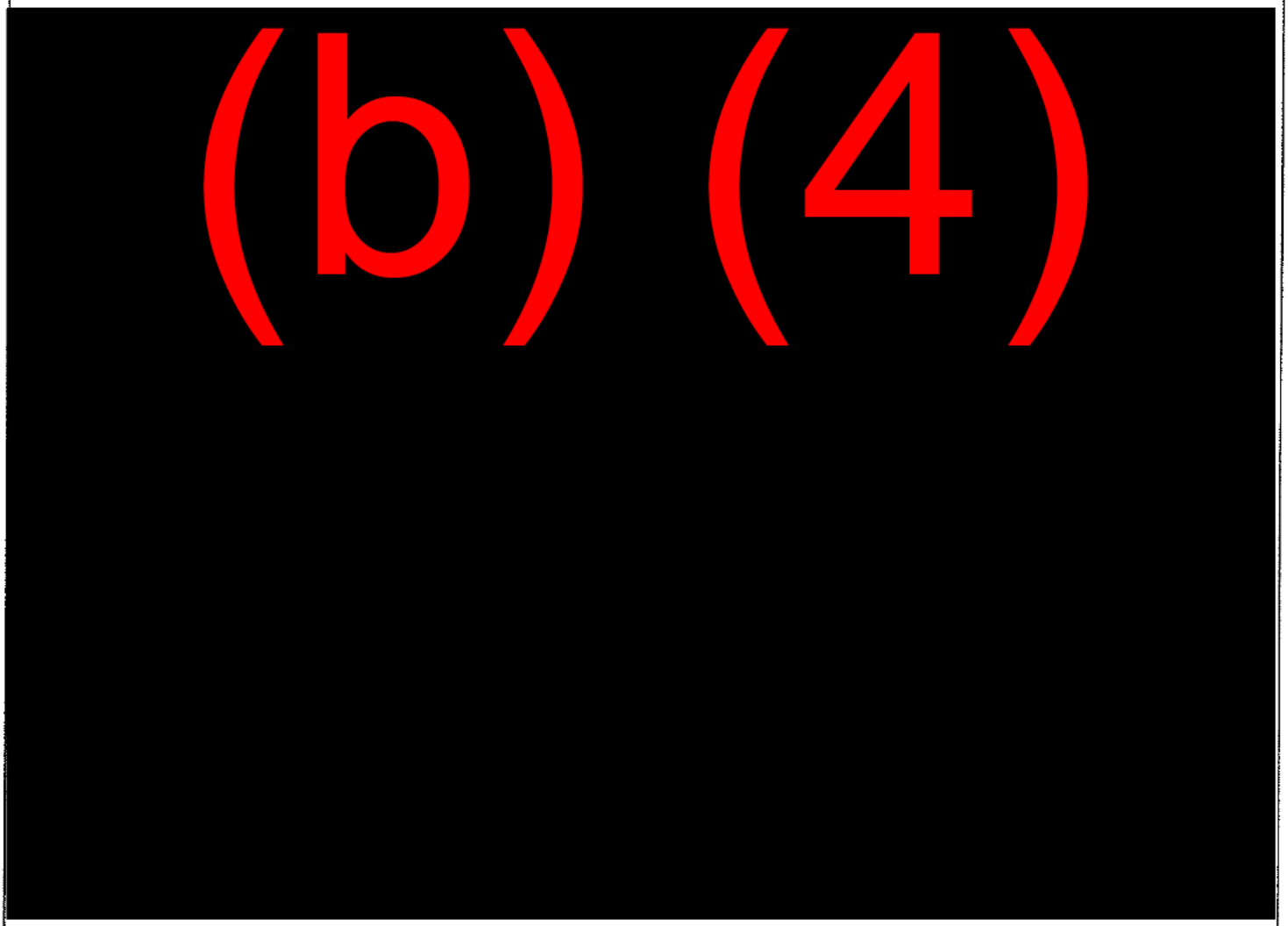
SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

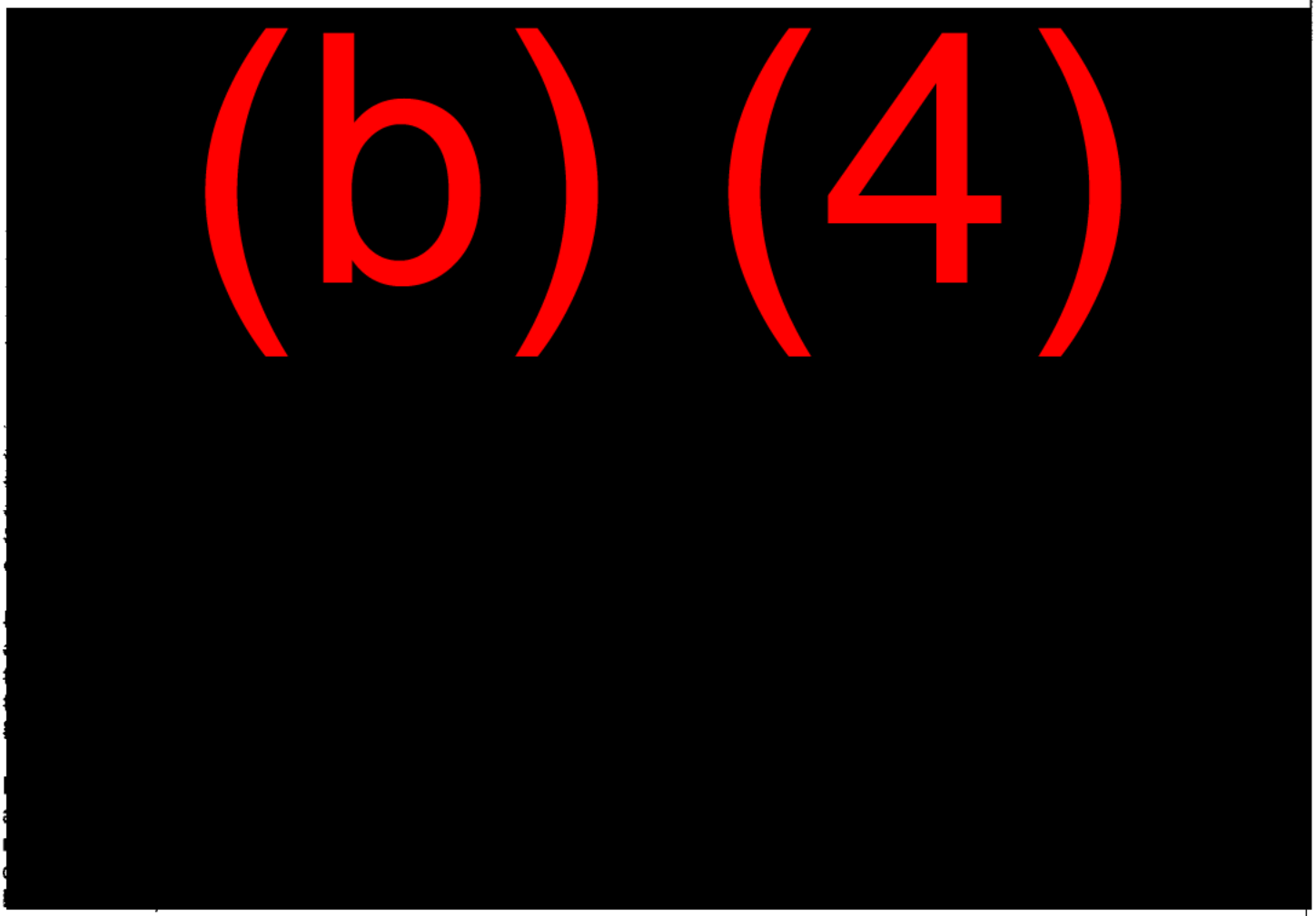
BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)



CR NO.: 2539 Rev A	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Rev A Total Cost (b) (4)

FY12: Total Cost

	Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)				

FY13: (b) (4)

	Design	Engineering and Program Support	Management	Technicians	Material
Baseline	(b) (4)				
Rev A					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 949B	09/04/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 949B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 949B

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO949B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: ~~Cynthia Madison~~
JENNIFER L. KRAUSE
NASA CONTRACTING OFFICER
Jennifer L Krause 9/4/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 949B is to: Support EFT-1 Swimmer Training The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $35,492. Work is to be completed by September 25, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	35,492.00	35,492.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 35,492.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2539 Rev B	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

1. REQUESTOR: Tom Walker	2. PHONE: 281.483.6737	3. E-MAIL: Thomas.Walker-1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV
☐ OTHER ☐ FUND CODE: 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program and specifically Exploration Flight Test 1 (EFT-1) Landing and Recovery efforts. This CR will fund labor for an [redacted] and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support in the form of a Forward Bay Cover mockup and other ancillary equipment items associated with Navy Recovery Team efforts.

Rev A: This revision adds additional labor, training runs and hardware modification as approved in SCIFs-01, -02 and -03 shown below and extends the duration of the CR to 9-25-13.

Rev B: This revision incorporates SCIF-04 [redacted] and SCIF-05 [redacted] that cover [redacted]

7. RATIONALE:
The NBL is to be used in the training evolution of Para Rescue personnel from the Air Force and Navy swimmers supporting the MPCV Program. Preparatory in water evaluations are planned for August 7-9, 2012 and swimmer training is planned for January 2013 and beyond.

CR NO.: 2539 Rev B	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Coordinate with the Air Force Detachment 3 and KSC Ground Ops personnel to support the Operational Concepts development and in water evaluations on 8/7-9 for EFT-1 landing and recovery as it relates to training in the NBL.
2. Fabricate an NBL mockup of the Orion Forward Bay Cover (FBC); Fidelity III.D. based on the presentation TPS_CDR_FBC_Design_Rev_D[1][1].pptx located in this CR's Requirements folder. Flight dimensions and models to be supplied as needed. The design concept shall be a rolled stainless steel cone, with deck, that has spot welded studs on the inside surfaces that are used to sandwich floatation foam between the outer Stainless Steel sheet and an inner Kydex plastic or Stainless Steel sheet that incorporates the ability to quickly (<20 min) adjust buoyancy between being negative 20 pounds to positive 20 pounds in 10 pound increments with a total dry weight of 772+/-20 pounds. This construction method shall be representative of the thickness of the FBC. A Safety Review and Preliminary Design Review are required.
4. Prepare materials and conduct Safety Reviews and Test Readiness Reviews to allow NBL training with the FBC, Navy supplied Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
5. Conduct end-to-end evaluation testing in the NBL on 8/7-9, 2012 using Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
6. Procure items on the following ancillary equipment:

Item	Quantity	Source	Need Date
Parachute flotation (anchor ball)	assortment	(b) (4)	8/7/2012 (Parachute procedure development)
Trolling motor batteries (b) (4)	3		8/7/2012 (Parachute procedure development)
Battery charger (b) (4)	1		8/7/2012 (Parachute procedure development)
Zodiac patch/repair kit	2		8/7/2012 (Parachute procedure development)
Carabineer	12		8/7/2012 (Parachute procedure development)

Safety Review Held – 7/5/12 for Mockup, TRR required. Safety Review Held – 7/12/12 for Ops, TRR required.

Rev A: A safety Review is required to support the FBC mods. A TRR is required to support the December run, and a delta TRR will be held to support the modified FBC and the February run.

9. NEED DATE: (support date in block 7 rationale) 9-28-12	**10. CR SUBMISSION DATE:** 6-6-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: E Turcotte
Date: 6/21/12

12. NASA POC: John Haas	**13. PHONE:** 281-792-5925	**14. E-MAIL:** John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$60,400 (FY12-$43,800; FY13-$16,600) $188,300 (FY12 - $43,800; FY13 - $144,500)~~ **Rev A** $223,800 (FY12-$43,800; FY13-$180,000) **Rev B**	**20. NEGOTIATED DELIVERY DATE:** ~~11/12/2012~~ **Rev A:** 9/25/13

AUTHORIZATION TO PROCEED

CR NO.: 2539 Rev B	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Rev A incorporates SCIF-01, SCIF-02 and SCIF-03 to complete detail planning and support 1 Training Event in each of the following months: December 2012, February 2013, April 2013, and a Training Event in the May/June/July 2013 timeframe. In addition, a Table Top evaluation will be held the last week of January, 2013. All the work identified for Rev A will be performed in GFY 13.

The following tasks will be performed to support this additional effort.

1. Generate an estimate including review of requirements, generate a plan, obtain material quotes, and estimate the hours and cost for executing this revision and 1 additional change.
2. Provide [redacted] to coordinate with the Air Force Detachment 3 and KSC Ground Ops personnel in support of the Operational Concepts development and training for EFT-1 landing and recovery as it relates to training in the NBL. This support to include weekly telecom support from November, 2012 through the end of September, 2013.
3. Produce mockups of the Octopus prototypes (sewing lab and carabineers). Following the December evaluations, update the prototypes to implement identified improvements.
4. Verify state and functionality of 18" and 24" floatation collars and GFE sea anchors prior to the December Training Run.
5. Identify and make modifications required on the stabilization collar provided by the Prototype Lab such that the collar is suitable for use during the NBL Procedures Development Sessions in December. Include checkout of the PORT Mockup for the December run.
6. Verify functionality of flotation for the Forward Bay Cover Mockup.
7. Consult with Det 3 in advance of the December procedures development session so they understand the capabilities of the various cranes or winches used during this procedures development session.
8. Consult with Det 3 in advance of the procedures development session to refine the agenda and help develop preliminary procedures, as needed.

CR TITLE: Support EFT-1 Swimmer Training

REQUIREMENTS/REFERENCES (cont.):

Rev A (Continued)

9. Provide NBL support for two rounds of Operational Concepts development and in water events. These evaluations are planned for the first week of December, 2012 and the last week of February, 2013. Each event includes 2 days of evaluation with the Orion Forward Bay Cover Mockup and 1 day of evaluation of the PORT Mockup in the Stable 1 orientation.
10. Participate in a Table Top evaluation the last week of January 2013, consisting of 3 days of support including the [redacted] (b) (4)
11. Provide NBL support for two rounds of wet and dry run Operational Training events. Round 1 is planned for late April 2013 and includes 2 days of training with the Orion Forward Bay Cover Mockup and 1 day of training of the PORT Mockup in the Stable 1 orientation. Round 2 is tentatively planned the May/June/July 2013 timeframe and includes the same activities as the April Training Event.
12. Prepare materials and conduct Safety Reviews and Test Readiness Reviews as required to accommodate changes that are out of scope with prior TRR's and to maintain having had a TRR within a year of the planned events per JPR1700.10.
13. Provide fabrication support for modifications to specialized equipment identified during evaluations following the December development run.
14. Build a desk top crew module cleat mockup to support Operational Training. The objective of this device is to train Navy personnel in a classroom setting.
15. Procure telescoping boat hooks for recovery team use in both the classroom and the pool (procure to support February Training).
16. Determine & procure a suitable supply of line for use during Crew Module Tending Operations and forward bay cover tending operations (procure to support February Training).
17. Procure 4 lifting devices (slings) for the Forward Bay Cover mockup (procure to support February Training).
19. Modify the Forward Bay Cover (FBC) Mockup to increase fidelity in the following areas identified following the December development run. These modifications are shown on the attachment and include:
a) Add 6 LAS Wells to the FBC
b) Add mockups of 3 Parachute Canisters, including 3 key hole cutouts
c) Add mockups of 3 Mortar Tubes
d) Add 2 cutouts for the Pitch Down Thrusters
e) Add 3 Parachute Attach Points
The mockup is to be analyzed for lifting with a single strap through the LAS Well between the 2 Pitch Down Thruster Cutouts. The side load capacity of the mockup Mortar Tubes, Parachute Canisters and attachments as designed will be analyzed and provided. The modifications will be complete in time to support a TRR and test run scheduled for the last week of February, 2013.

Rev B:
20. NSOC SME shall support Stationary Recovery Test in Norfolk VA.
21. NSOC Shall estimate the CR for FY14 EFT-1.
22. NSOC to purchase the following items:
- Wireless Gateway w/USB Port
- Standard License Key for LSI Dashboard
- 5K Load Cell w/ Separate Ampli (50" Cable)
- 5K Load Cell w/ Separate Ampli (50" Cable)
- Line Riding Tensiometer - 1/2" Rope - Small Frame
- Line Riding Tensiometer Transmitter (Reading Load ONLY)
- Garmin Edge 500
- Campbell 9/32 masterlink

CR NO.: 2539 Rev B	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	Orion Forward Bay Cover (FBC) Mockup, Fidelity IIID	Each	1	Inspection		(b) (4)
2	Mockup Neutral Buoyancy to be adjustable from -20 lb to +20 lb in 10 lb increments	Job	1	Inspection		
3	Procured Items (as listed for Item 6) to support 8/7-9 Test	Job	1	Inspection		
4	Conduct in water parachute evaluation 8/7 -9	Job	1	Inspection		

Rev A Acceptance

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
3	Mockups of the Octopus Prototypes, Fidelity IIID	Each	3	Inspection		(b) (4)
6	Mockup Neutral Buoyancy to be adjustable from -20 lb to +20 lb in 10 lb increments (post modification)	Job	1	Inspection		
9	Conduct In-Water Evaluation in December 2012	Job	1	Inspection		
9	Conduct In-Water Evaluation in December 2012	Job	1	Inspection		
10	Conduct Table Top Evaluation in January 2013	Job	1	Inspection		
11	Conduct In-Water Training in April 2013	Job	1	Inspection		
11	Conduct In-Water Training in May/June/July 2013	Job	1	Inspection		
12	Conduct TRR for December Evaluation	Job	1	Inspection		
12	Conduct TRR for February Evaluation	Job	1	Inspection		
12	Conduct TRR for April Evaluation	Job	1	Inspection		
14	Fabricate Desk Top Crew Module Cleat, Fidelity IIID	Each	1	Inspection		
15-18	Procured Items (as listed)	Job	1	Inspection		
19	Modified FBC Per Drawings	Each	1	Inspection		

Rev B Acceptance

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
20	NSOC SME shall support Stationary Recovery Test	Job	1	Inspection		(b) (4)
21	NSOC Shall estimate the CR for FY14	1	1	Inspection		
22	Procured Items to support Stationary Recovery Test	Job	1	Inspection		

CR NO.: 2539 Rev B	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

Con't on page 10

CR NO.: 2539 Rev B	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2539 Rev B	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

FY12: Total Cost (b) (4)

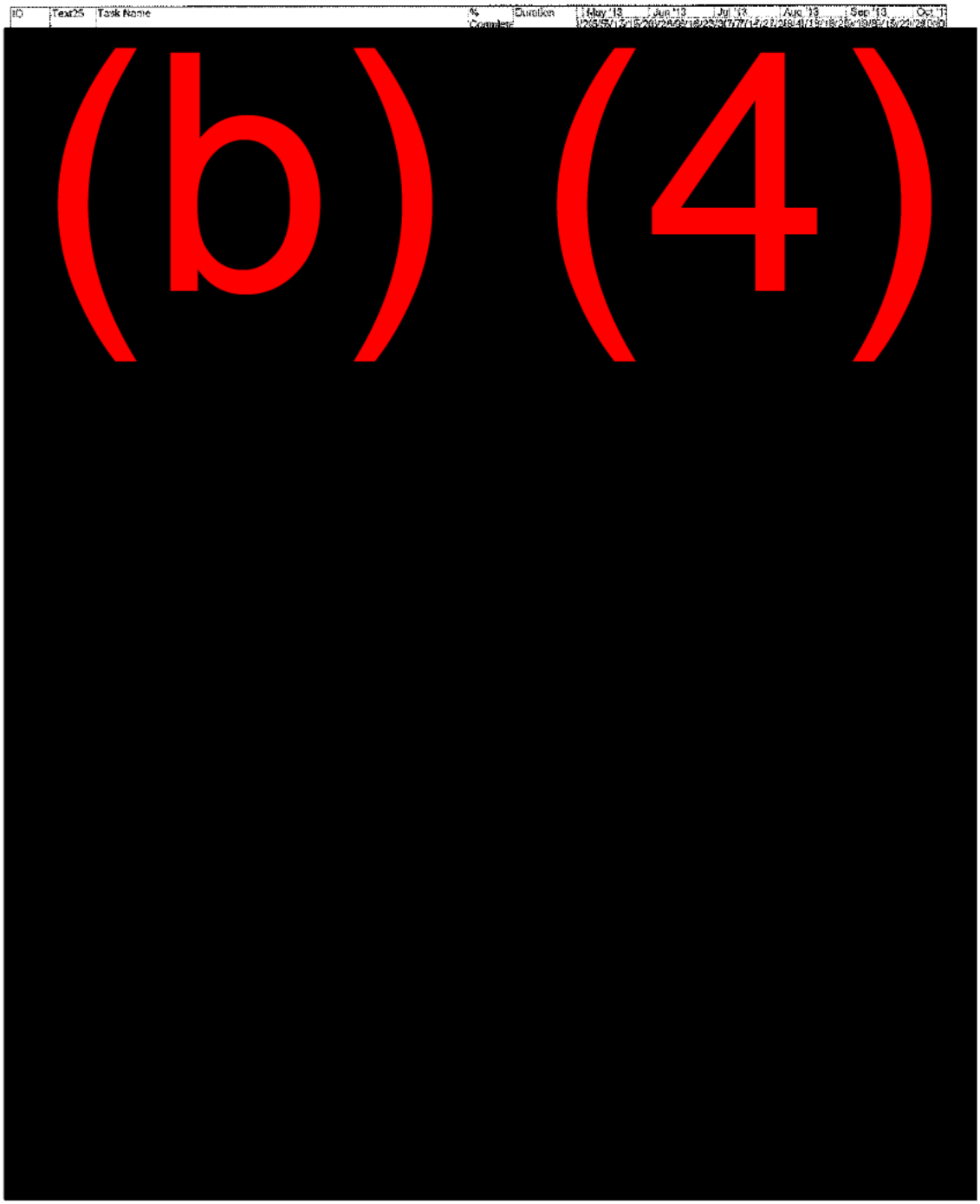
	Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)				

FY13: (b) (4)

	Design	Engineering and Program Support	Management	Technicians	Material
Baseline	(b) (4)				
Rev A					
Rev B					

(b) (4)

Schedule Con't: Rev B:



National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 949C	09/24/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 949C

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 25, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 949C

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO949c

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Jennifer Krause — Contracting Officer — 9/25/13 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 949C is to: Support EFT-1 Swimmer Training The estimated cost is (b) (4) The estimated award fee is (b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $4,970. Work is to be completed by September 25, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	4,970.00	4,970.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 4,970.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

1. REQUESTOR: Tom Walker	2. PHONE: 281.483.6737	3. E-MAIL: Thomas.Walker-1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV
☐ OTHER ☐ FUND CODE: 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program and specifically Exploration Flight Test 1 (EFT-1) Landing and Recovery efforts. This CR will fund labor for (b) (4) and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support in the form of a Forward Bay Cover mockup and other ancillary equipment items associated with Navy Recovery Team efforts.

Rev A: This revision adds additional labor, training runs and hardware modification as approved in SCIFs-01, -02 and -03 shown below and extends the duration of the CR to 9-25-13.

Rev B: This revision incorporates SCIF-04 (b) (4) and SCIF-05 (b) (4) that covers (b) (4)

Rev C: This revision incorporates SCIF-06 (b) (4) that covers CMUS testing

7. RATIONALE:
The NBL is to be used in the training evolution of Para Rescue personnel from the Air Force and Navy swimmers supporting the MPCV Program. Preparatory in water evaluations are planned for August 7-9, 2012 and swimmer training is planned for January 2013 and beyond.

CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Coordinate with the Air Force Detachment 3 and KSC Ground Ops personnel to support the Operational Concepts development and in water evaluations on 8/7-9 for EFT-1 landing and recovery as it relates to training in the NBL.
2. Fabricate an NBL mockup of the Orion Forward Bay Cover (FBC); Fidelity III.D. based on the presentation TPS_CDR_FBC_Design_Rev_D[1][1].pptx located in this CR's Requirements folder. Flight dimensions and models to be supplied as needed. The design concept shall be a rolled stainless steel cone, with deck, that has spot welded studs on the inside surfaces that are used to sandwich floatation foam between the outer Stainless Steel sheet and an inner Kydex plastic or Stainless Steel sheet that incorporates the ability to quickly (<20 min) adjust buoyancy between being negative 20 pounds to positive 20 pounds in 10 pound increments with a total dry weight of 772+/-20 pounds. This construction method shall be representative of the thickness of the FBC. A Safety Review and Preliminary Design Review are required.
4. Prepare materials and conduct Safety Reviews and Test Readiness Reviews to allow NBL training with the FBC, Navy supplied Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
5. Conduct end-to-end evaluation testing in the NBL on 8/7-9, 2012 using Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
6. Procure items on the following ancillary equipment:

Item	Quantity	Source	Need Date
Parachute flotation (anchor ball)	assortment	(b) (4)	8/7/2012 (Parachute procedure development)
Trolling motor batteries (b) (4)	3		8/7/2012 (Parachute procedure development)
Battery charger (b) (4)	1		8/7/2012 (Parachute procedure development)
Zodiac patch/repair kit	2		8/7/2012 (Parachute procedure development)
Carabineer	12		8/7/2012 (Parachute procedure development)

Safety Review Held – 7/5/12 for Mockup, TRR required. Safety Review Held – 7/12/12 for Ops, TRR required.

Rev A: A safety Review is required to support the FBC mods. A TRR is required to support the December run, and a delta TRR will be held to support the modified FBC and the February run.

Rev C: A Delta Test Readiness Review was held on 9/4/13.

9. NEED DATE: (support date in block 7 rationale) 9-28-12	**10. CR SUBMISSION DATE:** 6-6-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: E Turcotte
Date: 6/21/12

12. NASA POC: John Haas	**13. PHONE:** 281-792-5925	**14. E-MAIL:** John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

19. COST IMPACT: ~~$60,400 (FY12-$43,800; FY13-$16,600)~~ ~~$188,300 (FY12 - $43,800; FY13 - $144,500) Rev A~~ ~~$223,800 (FY12-$43,800; FY13-$180,000) Rev B~~ $228,800 (FY12-$43,800; FY13-$185,000) **Rev C**	20. NEGOTIATED DELIVERY DATE: ~~11/12/2012~~ **Rev A:** 9/25/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Rev A incorporates SCIF-01, SCIF-02 and SCIF-03 to complete detail planning and support 1 Training Event in each of the following months: December 2012, February 2013, April 2013, and a Training Event in the May/June/July 2013 timeframe. In addition, a Table Top evaluation will be held the last week of January, 2013. All the work identified for Rev A will be performed in GFY 13.

The following tasks will be performed to support this additional effort.

1. Generate an estimate including review of requirements, generate a plan, obtain material quotes, and estimate the hours and cost for executing this revision and 1 additional change.
2. Provide (b) (4) to coordinate with the Air Force Detachment 3 and KSC Ground Ops personnel in support of the Operational Concepts development and training for EFT-1 landing and recovery as it relates to training in the NBL. This support to include weekly telecom support from November, 2012 through the end of September, 2013.
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4. Verify state and functionality of 18" and 24" floatation collars and GFE sea anchors prior to the December Training Run.
5. Identify and make modifications required on the stabilization collar provided by the Prototype Lab such that the collar is suitable for use during the NBL Procedures Development Sessions in December. Include checkout of the PORT Mockup for the December run.
6. Verify functionality of flotation for the Forward Bay Cover Mockup.
7. Consult with Det 3 in advance of the December procedures development session so they understand the capabilities of the various cranes or winches used during this procedures development session.
8. Consult with Det 3 in advance of the procedures development session to refine the agenda and help develop preliminary procedures, as needed.
9. Provide NBL support for two rounds of Operational Concepts development and in water events. These evaluations are planned for the first week of December, 2012 and the last week of February, 2013. Each event includes 2 days of evaluation with the Orion Forward Bay Cover Mockup and 1 day of evaluation of the PORT Mockup in the Stable 1 orientation.
10. Participate in a Table Top evaluation the last week of January 2013, consisting of 3 days of support including the (b) (4)
11. Provide NBL support for two rounds of wet and dry run Operational Training events. Round 1 is planned for late April 2013 and includes 2 days of training with the Orion Forward Bay Cover Mockup and 1 day of training of the PORT Mockup in the Stable 1 orientation. Round 2 is tentatively planned the May/June/July 2013 timeframe and includes the same activities as the April Training Event.

CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

REQUIREMENTS/REFERENCES (cont.):

Rev A (Continued)

12. Prepare materials and conduct Safety Reviews and Test Readiness Reviews as required to accommodate changes that are out of scope with prior TRR's and to maintain having had a TRR within a year of the planned events per JPR1700.10.
13. Provide fabrication support for modifications to specialized equipment identified during evaluations following the December development run.
14. Build a desk top crew module cleat mockup to support Operational Training. The objective of this device is to train Navy personnel in a classroom setting.
15. Procure telescoping boat hooks for recovery team use in both the classroom and the pool (procure to support February Training).
16. Determine & procure a suitable supply of line for use during Crew Module Tending Operations and forward bay cover tending operations (procure to support February Training).
17. Procure 4 lifting devices (slings) for the Forward Bay Cover mockup (procure to support February Training).
19. Modify the Forward Bay Cover (FBC) Mockup to increase fidelity in the following areas identified following the December development run. These modifications are shown on the attachment and include:
a) Add 6 LAS Wells to the FBC
b) Add mockups of 3 Parachute Canisters, including 3 key hole cutouts
c) Add mockups of 3 Mortar Tubes
d) Add 2 cutouts for the Pitch Down Thrusters
e) Add 3 Parachute Attach Points
The mockup is to be analyzed for lifting with a single strap through the LAS Well between the 2 Pitch Down Thruster Cutouts. The side load capacity of the mockup Mortar Tubes, Parachute Canisters and attachments as designed will be analyzed and provided. The modifications will be complete in time to support a TRR and test run scheduled for the last week of February, 2013.

Rev B:
20. NSOC SME shall support Stationary Recovery Test in Norfolk VA.
21. NSOC Shall estimate the CR for FY14 EFT-1.
22. NSOC to purchase the following items:
- Wireless Gateway w/USB Port
- Standard License Key for LSI Dashboard
- 5K Load Cell w/ Separate Ampli (50" Cable)
- 5K Load Cell w/ Separate Ampli (50" Cable)
- Line Riding Tensiometer - 1/2" Rope - Small Frame
- Line Riding Tensiometer Transmitter (Reading Load ONLY)
- Garmin Edge 500
- Campbell 9/32 masterlink

Rev C:
23. The Hydrostatic testing of the CMUS Uprighting Bag Assembly (UBA) to failure. For the test the pressurizing fluid shall be water. Associated gages, valves, lines and regulated pressure source are connected to the test article conditioned as specified, and the test area safety secured appropriately. The internal pressure of the test article is increased hydrostatically to the Design Burst Pressure (12 psi for EFT-1 mission; 24 psi for man rated flight). Request for video capture of the hydrostatic test.

CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	Orion Forward Bay Cover (FBC) Mockup, Fidelity IIID	Each	1	Inspection		(b) (4)
2	Mockup Neutral Buoyancy to be adjustable from -20 lb to +20 lb in 10 lb increments	Job	1	Inspection		
3	Procured Items (as listed for Item 6) to support 8/7-9 Test	Job	1	Inspection		
4	Conduct in water parachute evaluation 8/7 -9	Job	1	Inspection		

Rev A Acceptance

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
3	Mockups of the Octopus Prototypes, Fidelity IIID	Each	3	Inspection		(b) (4)
6	Mockup Neutral Buoyancy to be adjustable from -20 lb to +20 lb in 10 lb increments (post modification)	Job	1	Inspection		
9	Conduct In-Water Evaluation in December 2012	Job	1	Inspection		
9	Conduct In-Water Evaluation in December 2012	Job	1	Inspection		
10	Conduct Table Top Evaluation in January 2013	Job	1	Inspection		
11	Conduct In-Water Training in April 2013	Job	1	Inspection		
11	Conduct In-Water Training in May/June/July 2013	Job	1	Inspection		
12	Conduct TRR for December Evaluation	Job	1	Inspection		
12	Conduct TRR for February Evaluation	Job	1	Inspection		
12	Conduct TRR for April Evaluation	Job	1	Inspection		
14	Fabricate Desk Top Crew Module Cleat, Fidelity IIID	Each	1	Inspection		
15-18	Procured Items (as listed)	Job	1	Inspection		
19	Modified FBC Per Drawings	Each	1	Inspection		

Rev B Acceptance

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
20	NSOC SME shall support Stationary Recovery Test	Job	1	Inspection		(b) (4)
21	NSOC Shall estimate the CR for FY14	1	1	Inspection		
22	Procured Items to support Stationary Recovery Test	Job	1	Inspection		

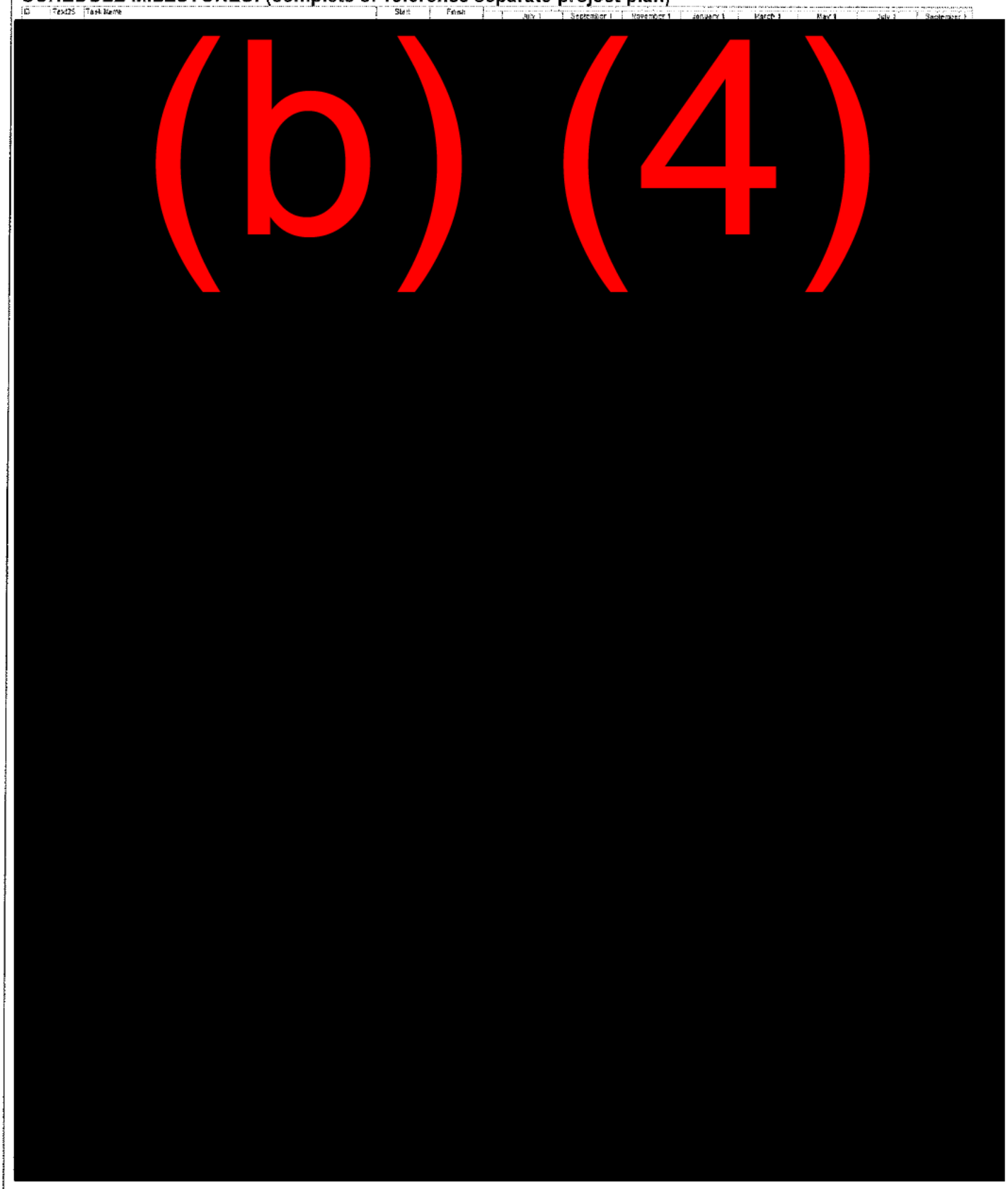
Rev C Acceptance

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
23	Perform CMUS Hydrostatic Test	Job	1	Inspection		(b) (4)

CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

SCHEDULE MILESTONES: (complete or reference separate project plan)

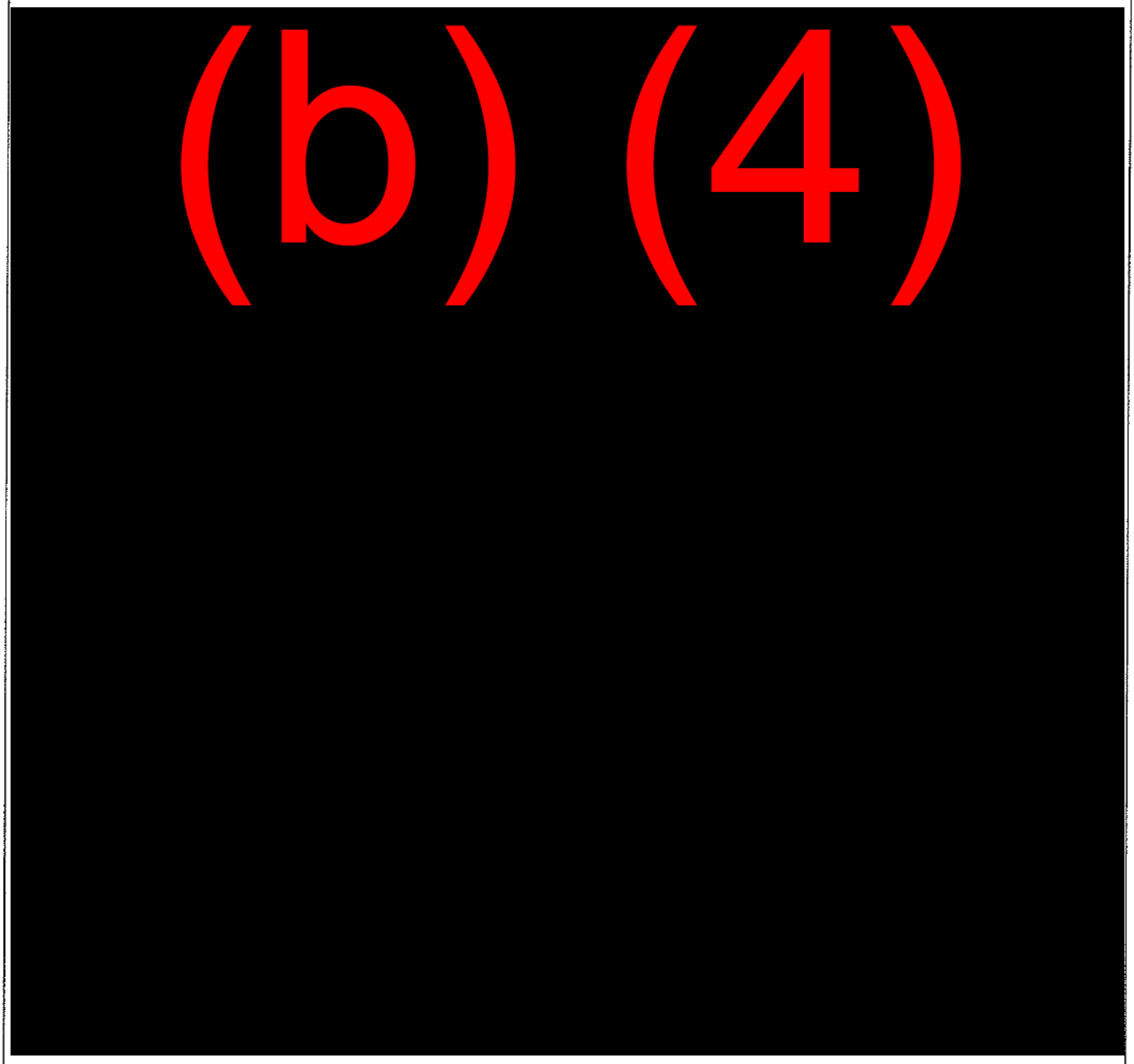


Con't on page 10 & 11

CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



CR NO.: 2539 Rev C	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

FY12: Total Cost (b) (4)

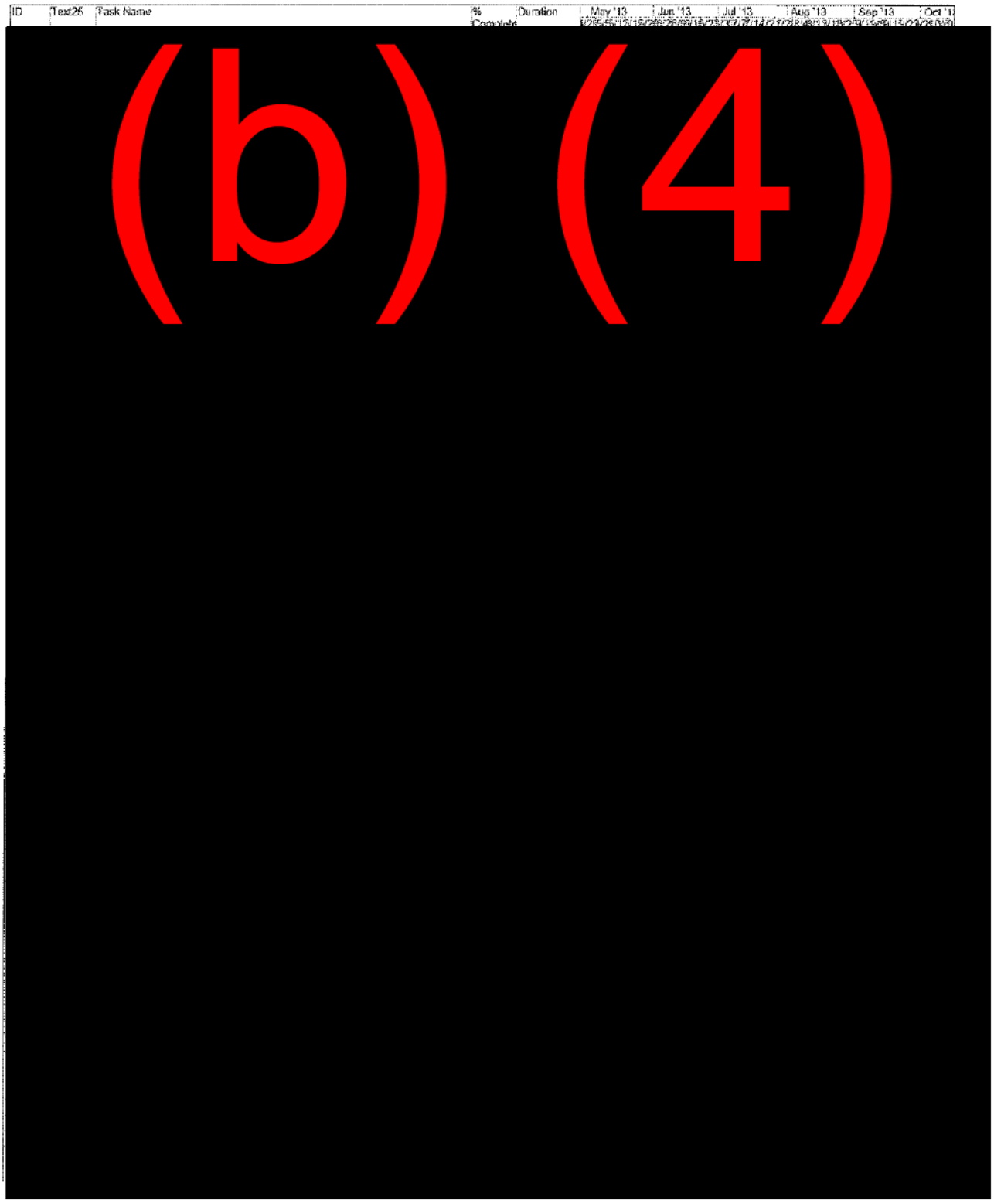
	Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)				

FY13 (b) (4)

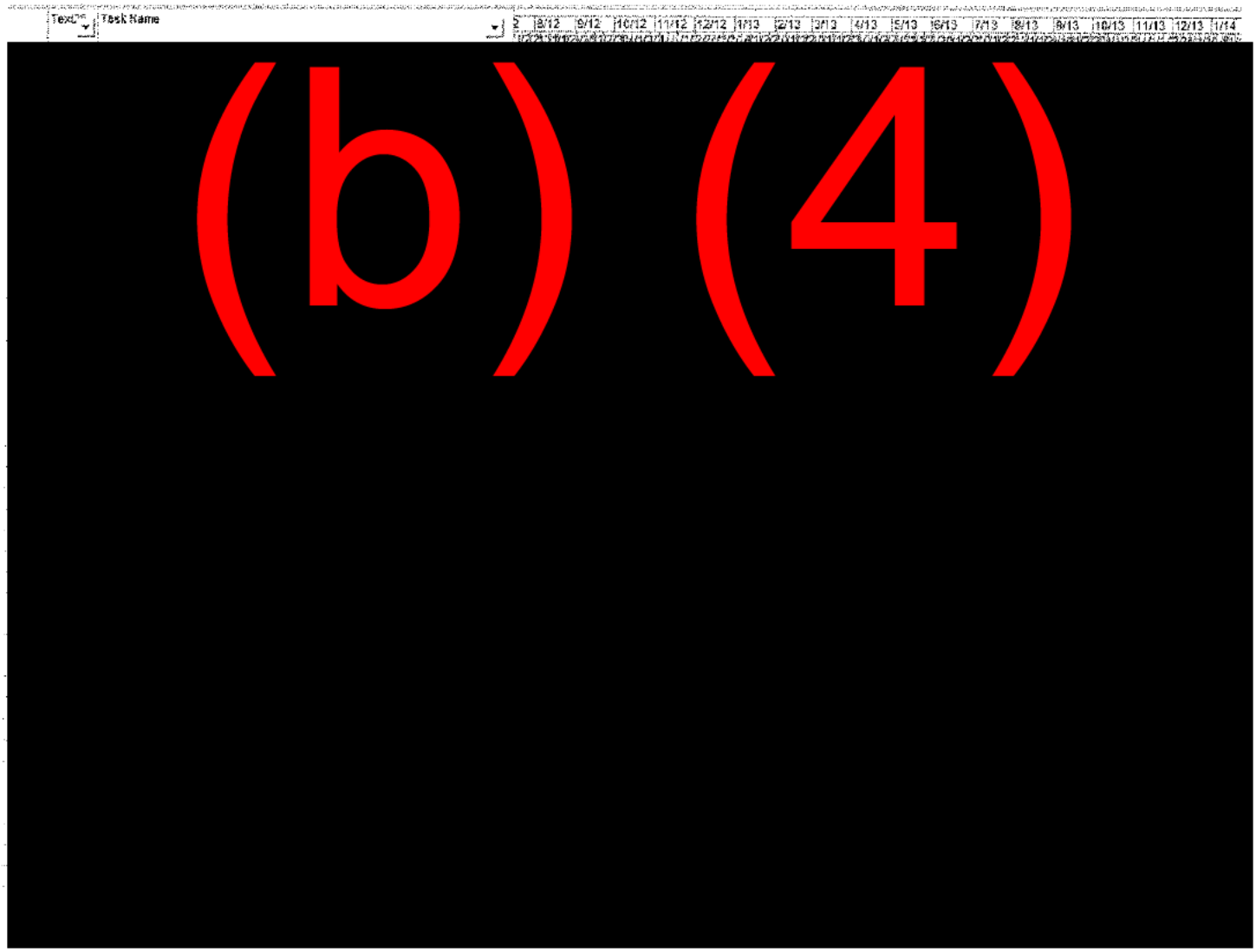
	Design	Engineering and Program Support	Management	Technicians	Material
Baseline	(b) (4)				
Rev A					
Rev B					
Rev C					

(b) (4)

Schedule Con't: Rev B:



Schedule Con't: **Rev C:**



National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 949	07/26/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 949

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 12, 2012
F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 949

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO949

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 7/26/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 949 is to: Support EFT-1 Swimmer Training The estimated cost is $(b) (4) The estimated award fee is $(b) (4) The estimated incentive fee is $(b) (4) The total value of this Delivery Order is $60,352.54 Work is to be completed by November 12, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	60,352.54	60,352.54	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 60,352.54

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: CR-2539	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) 1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV
☐ OTHER ☐ FUND CODE:
2.6.3(699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program and specifically Exploration Flight Test 1 (EFT-1) Landing and Recovery efforts. This CR will fund labor for an NBL Flight Lead and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support in the form of a Forward Bay Cover mockup and other ancillary equipment items associated with Navy Recovery Team efforts.

7. RATIONALE:
The NBL is to be used in the training evolution of Para Rescue personnel from the Air Force and Navy swimmers supporting the MPCV Program. Preparatory in water evaluations are planned for August 7-9, 2012 and swimmer training is planned for January 2013 and beyond.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
1. Coordinate with the Air Force Detachment 3 and KSC Ground Ops personnel to support the Operational Concepts development and in water evaluations on 8/7-9 for EFT-1 landing and recovery as it relates to training in the NBL.
2. Fabricate an NBL mockup of the Orion Forward Bay Cover (FBC); Fidelity III.D. based on the presentation TPS_CDR_FBC_Design_Rev_D[1][1].pptx located in this CR's Requirements folder. Flight dimensions and models to be supplied as needed. The design concept shall be a rolled stainless steel cone, with deck, that has spot welded studs on the inside surfaces that are used to sandwich floatation foam between the outer Stainless Steel sheet and an inner Kydex plastic or Stainless Steel sheet that incorporates the ability to quickly (<20 min) adjust buoyancy between being negative 20 pounds to positive 20 pounds in 10 pound increments with a total dry weight of 772+/-20 pounds. This construction method shall be representative of the thickness of the FBC. A Safety Review and Preliminary Design Review are required.
4. Prepare materials and conduct Safety Reviews and Test Readiness Reviews to allow NBL training with the FBC, Navy supplied Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
5. Conduct end-to-end evaluation testing in the NBL on 8/7-9, 2012 using Zodiac boats, EFT-1 Capsule Parachutes and ancillary equipment.
6. Procure items on the following ancillary equipment:

Item	Quantity	Source	Need Date
Parachute flotation (anchor ball)	assortment	(b) (4)	8/7/2012 (Parachute procedure development)
Trolling motor batteries (b) (4)	3		8/7/2012 (Parachute procedure development)
Battery charger (b) (4)	1		8/7/2012 (Parachute procedure development)
Zodiac patch/repair kit	2		8/7/2012 (Parachute procedure development)
Carabineer	12		8/7/2012 (Parachute procedure development)

Safety Review Held – 7/5/12 for Mockup, TRR required.

Safety Review Held – 7/12/12 for Ops, TRR required.

CR NO.: CR-2539	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

9. NEED DATE: (support date in block 7 rationale) 9-28-12	**10. CR SUBMISSION DATE:** 6-6-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: E Turcotte
Date: 6/21/12

12. NASA POC: John Haas	**13. PHONE:** 281-792-5925	**14. E-MAIL:** John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $60,400 (FY12-$43,800; FY13-$16,600)	**20. NEGOTIATED DELIVERY DATE:** 11/12/2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

CR NO.: CR-2539	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1	Orion Forward Bay Cover (FBC) Mockup, Fidelity IIID	Each	1	Inspection		(b) (4)
2	Mockup Neutral Buoyancy to be adjustable from -20 lb to +20 lb in 10 lb increments	Job	1	Inspection		
3	Procured Items (as listed for Item 6) to support 8/7-9 Test	Job	1	Inspection		
4	Conduct in water parachute evaluation 8/7 -9	Job	1	Inspection		

CR NO.: CR-2539	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Text25	Task Name	% complet	Duration	Aug '12	Sep '12	Oct '12	Nov '12

(b) (4)

CR NO.: CR-2539	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: CR-2539	DX CHANGE REQUEST

CR TITLE: Support EFT-1 Swimmer Training

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY12: Total Cost (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

FY13: Total Cost (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 950	07/26/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 950

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 950

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO950

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 7/26/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 950 is to: Develop Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup Development The estimated cost is $(b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $71,065.52 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	71,065.52	71,065.52	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 71,065.52

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2545	DX CHANGE REQUEST

CR TITLE: Develop Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup Development Requirements Document (MDRD) and Estimate

1. REQUESTOR: EA32/Trent Martin	2. PHONE: 33296	3. E-MAIL: trent.d.martin@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☐ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.3 (EC)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Support development of an MDRD for a hi-fi AMS mockup and subsequent implementation CR. Develop the stated documentation with the assistance of EA32/Trent Martin and EA32/ (b) (4) and lead the development of the documents through final release. The MDRD shall reflect a validated design concept sufficient to perform an early materials order. Use the AMS mockup concept to determine any structural load cases which feed into the mockup design and estimations.

7. RATIONALE:

MDRD and estimate required to fabricate new hi-fi replacement AMS mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Deliver an AMS MDRD per JSC-28528
2. Develop requirements matrix with DRD content and initial acceptance criteria
3. Develop materials purchase list based on AMS design concept and procure early materials this FY
4. Develop full estimate for hi-fi AMS mockup development and populate a CR form through block 20.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
September 15, 2012	July 2, 2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J Haas Date: 7/16/12

12. NASA POC:	13. PHONE:	14. E-MAIL:
DX/Angela Prince	41086	angela.r.prince@nasa.gov
15. IMPLEMENTING CONTRACTOR	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: (b) (4)	(b) (4)	(b) (4) nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$71,100.	September 28, 2012

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2545	DX CHANGE REQUEST

CR TITLE: Develop Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup Development Requirements Document (MDRD) and Estimate

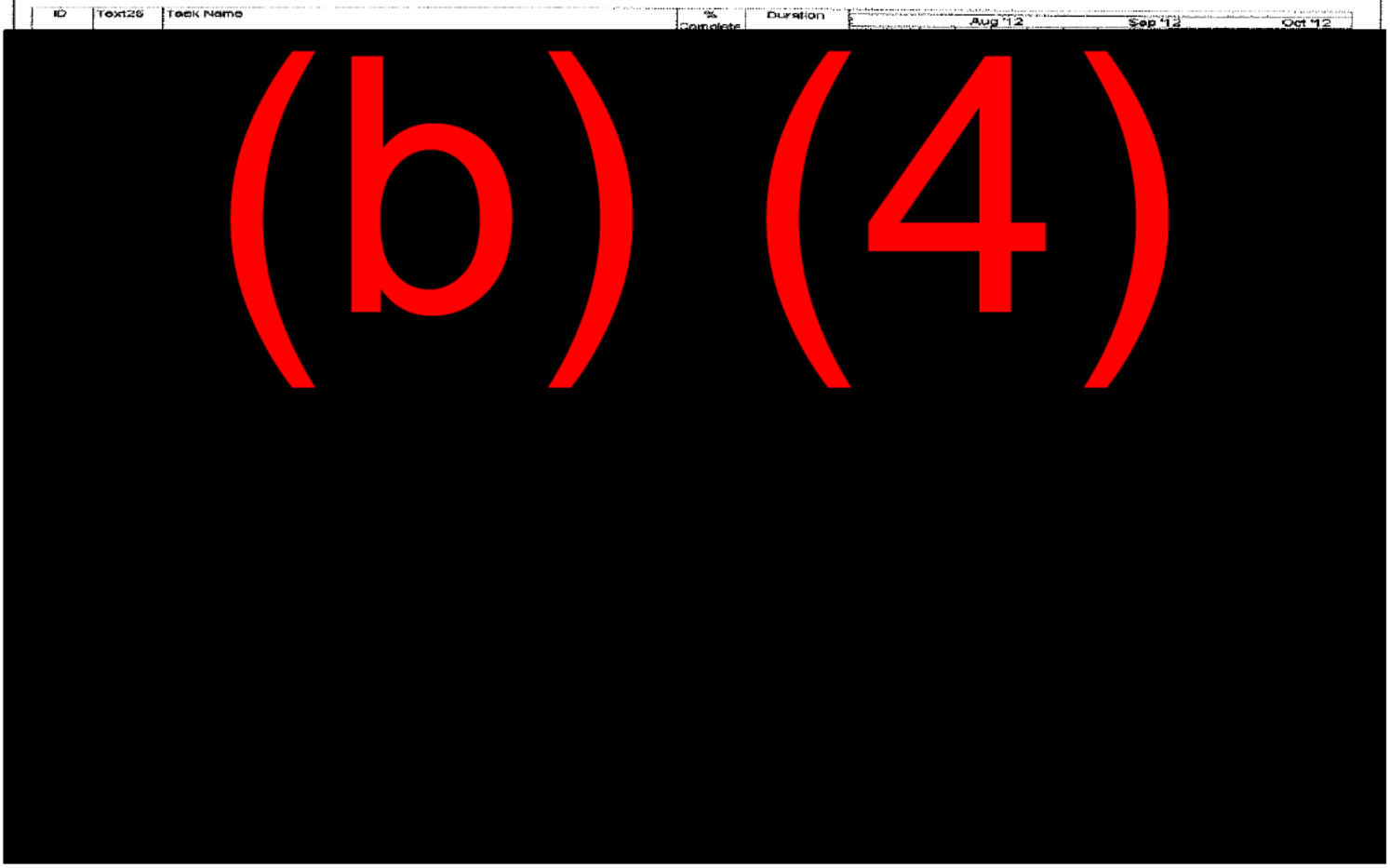
REQUIREMENTS/REFERENCES (cont.):

Note: Safety Review is waived by Chief Engineer and a TRR is not required for CR-2545. The design concept will be reviewed as a consideration of a formal Safety Review.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

ITEM	DELIVERABLE	PRIMARY DATA REFERENCE	QTY	VERIFICATION
1	Approved hi-fi AMS MDRD Document	JSC-28528	1	
2	Approved Requirements Traceability Matrix	F-NSOC ENG-L3000-3	1	
3	Materials Purchase List and any Early Procurement Item List	DX12-SLP-014	1	
4	Completed DRAFT Design-Fabricate-CR through block 20.	DX12-SLP-014	1	

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2545	DX CHANGE REQUEST

CR TITLE: Develop Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup Development Requirements Document (MDRD) and Estimate

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2545	DX CHANGE REQUEST

CR TITLE: Develop Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup Development Requirements Document (MDRD) and Estimate

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No unique risk has been identified for CR-2545 at this time.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY12: Total Cost $71,100

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 951	08/15/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 951

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
October 31, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 951

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO951

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 8/15/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 951 is to: Modify PMA2 for IDA Installation The estimated cost is $(b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $25,965.44 Work is to be completed by October 31, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	25,965.44	25,965.44	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 25,965.44

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2544	DX CHANGE REQUEST	Page: 1 of 5

CR TITLE: Modify PMA2 for IDA Installation

1. REQUESTOR: CB/ (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Modify PMA2 to interface with the new International Docking Adapter (IDA) mockup. Modifications will include addition of fine alignment pins and holes that will interface with corresponding pins/holes on the IDA.

Add planar reflector and bracket to PMA2. These elements are missing from the PMA2 mockup. EVA crews will need to install a cover over the PMA2 planar reflector once the IDA is installed.

7. RATIONALE:

Required to support NBL development testing (1-G session scheduled for 10/31/12) and future crew training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

PMA 2 Overview.pdf

Safety Review Held – 7/12/12, No TRR required.

9. **NEED DATE:** (support date in block 7 rationale) **October 31, 2012**	10. CR SUBMISSION DATE: **May 16, 2012**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J Haas Date: 7/9/12 in ICE

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractors procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: **$26,000 (FY12-$14,000; FY13-$12,000)**	20. NEGOTIATED DELIVERY DATE: **October 31, 2012**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date:_____	**COTR For CRs with Cost Impact Only** COTR:_____ Date: _____

CR NO.: 2544	DX CHANGE REQUEST	Page: 2 of 5

CR TITLE: Modify PMA2 for IDA Installation

Closed by:_____ **Date:**_____

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Add PMA2 Fine Alignment Pins	Boeing Provide Step File	Step File	2	II-D	(b) (4)
2	Add PMA2 Fine Alignment Holes	Boeing Provide Step File	Step File	2	II-D	
3	Planar Reflector – volumetric only	Boeing Provide Step File	Step File	1	III-D	
4	Planar Reflector Mounting Bracket	Boeing Provide Step File	Step File	1	III-D	
5	X-Connectors – volumetric only	Boeing Provide Step File	Step File	4	III-D	
6	Latch motors – volumetric only	Boeing Provide Step File	Step File	2	III-D	
7	Connector Panel – volumetric only	Boeing Provide Step File	Step File	1	III-D	
8	Course Alignment Guides	Boeing Provide Step File	Step File	3	III-D	

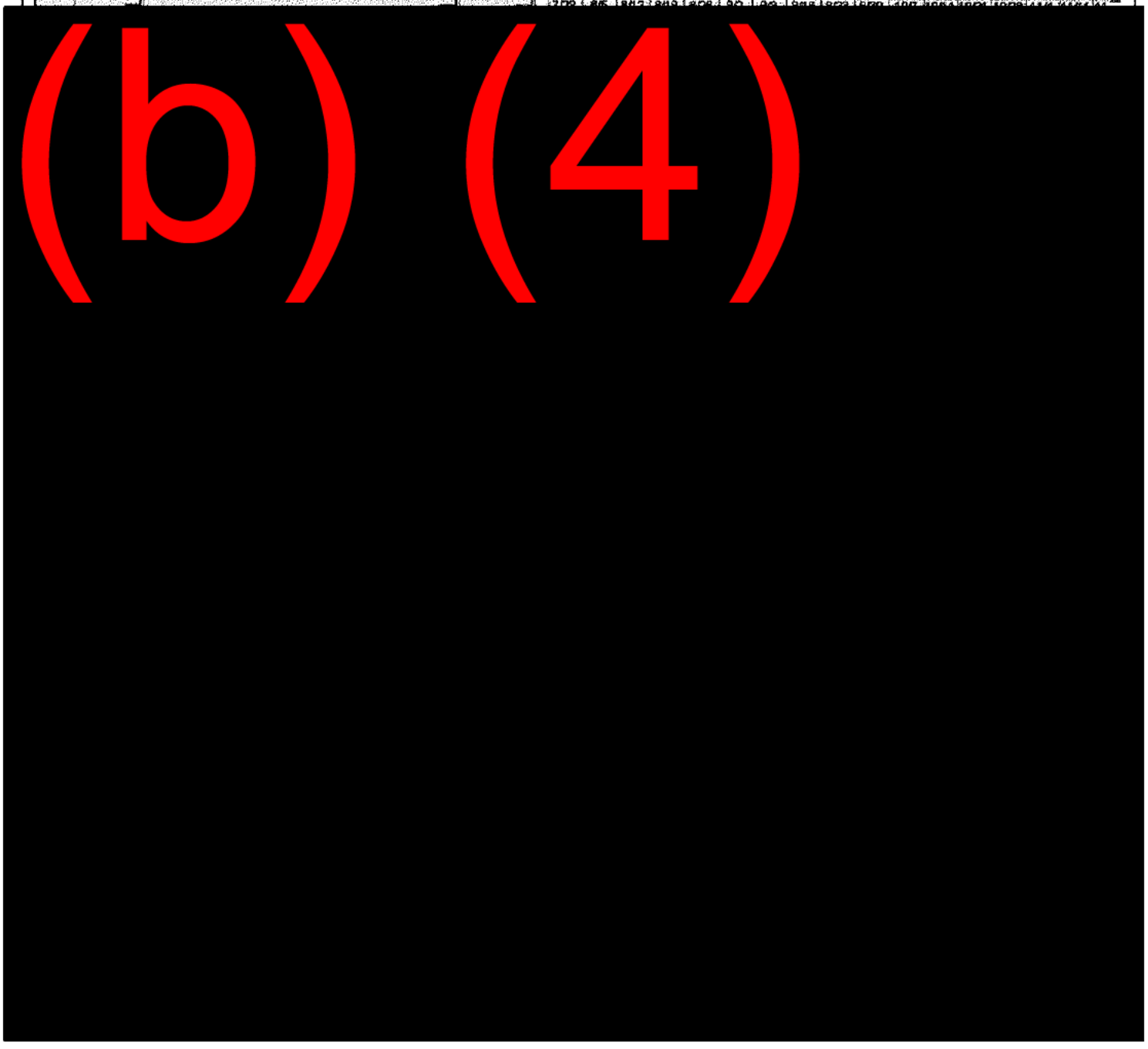
1. Item 4 should include three threaded holes noted in the attached PDF. These were used to retain a ground cover and may be utilized for an EVA cover.
2. Item 8 shall support berthing loads from EVA crew install of International Docking Adapter Mockup.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	Add PMA 2 Fine Alignment Pins	2	II-D	
2	Add PMA 2 Fine Alignment Holes	2	II-D	
3	Planar Reflector	1	III-D	
4	Planar Reflector Mounting Bracket	1	III-D	
5	X-Connectors	4	III-D	
6	Latch motors	2	III-D	
7	Connector Panel	1	III-D	
8	Course Alignment Guides	3	III-D	

CR NO.: 2544	DX CHANGE REQUEST	Page: 3 of 5
CR TITLE: Modify PMA2 for IDA Installation		

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2544	DX CHANGE REQUEST	Page: 4 of 5

CR TITLE: Modify PMA2 for IDA Installation

BASIS OF ESTIMATE (include and identify significant assumptions): **(complete or reference separate project plan)**

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): **(complete or reference separate project plan)**

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY12: Total Cost (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

FY13: Total Cos (b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 952	08/15/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 952

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 952

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO952

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 8/15/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 952 is to: Damage Tolerance Test Article The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $62,771.96 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	62,771.96	62,771.96	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 62,771.96

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2546	DX CHANGE REQUEST

CR TITLE: Damage Tolerance Test Article

1. REQUESTOR: Gerard D. Valle	2. PHONE: W: (281) 483-8835 M: (832) 978-5075	3. E-MAIL: gerard.d.valle@nasa.gov

4. PROGRAM /PROJECT:	5. FUNCTIONAL AREA:
☐ SHUTTLE ☐ STATION ☐ CONSTELLATION ☒ OTHER: 2.6.3 EC	☐ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS ☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:

Support ES division by providing the sewing capability required to fabricate a structural restraint layer of a Damage Tolerance Test Article. This manufacturing will be performed as an external customer task and as such this CR shall be priced as an IDIQ effort.

7. RATIONALE

ES has FY funding to support the development of the hardware and are seeking to use excess manufacturing capacity resident in the LMF to perform the work this FY.

8. REQUIREMENTS AND REFERENCES:

Note: ES will provide engineering support for manufacturing throughout the life of this project. All direction for design and manufacturing activities will come through the ES project engineering.(b) (4) The following requirements are initial and subject to change at the requestor's request. These requirements are not verifiable and the continuance of hours being worked will indicate acceptance of requirements on an ongoing basis. These initial requirements serve Basis of Estimate purposes only.

Fabricate a complete Structural Restraint Layer. All Vectran webbing, thread, sewing machine, templates, and possible tables are available from ES.

SEY44106100__2_0
_RESTRAINT-TOP...

Note: No Safety Review or TRR required

9. NEED DATE: (support date in block 7 rationale) 08-15-12	10. CR SUBMISSION DATE: 06-29-12

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J Haas IN ICE Date 7/19/12

12. NASA POC: Angela R. Prince	13. PHONE: W: (281) 244-1086	14. E-MAIL: angela.r.prince@nasa.gov
15. IMPLEMENTING CONTRACTOR (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $62,800	20. NEGOTIATED DELIVERY DATE: 9/28/12

AUTHORIZATION TO PROCEED

CR NO.: 2546	DX CHANGE REQUEST

CR TITLE: Damage Tolerance Test Article

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Details related to Task

The drawings necessary to build one SEY44106100 are provided in the CR folder. ES will supply the webbing and Vectran thread.

Files located in the CR Folder under "11-Working Files\Reference Drawings"

(b) (4)

table-arrangement.pdf
longitudinal-strap-weave.pdf
longitudinal-strap-marking-index.pdf
longitudinal-strap-marking-secondary.pdf
hoop-strap-weaving.pdf
templateA-hoop-weaving.pdf
template-B-hoop-weaving.pdf
hoop-strap-indexing.pdf
template-hoop-strap-indexing.pdf
RESTRAINT-TOP-LEVEL-ASSY.pdf
ongitudinal-strap-assy.pdf
sed_restraint-assy-procedure.pdf
ongitudinal-marking-procedure.pdf
ongitudinal-marking-procedure.pdf
ongitudinal-secondary-marking-procedure.pdf
hoop-strap-weaving-marking-procedure.pdf
marking-procedure-hoop-strap.pdf
urgeons-knot-procedure.pdf
ndex-stitch-procedure.pdf
ongitudinal-seam-procedure.pdf

CR NO.: 2546	DX CHANGE REQUEST

CR TITLE: Damage Tolerance Test Article

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

1	Structural Restraint Layer per drawing (b) (4) RESTRAINT -TOP-LEVEL-ASSY.pdf	I	IIB	

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2546	DX CHANGE REQUEST

CR TITLE: Damage Tolerance Test Article

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Management	Design	Project Engineer & Support	Technician Support	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 953	08/17/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 953

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 28, 2012
F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 953

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO953

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Jennifer Krause 8/17/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 953 is to: NSOC Estimation of Above Baseline FY 12 Projects The estimated cost is $(b) (4) The estimated award fe The estimated incentiv The total value of this Delivery Order is $140,719.79 Work is to be completed by September 28, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	140,719.79	140,719.79	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 140,719.79

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2485 Rev A	DX CHANGE REQUEST

CR TITLE: NSOC Estimation of Above Baseline FY12 Projects

1. REQUESTOR: Jeff Musler	2. PHONE: 30720	3. E-MAIL: Jeffery.l.musler@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION **Rev A:**
☐ CONSTELLATION ☐ OTHER: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

(b) (4) [redacted]

7. RATIONALE
Protects baseline estimation for baseline projects and allows for planning for potential additional funds.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Provide estimates for the following:

1. ISS platforms, to be revised later to include CEV move and PDL moves
2. EVA hatch trainer
3. Regen ECLSS w/ARFTA
4. ISS Pantry
5. Flight article MPLM integration into SVMF ROM (FY13 imp)
6. PTT software update
7. Quintron Repl. Study
8. One additional ISS pantry sized (medium) IDIQ estimate
9. One additional Regen ECLSS sized (large) IDIQ estimate
10. Additionally, provide 6 ROMS similar to ISS Program CR impacts as requested by SVMF management.

Note: TOM determined no TRR required on 10/12/11
Rev A: (continued)

9. NEED DATE: (support date in block 7 rationale) 01/30/12	10. CR SUBMISSION DATE: ~~09/29/11~~ **Rev A: 07/16/12**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre Date: 10/06/11

12. NASA POC: Allison McIntyre	13. PHONE: x47115	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4) [redacted]	16. PHONE: (b) (4) [redacted]	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$102,000~~ **Rev A: $242,700**	20. NEGOTIATED DELIVERY DATE: ~~08/01/12~~ **Rev A: 09/28/12**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2485 Rev A	DX CHANGE REQUEST

CR TITLE: NSOC Estimation of Above Baseline FY12 Projects

REQUIREMENTS/REFERENCES (cont.):

Rev A (SCIF-01): 11. Provide estimate, including requirements development support, for the CASEO.

Rev A (SCIF-02): 12. Provide estimate, including requirements development support, for the following:

a. CR-2209 Crew Quarters Power,
b. Sun Re-architecture Study,
c. Obsolescent Equipment Replacement Study (Quintron and Video PC),
d. Four (4) ISS Program ROMs,
e. Ku-Band Audio

Rev A (SCIF-03): 13. Provide estimate NLT 09/28/12, including requirements development support, for the following projects:

a. Cupola ATU,
b. Reorg B59,
c. Install Security Cameras,
d. IOS Reconfig,

Block 11 for all CRs assumed NLT 8/7/12. Deliverable will be completed CR estimates ready for DX14 CCB approval review.

14. Provide Tech Plan support for all FY13 projects. Deliverable shall be FY13 resource load by skill category (Engineer / Designer / Technician)

Rev A (SCIF-04): 15. Provide Project plan for CR2536, "SVMF FY 12 Facility Support Purchases"

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Submittal of all requested ROM's / Estimates or expiration of planned duration.

CR NO.: 2485 Rev A	DX CHANGE REQUEST

CR TITLE: NSOC Estimation of Above Baseline FY12 Projects

SCHEDULE MILESTONES: (complete or reference separate project plan)

Rev A:

ID	Text25	Task Name	% Comple	Duration	eptemOctoberNovemDecemJanuarFebruaMarch 1April 1 May 1 June 1 July 1 August SeptemOct

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2485 Rev A	DX CHANGE REQUEST

CR TITLE: NSOC Estimation of Above Baseline FY12 Projects

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

None identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Rev A:
Rev A:
Rev A:
Rev A:

(b) (4)

Design	Engineering and Program Support	Management	Technician	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order
NNJ10HD35C DO 954	08/30/12

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.

Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 954

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 31, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 954

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 954

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 8/31/2012
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 954 is to: Provide Node 3 Mockup CR-2424, Rev B The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $7,670.47. Work is to be completed by August 31, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	7,670.47	7,670.47	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 7,670.47

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2424 Rev B	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

1. REQUESTOR: S. Segadi	2. PHONE: 47264	3. E-MAIL: NASA Global

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: : 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE: Provide Node 3 mockup to support crew training and engineering evaluations in the SVMF.
Rev A: Incorporates SCIF 01 and SCIF 03 into the baseline. **Rev B:** Incorporates SCIF 05 into the baseline

7. RATIONALE
SVMF currently does not have Node 3 mockup, the Node 3 is required to provide emergency training, spatial awareness, functional equipment location, engineering evaluations and fit checks, depress procedures for Node 3 and Cupola. A Node 3 mockup will greatly improve crew training and safety.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Provide Node 3 mockup per MDRD-400 requirements, excluding the following sections:

- 6.5.2.8 – Extension hose and "t" fittings
- 6.5.12.1.2 – PBA Ports
- 6.5.12.1.3 – CO2 Vent Valves
- 6.5.12.1.4 – H2 Vent Valves
- 6.5.12.1.5 – PCA OIV / NIV
- 6.5.12.1.6 – O2 / N2 Induction Ports
- 6.5.12.1.7 – Loop Crossover Assembly
- 6.5.12.1.8 – System Flow Control Assembly
- 6.5.12.1.9 – 3-Way Mix Valves
- 6.5.12.1.10 – Pump Package Assemblies
- 6.5.16 – EDV
- 6.5.17 – KTO
- 6.5.19 – Light Weight Rack

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: ~~04/11/11~~
03/31/12	**Rev A:** 11/28/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntyre
Date: 04/12/11

12. NASA POC:	13. PHONE:	14. E-MAIL:
~~John Foss~~ June Huhn / Ernie Prado	~~x34851~~ x25837 / x34902	global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$903,978 (FY11: $523,840; FY12: $380,138)~~ ~~**Rev A:** $950,279 (FY11: $523,840; FY12: $426,439)~~ **Rev B:** $957,979 (**FY11:** $523,840; **FY12:** $434,139)	~~05/29/12~~ ~~**Rev A:** 07/02/12~~ **Rev B:** 8/31/12

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 2424 Rev B	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Include use existing Light Weight Rack unit pulled from MPLM, and provide an OGS photo façade installed on the front of that unit

Note: Safety Review waived as section 11.9 requires a TRR prior to final acceptance, with documentation as noted throughout the MDRD.

Rev A:
SCIF 01: Fabrication of parts for five access platforms, welding and assembly of same; cutting, painting, and installation of plywood floor panels to platforms moved to CR-2446.

SCIF 03: Initial structural analysis found that the existing CAM structure and proposed longerons required reinforcement to handle expected loads (Risk 05), which also required purchase of additional material (Risk 07) to accommodate necessary reinforcement.

Rev B: SCIF 05 Rqmt 91: Install OGS rack façade and existing IIB OGS Rack Interface Panel in NOD3A5. Node 3 delivery schedule is requested to be extended, in part, due to JSC riggers support schedule and the addition of OGS rack front; the new delivery date is targeted to be 08/28/2012. Mockup was requested to be ready for emergency crew training by 7/23/12. To meet this request, a partial completion of the overall requirements (which will include flooring, facades, air conditioning, lighting, rack installation, emergency lockers with PFEs, PBAs and QDMs, functioning ATUs, UOPs, RCA, C&W, ethernet switch, SDS port, lightweight starboard hatch) will be prioritized and worked to support the class.

CR NO.: 2424 Rev B	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Acceptance of the mockup will be segmented as per the following to allow incremental acceptance.

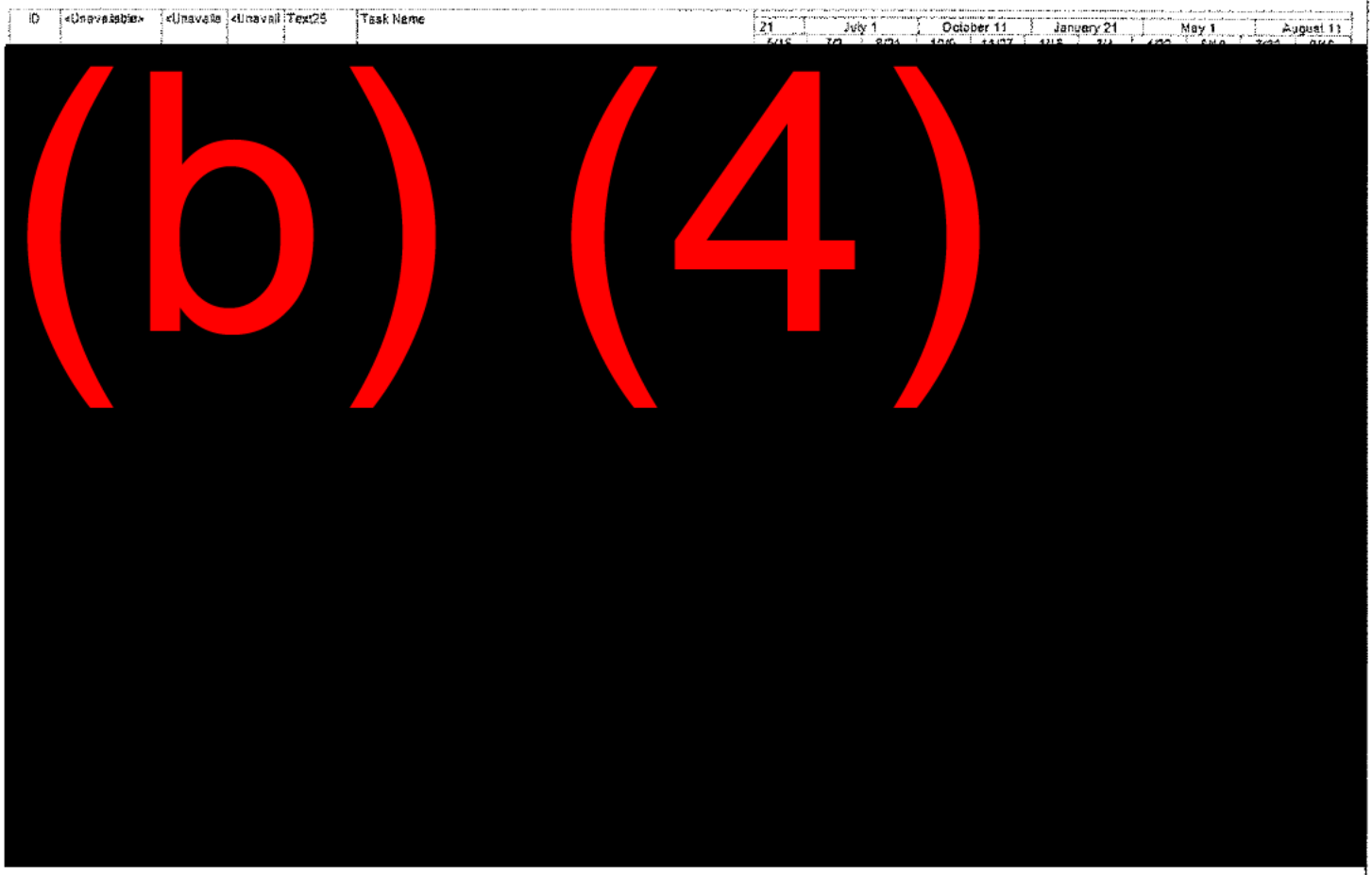
- Cradle, Shell and Primary Structure
- Secondary Structure
- Floor and Closeout Panels
- ARED / Compressor / T2 / TOCA / WHC / Lt Wt Rack / Lt Wt Hatch
- Emergency Equipment Lockers / QDM's / PFE
- Fire Port Labels / EEGS / Location Coding / Photo Facades / Rack Power Switches / CTB's / Access Platforms / Hurricane Cover (include confirmation of new locations for REGEN Racks, Chairs/ Tables, and cables)
- ATU's, C&W Panel, GLA's, Lipstick Camera / ICP, and UOP's (including regression testing)
- AC Electrical system, Ethernet Access Points, I/O Panels, and Air Conditioner
- ORU's and Outfitting Items, and Smoke Generator Access Points

A separate acceptance test plan will be submitted and executed for each of these identified groups.

CR NO.: 2424 Rev B	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2424 Rev B	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

CR NO.: 2424 Rev B	DX CHANGE REQUEST

CR TITLE: Provide Node 3 Mockup

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	Design	Project Engineering	Management and Support	Technicians	Material
FY11	(b) (4)				
FY12					
~~Rev A FY12~~					
Rev B FY12					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 955	09/17/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 955

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 30, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 955

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 955

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 9/18/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 955 is to: Provide HIFI SS-SPDM Mockup Fabrication The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $28,728.97. Work is to be completed by November 30, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	28,728.97	28,728.97	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 28,728.97

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

1. REQUESTOR: DX/Randall McDaniel	2. PHONE: x32570	3. E-MAIL: randall.s.mcdaniel@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Using the development MDRD-401 defined under CR2448, fabricate a replacement high fidelity stainless steel Special Purpose Dexterous Manipulator (HIFI-SS-SPDM) mockup for use in NBL training runs.

Rev A: Incorporate SCIF-01, SCIF-02, and SCIF-03. Revise the schedule to complete work on the Cradle by the end of November 2012 in GFY 13.

7. RATIONALE
The existing HIFI-AL-SPDM NBL Mockup is primarily made of aluminum. After a decade of use in the pool, the aluminum material has significantly degraded and as a result limits training fidelity.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

A Hi-Fi Stainless Steel SPDM Mockup shall be provided per the requirements defined in MDRD-401, High Fidelity Stainless Steel Special Purpose Dexterous Manipulator (Hi-Fi SS SPDM).

TRR required as specified in MDRD-401.

9. NEED DATE: (support date in block 7 rationale) 9/4/12	10. CR SUBMISSION DATE: Sept. 22, 2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: s/ J Haas (in ICE) Date: 9/23/11

12. NASA POC: Frank Markle	13. PHONE: 281-483-0696	14. E-MAIL: franklin.s.markle@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$566,700~~ Total **$584,900** **GFY12 Total $562,100, GFY13 Total $22,800** **Rev A**	20. NEGOTIATED DELIVERY DATE: ~~Sept 4, 2012~~ November 30, 2012 **Rev A**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

REQUIREMENTS/REFERENCES (cont.):

SCIF 01 incorporated in Rev A. Risk 01 Activated. Additional design effort and stress analysis iterations were required to complete the design of the SPDM assembly to include the load alleviator feature (which was considered highly desirable over replaceable sheer pins). The additional analysis iterations were needed to be performed to address all load conditions and issues which in turn also drove additional designer support to incorporate modifications to the model.

SCIF 02 incorporated in Rev A. Risk 05 Activated. The current THA had several items that were not usable or did not meet the MDRD requirements as expected. This caused a redesign of several components as well as new ones; new models and drawings were required to be developed for manufacture of items.

SCIF-03 incorporated in Rev a. Risk 06 Activated. Additional design iterations were required to properly weigh out the arm segments (as modeled in Pro-E). The largest impact was due to the OTCM design. During Design reviews it was determined that all efforts be made to have each OTCM weighed out when not attached to the arm causing several iterations over the plan; additional arm design effort was generated to address several high stress areas.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

See MDRD-401 – Mockup Development Requirements Document for the Development of the HIFI-SS-SPDM, Section 10 – Requirements Verification Matrix (RVM), MDRD-401.

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

SCHEDULE MILESTONES: (complete or reference separate project plan)

ID	Text25	Task Name	Baseline Work	3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
				Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

(b) (4)

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2482A	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 956	12/06/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 956

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
December 21, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 956

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO956

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 12/7/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 956is to: Build International Docking Adapter Mockup CR-2535B The estimated cost is $(b) (4) The estimated award fee is $(b) (4) The estimated incentive fee is (b) (4) The total value of this Delivery Order is $3,968 Work is to be completed by December 21, 2012. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	3,968.00	3,968.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 3,968.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2535B	DX CHANGE REQUEST	Page: 2 of 7

CR TITLE: Build International Docking Adapter Mockup

1. REQUESTOR (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov @nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Build one International Docking Adapter (IDA). The IDA mockup will need to be neutrally weighed out to support crew maneuvering during berthing to PMA2. The PMA2 mockup will be modified in a separate CR to provide fine alignment pins and holes that will interface with this new IDA mockup.

Rev A: Updates to the cost Block 19 and major cost drivers charts to match the IDIQ pricing
Rev B: Incorporates the changes due to SCIFs 01 and 02 (see details below), extends completion date

7. RATIONALE:

Required to support NBL development testing (the 1-G class is currently scheduled for 10/31/12) and future crew training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

IDA Overview.pdf

Safety Review Held – 6/28/12, TRR required.

9. **NEED DATE:** (support date in block 7 rationale)	10. CR SUBMISSION DATE:
October 31, 2012	**May 11, 2012**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J Haas Date: 5/21/12

12. NASA POC:	13. PHONE:	14. E-MAIL:
John Haas	281-792-5925	John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractors procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$62,100~~ $66,100 (FY12- $36,400; FY13 ~~$25,700~~ $29,700) ~~Rev A~~ Rev B	20. NEGOTIATED DELIVERY DATE: ~~10/31/12~~ 12/21/12 Rev B

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date:_____	**COTR For CRs with Cost Impact Only** COTR:_____ Date: _____

Closed by:_____ **Date:**_____

CR TITLE: Build International Docking Adapter Mockup

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	International Docking Adapter	Boeing Provide Step File	Step File	1	III-C	(b) (4)
1.1	Retro Reflector (handholds – TBD)	(b) (4)	VMDB	2	II-C	
1.2	Planar Reflector and Bracket	Boeing Step File	Step File	1	III-D	
1.3	NZGL Connector Panel	Boeing Step File	Step File	2	III-D	
1.3a	Size 13 NZGL Receptacle. Mockup may use size 15. (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.3.b	Size 15 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.3.c	Size 17 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	3	II-D	
1.3.d	Size 21 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.3.e	Size 25 NZGL Receptacle (includes caps)	Existing NBL Design	Existing NBL Design	2	II-D	
1.4	Trunnion Pin – accepts mounting of Retro Reflector	Boeing Provide Step File	Step File	3	II-D	
1.5	Tether Loops	(b) (4)	VMDB	2	III-D	
1.6	Top Mounted Handrail Assemblies (8" Length)		VMDB	8	II-D	
1.7	H-fixture and Target (mounting bracket to take EVA loads)	Existing NBL design	Existing NBL Design	1	III-D	
1.8	Alignment Petals to visiting vehicle – these are EVA installable through a bolted interface (TBD)	Boeing Provide Step File	Step File	3	II-B	
1.9	Receptacle Umbilical – volumetric only	Boeing Provide Step File	Step File	1	III-D	
1.10	Plug Umbilical – volumetric only	Boeing Provide Step File	Step File	1	III-D	
1.11	Course alignment guides to PMA	Boeing Provide Step File	Step File	6	II-D	
1.12	Fine alignment holes – interface to PMA 2	Boeing Provide Step File	Step File	2	II-D	
1.13	Fine alignment pins – interface to PMA 2	Boeing Provide Step File	Step File	2	II-D	
1.14	OIWIF Adapter Plate (no WIF loads, make from PVC)	(b) (4)	VMDB	4	III-D	
2	Fit check of IDA to modified PMA2	N/A	N/A	N/A	N/A	

1. Retro reflectors will be EVA installed into trunnion ends.
2. OIWIF plates are not required to handle WIF loads. Used for attaching camera brackets etc. Make from non metallic material (i.e. PVC, Delrin etc.) to signify not intended for WIF loads.
3. Install Kydex panel to obstruct crew visibility through IDA.

Rev B:
SCIF 01 - Drawings of the PMA2 Mockup and the IDA Flight Models show interferences (Risk 03). Generate a model of the APAS to IDA interface based on measurements and drawings of the PMA2, and use that model to develop a design solution that does not interfere.
SCIF 02 – The attachment bolt holes on the PMA2 were designed for ½" bolts, rather than 5/8" bolts as shown on the drawings and used for the IDA design (Risk 03). Modify the bolted connection for the IDA to use ½" bolts and ½" nut plates to match the PMA2 hardware.

CR TITLE: Build International Docking Adapter Mockup

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	International Docking Adapter	1	III-B	
1.1	Retro Reflector	2	II-B	
1.2	Planar Reflector and Bracket	1	III-D	
1.3	NZGL Connector Panel	2	III-D	
1.3a	Size 13 NZGL Receptacle	2	II-D	
1.3.b	Size 15 NZGL Receptacle	2	II-D	
1.3.c	Size 17 NZGL Receptacle	3	II-D	
1.3.d	Size 21 NZGL Receptacle	2	II-D	
1.3.e	Size 25 NZGL Receptacle	2	II-D	
1.4	Trunnion Pins – accepts mounting of retro reflector	3	II-D	
1.5	Tether Loops	2	III-D	
1.6	Top Mounted Handrail Assemblies (TBD Length)	8	II-D	
1.7	H-fixture and Target	1	III-D	
1.8	Alignment Petals to visiting vehicle – these are EVA installable through a bolted interface	3	II-B	
1.9	Receptacle Umbilical – volumetric only	1	III-D	
1.10	Plug Umbilical – volumetric only	1	III-D	
1.11	Course alignment guides to PMA	6	II-D	
1.12	Fine alignment holes – interface to PMA 2	2	II-D	
1.13	Fine alignment pins – interface to PMA 2	2	II-D	
1.14	OIWIF Adapter Plate	4	II-D	
2	Fit check of IDA to modified PMA 2	N/A	N/A	

CR NO.: 2535B	DX CHANGE REQUEST	Page: 5 of
CR TITLE: Build International Docking Adapter Mockup		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2535B	DX CHANGE REQUEST	Page: 6 of 7

CR TITLE: Build International Docking Adapter Mockup

BASIS OF ESTIMATE (include and identify significant assumptions): **(complete or reference separate project plan)**

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years)**: (complete or reference separate project plan)**

(b) (4)

CR NO.: 2535B	DX CHANGE REQUEST	Page: 7 of 7

CR TITLE: Build International Docking Adapter Mockup

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Grand Total (b) (4)
FY12: Total

	DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
		(b) (4)			
Rev A					

FY13: Total Cost $26,000 ~~$25,700 Rev A~~ $29,700 Rev B

	DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
		(b) (4)			
~~Rev A~~					
Rev B					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR For CRs with Cost Impact Only Signature :	Date:

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 957	12/07/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 957

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 13, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 957

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO957

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 12/10/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 957 is to: FY13 Orion Mockup Installation and Operations The estimated cost is $ (b) (4) The estimated award fee is $ (b) (4) The estimated incentive fee [redacted] The total value of this Delivery Order is $48,000 Work is to be completed by September 13, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	48,000.00	48,000.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 48,000.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2605	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

1. REQUESTOR: Christie Sauers	2. PHONE: 281-244-5692	3. E-MAIL: christie.n.sauers@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV 3.6.1
☐ OTHER ☒ FUND CODE: 747797

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide Orion Multi-Purpose Crew Vehicle (MPCV) operations support and mockup additions in the Building 9 Medium Fidelity Mockup (MFM) to include items provided by the Students Shaping America's Next Spacecraft (SSANS) program. Requirements are listed in priority order.

7. RATIONALE:
This is work that needs to be done to further outfit the MFM in preparation for FY2013 evaluations and events in the mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Provide support to receive, unload and relocate the MPCV Crew Module Aft Bay and Subsystems Mockup hardware within the SVMF and storage boxes.
2. Provide support for one test readiness review of the Display & Control Console evaluation.
3. Provide scheduling and operations support for Display & Control evaluation planned (b) (4) (b) (4)

9. NEED DATE: (support date in block 7 rationale) 09/13/13	10. CR SUBMISSION DATE: 10/29/12

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED Signature: in ICE: Allison McIntyre Date:11/1/12

12. NASA POC: June Huhn	13. PHONE: 281-792-5837	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $48,000	20. NEGOTIATED DELIVERY DATE: 09/13/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2605	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

REQUIREMENTS/REFERENCES (cont.):

4. Provide the capability to simultaneously record video for up to 4 cameras, including audio from area microphones (per FUR requests). Capability shall include support for quad-screen recording.

5. Install 3 CWG-provided seat ingress/egress hand straps in locations to closely match the locations in the Low Fidelity Mockup (5 attachment points to the MFM structure for seats 1,3 & 4).

6. Install the following student provided (SSANS) hardware assemblies and hardware in MFM per CWG-provided installation documentation:
   a. Avionics & ECLS Bays walls (Qty 7, 1/8", aluminum) - mount to the wood support structure & MFM walls
   b. Negative Pressure Relief Valve
   c. Non-locker floor panels (Qty 4) near the Avionics Bays walls
   d. Lockers (Bay A) – locker will be assembled by CWG.
   e. Locker (Bay C) - requires permanently removing ladder. (Locker will be assembled by CWG)
   f. Lockers (Bays D, E and B in priority order) – lockers will be assembled by CWG.
   g. Lighting System, including 15 lights, two control boxes, and associated cables (cables will need to be secured to walls, backbone, etc.)
   h. Install Docking Vestibule Pressure Equalization Valve Assembly on forward bulkhead per CWG-provided installation drawing.

7. Provide (b) (4) of support for safety reviews, test readiness reviews, acceptance reviews, mockup readiness review, discrepancy report rework and engineering analysis, as needed.

8. TRR required per Safety Review conducted 11/27/12. Required documentation includes the following:
   a. Updated Orion mockup HA
   b. Review of CWG provided Analysis data

CR NO.: 2605	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Description	Expected Results	RQMT	Comment
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.		
4	Verify that support was provided for receiving, unloading and relocating the Aft Bay and Subsystems Mockup hardware	Aft Bay and Subsystems Mockup hardware has been assembled and is located on the SVMF floor, and extra hardware is in the storage boxes	1	
5	Verify that support was provided for one test readiness review of the Display & Control Console evaluation	TRR for the D&C panel has been completed	2	
6	Verify that support was provided for Display & Control evaluation scheduling and operations	D&C Panel Evaluation was completed with support from SVMF	3	
7	Verify that the MFMM video equipment has the capability to simultaneously record video for up to 4 cameras,	Demonstration shows that video feed from four cameras can be recorder simultaneously	4a	
8	Verify that the MFMM video equipment has the capability to record audio from area and wireless	Demonstration shows that audio can be recorded from area and wireless	4b	
9	Verify that the MFMM video equipment has the capability to do quad-screen recording	Demonstration shows that there is quad-screen recording capability	4c	
10	Verify that 3 ingress/egress hand straps have been installed in locations to closely match the locations in the Low Fidelity Mockup (5 attachment points to the MFM structure for seats 1,3 & 4)	Three hand straps have been installed to five attachment points in the MFMM in locations similar to those in the LFMM	5	
11	Verify that the Avionics & ECLS Bays walls have been installed to the wood support structure & MFM walls per requestor's instructions/drawings	Avionics & ECLS Bays walls have been installed to the wood support structure & MFM walls per requestor's instructions/drawings	6a	
12	Verify that the Negative Pressure Relief Valve mock-up has been installed to the forward bulkhead of the MFMM per requestor's instructions/drawings	Negative Pressure Relief Valve mock-up has been installed to the forward bulkhead of the MFMM per requestor's instructions/drawings	6b	
13	Verify that the four non-locker floor panels (have been installed near the Avionics Bays walls per requestor's instructions/drawings	Four non-locker floor panels (have been installed near the Avionics Bays walls per requestor's instructions/drawings	6c	
14	Verify that the locker for Bay A has been installed per requestor's instructions/drawings	The locker for Bay A has been installed per requestor's instructions/drawings	6d	

CR NO.: 2605	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (cont.)

15	Verify that the ingress/egress ladder has been removed and the locker for Bay C has been installed per requestor's instructions/drawings.	The ingress/egress ladder has been removed and the locker for Bay C has been installed per requestor's instructions/drawings.	6e	
16	Verify that the locker for Bay D has been installed per requestor's instructions/drawings	The locker for Bay D has been installed per requestor's instructions/drawings	6f-1	
17	Verify that the locker for Bay E has been installed per requestor's instructions/drawings	The locker for Bay E has been installed per requestor's instructions/drawings	6f-2	
18	Verify that the locker for Bay B has been installed per requestor's instructions/drawings	The locker for Bay B has been installed per requestor's instructions/drawings	6f-3	
19	Verify that the Lighting System, including 15 lights, two control boxes, and associated cables, has been installed near the Avionics Bays walls per requestor's instructions/drawings	The Lighting System, including 15 lights, two control boxes, and associated cables, has been installed near the Avionics Bay walls per requestor's instructions/drawings	6g-1	
20	Verify that the Lighting System cables, have been secured	The Lighting System cables, have been secured	6g-2	
21	Verify that the Docking Vestibule Pressure Equalization Valve Assembly has been installed to the forward bulkhead per requestor's instructions/drawings	The Docking Vestibule Pressure Equalization Valve Assembly has been installed to the forward bulkhead per requestor's instructions/drawings	6h	
22	Verify that Raytheon has provided 25 hours of support for safety reviews, test readiness reviews, acceptance reviews, mockup readiness review, discrepancy report rework and engineering analysis, as needed.	The safety reviews, test readiness reviews, acceptance reviews, mockup readiness review, discrepancy report rework and engineering analysis have all been completed, which verifies that the manhours were provided.	7	
23	Verify TRR conducted, and included updated HA, and CWG provided analysis	TRR conducted, and included updated HA and review of CWG provided analysis data	8	

CR NO.: 2605	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2605	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
FY13	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 957A	09/04/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 957A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2013
F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 957A

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO957A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: ~~Contracting Officer~~ JENNIFER L. KRAUSE
NASA CONTRACTING OFFICER
Jennifer Krause 9/4/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 957A is to: FY13 Orion Mockup Installation and Operations The estimated cost is $(b) (4) The estimated award fe The estimated incentiv The total value of this Delivery Order is $83,688. Work is to be completed by September 27, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	83,688.00	83,688.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 83,688.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2605 Rev A	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

1. REQUESTOR: ~~Christie Sauers~~ Rev A Neal Zapp	2. PHONE: 281-244-5692	3. E-MAIL: christie.n.sauers@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV 3.6.1
☐ OTHER ☒ FUND CODE: 747797

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide Orion Multi-Purpose Crew Vehicle (MPCV) operations support and mockup additions in the Building 9 Medium Fidelity Mockup (MFM) to include items provided by the Students Shaping America's Next Spacecraft (SSANS) program. Requirements are listed in priority order.

(b) (4)

7. RATIONALE:
This is work that needs to be done to further outfit the MFM in preparation for FY2013 evaluations and events in the mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. Provide support to receive, unload and relocate the MPCV Crew Module Aft Bay and Subsystems Mockup hardware within the SVMF and storage boxes.
2. Provide support for one test readiness review of the Display & Control Console evaluation.
3. Provide scheduling and operations support for Display & Control evaluation (b) (4) (b) (4)

9. NEED DATE: (support date in block 7 rationale) 09/13/13	10. CR SUBMISSION DATE: 10/29/12

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED Signature: in ICE: Allison McIntyre Date:11/1/12

12. NASA POC: June Huhn	13. PHONE: 281-792-5837	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: Rev A: (b) (4)	20. NEGOTIATED DELIVERY DATE: Rev A: ~~09/13/13~~ 09/27/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

4. Provide the capability to simultaneously record video for up to 4 cameras, including audio from area microphones (per FUR requests). Capability shall include support for quad-screen recording.

5. Install 3 CWG-provided seat ingress/egress hand straps in locations to closely match the locations in the Low Fidelity Mockup (5 attachment points to the MFM structure for seats 1,3 & 4).

6. Install the following student provided (SSANS) hardware assemblies and hardware in MFM per CWG-provided installation documentation:
   a. Avionics & ECLS Bays walls (Qty 7, 1/8", aluminum) - mount to the wood support structure & MFM walls
   b. Negative Pressure Relief Valve
   c. Non-locker floor panels (Qty 4) near the Avionics Bays walls
   d. Lockers (Bay A) – locker will be assembled by CWG.
   e. Locker (Bay C) - requires permanently removing ladder. (Locker will be assembled by CWG)
   f. Lockers (Bays D, E ~~and B in priority order~~ Rev A, SCIF 07) – lockers will be assembled by CWG.
   g. Lighting System, including 15 lights, two control boxes, and associated cables (cables will need to be secured to walls, backbone, etc.)
   h. Install Docking Vestibule Pressure Equalization Valve Assembly on forward bulkhead per CWG-provided installation drawing.

7. Provide (b) (4) of support for safety reviews, test readiness reviews, acceptance reviews, mockup readiness review, discrepancy report rework and engineering analysis, as needed.

8. TRR required per Safety Review conducted 11/27/12. Required documentation includes the following:
   a. Updated Orion mockup HA
   b. Review of CWG provided Analysis data

9. Document current locations of seats for relocation with respect to grate floor prior to pallet removal. . (Rev A, SCIF 03)
10. Mark strut rods with tape, marker, or paint to indicate current extended length (assuming the rod lengths don't have to be adjusted to remove the struts), number them 1-8 and document current locations within mockup. (Rev A, SCIF 03)
11. Remove the pallet and struts from the mockup and retain together in storage location (one day in advance, let Christie Sauers know via direct verbal communication when the pallet will be removed). (Rev A, SCIF 03)
12. Install two operator seats 1 and 2 to the floor grate at current flight location and install the non-operator seat 3 (closest to the viewing window) to the floor grate at new location to be provided by CWG (seat assemblies with standoffs also to be provided by CWG) (Rev A, SCIF 03)
13. Install the non-operator seat 4 (seat assembly with standoffs to be provied by CWG) to the floor grate over the hygiene Bay area near the viewing window (Outboard). Exact location to be provided by CWG. Mark location of standoffs on grate for future re-installation. (Rev A, SCIF 03)
14. Remove the non-operator seat 4 from the hygiene bay area and install to the floor grate at original seat 4 location (exact location to be provided by CWG). Mark location of standoffs on grate for future re-installation. (Rev A, SCIF 03)
15. Provide support of Safety and Test Readiness Reviews (TRR) as required. Plan to conduct TRR by 5/29/13. (Rev A, SCIF 03)

16. Provide on-call technician support of dry runs the week of 6/3, as needed. (Rev A, SCIF 03)
17. Provide (b) (4) of event on-call technician support to provide relocation of the non-operator seat (4) and standoffs as needed (4 to 6 relocations over th (b) (4) Provide setup for (b) (4) (Rev A, SCIF 03)
18. ~~Install missing pieces of WMS in the hygiene bay.~~ (Rev A, SCIF 03)

CR NO.: 2605 Rev A	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

REQUIREMENTS/REFERENCES (cont.):

19: Each section of floor grating in the CEV Low-Fi mock-up shall be able to support the weight of a 300 lb suited crewmember with a factor of safety of 2.5. (Rev A, SCIF 05)

20: Perform unplanned ad-hoc tasks to support CIAS evaluation in LFCM and outfitting efforts for the MFCM
- a) file down sharp edges on seat frames;
- b) match drill 4 holes per leg x 28 legs = 112 holes (after removing 64 screws) for pull pins and install the pins;
- c) support safety walk-through in the mock-up;
- d) add tie wraps to seat frame/seat crossmember interfaces to prevent tipping;
- e) remove all seats and seat frames from mock-up; demonstrate to (train) users in removal of floor panels;
- f) install four seat frames and seats into the mock-up, with seat 4 in the outboard location; (requires drilling out seat crossmembers for new locking pins that will be provided by requestors, re-drilling holes in another location as necessary to get clearance for the head of the locking pin, and mount the seats to the seat frames with locking pins but without the tie wraps), remove vertical supports and mounting brackets from floor for seat frames 3 and 4 and secure the seat frames on the floor with tie wraps;
- g) replace vertical supports for seats 3 and 4;
- h) document additional work and manhours required;
- i) provide engineering support for installations.
- j) Review MFCM floor and ECLS panel installation instructions and discuss issues with requestor
- k) Address MFCM NPRV installation issues and resolve with requestor
- l) Resolve fastener strength and testing issues for MFCM floor
- m) Resolve hand strap bolt locations with requestor and provide sketch for installation

(Rev A, SCIF 06)

21. Remove the aluminum ingress/egress step assembly from the aft bay mock-up. Install the step to the MFM IML just below the hatch opening. Locating dimensions will be provided by CWG. (Rev A, SCIF 07)

22. Design, fabricate and install spacers against the ECLS panels to allow removal of the lateral struts for the seat pallet. (Rev A, SCIF 07)

23. Wiring on GFE lighting system has broken insulation, broken wire conductors near the connectors, and wires that have pulled out of crimped connections. Replace connectors and rewire system as required to make it functional and safe. (Rev A, SCIF 02)

24. Route air conditioning into the LFCM. (Rev A, SCIF 04)

25. Fabricate and install two additional crossmembers to each seat frame, and remove the existing crossmembers. (Rev A, SCIF 04)

26. Match drill eight holes in each seat frame for PIP pin alignment (Rev A, SCIF 04)

27. Drill and tap three seat bracket mounting holes in the MFM seat pallet. Locations will be provided by CWG. (Rev A, SCIF 08)

28. Install one door hinge and door to Bay C locker. Hinge and door were provided by CWG. (Rev A, SCIF 08)

29. Provide installation sketch for light fixture installation based on coordinates given in Orion Lighting Installation Plan that was provided by CWG. (Rev A, SCIF 08)

30. Proof load ingress/egress step and lockers A, C, D and E. (Rev A, SCIF 08)

CR NO.: 2605 Rev A	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Description	Expected Results	RQMT	Comment
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.		
4	Verify that support was provided for receiving, unloading and relocating the Aft Bay and Subsystems Mockup hardware	Aft Bay and Subsystems Mockup hardware has been assembled and is located on the SVMF floor, and extra hardware is in the storage boxes	1	
5	Verify that support was provided for one test readiness review of the Display & Control Console evaluation	TRR for the D&C panel has been completed	2	
6	Verify that support was provided for Display & Control evaluation scheduling and operations	D&C Panel Evaluation was completed with support from SVMF	3	
7	Verify that the MFMM video equipment has the capability to simultaneously record video for up to 4 cameras,	Demonstration shows that video feed from four cameras can be recorder simultaneously	4a	
8	Verify that the MFMM video equipment has the capability to record audio from area and wireless	Demonstration shows that audio can be recorded from area and wireless	4b	
9	Verify that the MFMM video equipment has the capability to do quad-screen recording	Demonstration shows that there is quad-screen recording capability	4c	
10	Verify that 3 ingress/egress hand straps have been installed in locations to closely match the locations in the Low Fidelity Mockup (5 attachment points to the MFM structure for seats 1,3 & 4)	Three hand straps have been installed to five attachment points in the MFMM in locations similar to those in the LFMM	5	
11	Verify that the Avionics & ECLS Bays walls have been installed to the wood support structure & MFM walls per requestor's instructions/drawings	Avionics & ECLS Bays walls have been installed to the wood support structure & MFM walls per requestor's instructions/drawings	6a	
12	Verify that the Negative Pressure Relief Valve mock-up has been installed to the forward bulkhead of the MFMM per requestor's instructions/drawings	Negative Pressure Relief Valve mock-up has been installed to the forward bulkhead of the MFMM per requestor's instructions/drawings	6b	
13	Verify that the four non-locker floor panels (have been installed near the Avionics Bays walls per requestor's instructions/drawings	Four non-locker floor panels (have been installed near the Avionics Bays walls per requestor's instructions/drawings	6c	
14	Verify that the locker for Bay A has been installed per requestor's instructions/drawings	The locker for Bay A has been installed per requestor's instructions/drawings	6d	

15	Verify that the ingress/egress ladder has been removed and the locker for Bay C has been installed per requestor's instructions/drawings.	The ingress/egress ladder has been removed and the locker for Bay C has been installed per requestor's instructions/drawings.	6e	
16	Verify that the locker for Bay D has been installed per requestor's instructions/drawings	The locker for Bay D has been installed per requestor's instructions/drawings	6f-1	
17	Verify that the locker for Bay E has been installed per requestor's instructions/drawings	The locker for Bay E has been installed per requestor's instructions/drawings	6f-2	
18	Verify that the locker for Bay B has been installed per requestor's instructions/drawings	The locker for Bay B has been installed per requestor's instructions/drawings	6f-3	
19	Verify that the Lighting System, including 15 lights, two control boxes, and associated cables, has been installed near the Avionics Bays walls per requestor's instructions/drawings	The Lighting System, including 15 lights, two control boxes, and associated cables, has been installed near the Avionics Bay walls per requestor's instructions/drawings	6g-1	
20	Verify that the Lighting System cables, have been secured	The Lighting System cables, have been secured	6g-2	
21	Verify that the Docking Vestibule Pressure Equalization Valve Assembly has been installed to the forward bulkhead per requestor's instructions/drawings	The Docking Vestibule Pressure Equalization Valve Assembly has been installed to the forward bulkhead per requestor's instructions/drawings	6h	
22	Verify that Raytheon has provided 25 hours of support for safety reviews, test readiness reviews, acceptance reviews, mockup readiness review, discrepancy report rework and engineering analysis, as needed.	The safety reviews, test readiness reviews, acceptance reviews, mockup readiness review, discrepancy report rework and engineering analysis have all been completed, which verifies that the manhours were provided.	7	
23	Verify TRR conducted, and included updated HA, and CWG provided analysis	TRR conducted, and included updated HA and review of CWG provided analysis data	8	
	– RevA additions			
24	**Review email validating SCIFs 3,4,&6 were completed**	**Email from Requestor or POC confirms these additional requirements were delivered**	9-17, 20, 24-26	
25	**Verify that each section of floor grating in the CEV Low-Fi mock-up can support the weight of a 300 lb suited crewmember with a factor of safety of 2.5.**	**Verification was performed by proofloading at a load factor of 1.5. See attached proofload form.**	19	

CR TITLE: FY13 Orion Mockup Installation and Operations

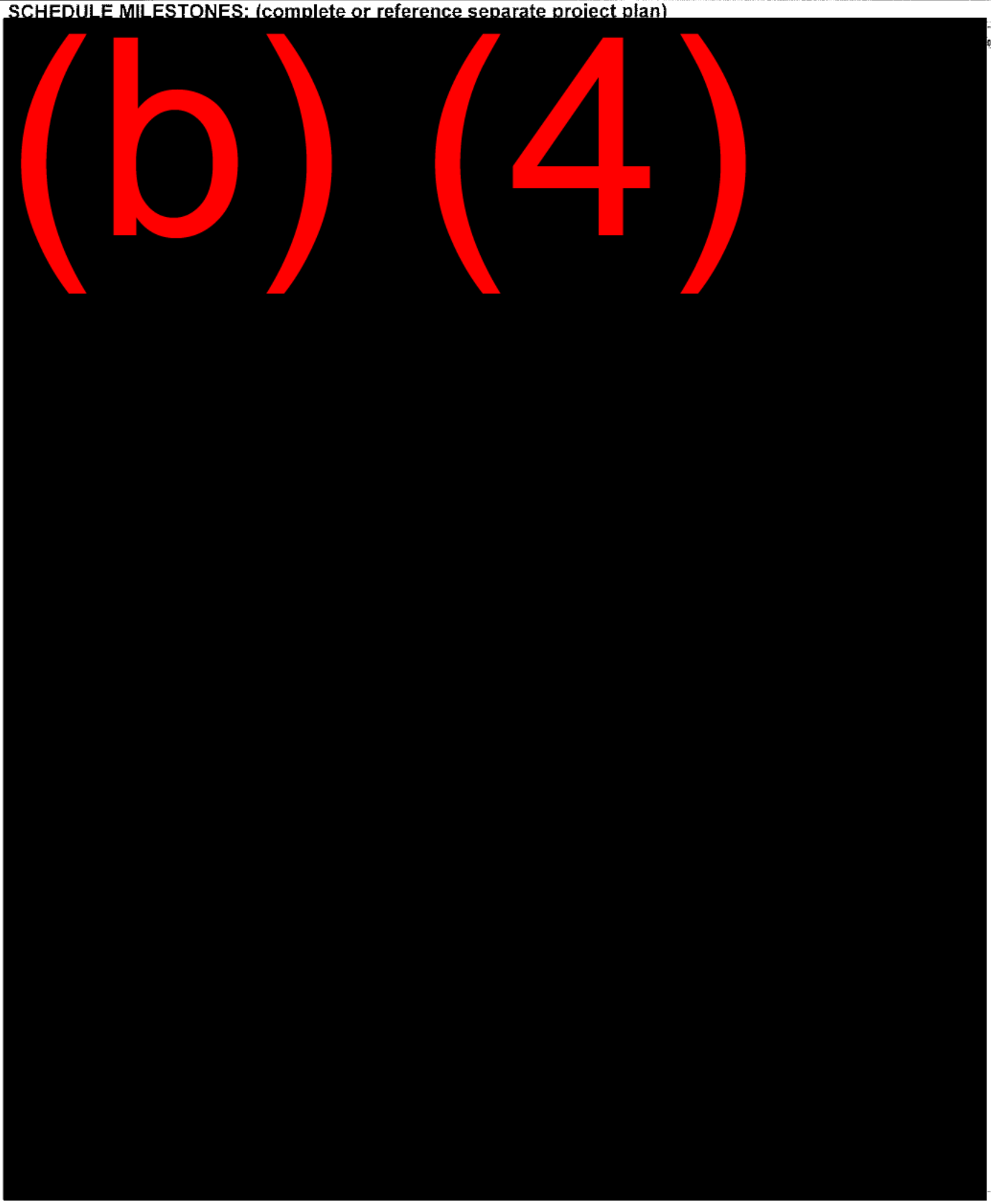
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (cont.)

26	Verify that the aluminum ingress/egress step assembly has been installed to the MFM IML just below the hatch opening. per dimensions provided by CWG.	The aluminum ingress/egress step assembly has been installed to the MFM IML just below per dimensions provided by CWG.	21	
27	Verify that spacers have been installed against the ECLS panels to allow removal of the lateral struts for the seat pallet.	Spacers have been installed against the ECLS panels to allow removal of the lateral struts for the seat pallet.	22	
28	Verify that broken insulation, broken wire conductors near the connectors, and wires that have pulled out of crimped connections on the GFE lighting system has been repaired by replacing connectors and rewiring the system as required to make it functional and safe.	Lighting system connectors have been replaced and the system has been rewired and tested	23	
29	Verify that three seat bracket mounting holes have been drilled and tapped in the MFM seat pallet.	Three seat bracket mounting holes have been drilled and tapped in the MFM seat pallet as directed by the requestor..	27	
30	Verify that one GSE door hinge and door have been installed to Bay C locker.	One GSE door hinge and door have been installed to Bay C locker.	28	
31	Verify that an installation sketch has been provided for light fixture installation based on coordinates given in Orion Lighting Installation Plan that was provided by CWG.	An installation sketch was provided for light fixture installation based on the Orion Lighting Installation Plan.	29	
32	Verify ingress/egress step and doors for lockers A, C, D and E, and four ECLSS floor panels have been proofloaded.	Ingress/egress step and doors for lockers A, C, D and E, and four ECLSS floor panels have been proofloaded.per attached form.	30	

CR NO.: 2605 Rev A	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2605 Rev A	DX CHANGE REQUEST

CR TITLE: FY13 Orion Mockup Installation and Operations

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

Assumptions:

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Labor:

(b) (4)

(b) (4)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
~~FY13~~ Rev A	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 958	12/17/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 958

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
December 28, 2012

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 958

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 958

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia Maclean 12/17/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 958 is to: Provide HIFI SS-SPDM Mockup Fabrication The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $10,459. Work is to be completed by December 28, 2012 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	10,459.00	10,459.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 10,459.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2482B	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

1. REQUESTOR: DX/Randall McDaniel	2. PHONE: x32570	3. E-MAIL: randall.s.mcdaniel@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☐ OTHER: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Using the development MDRD-401 defined under CR2448, fabricate a replacement high fidelity stainless steel Special Purpose Dexterous Manipulator (HIFI-SS-SPDM) mockup for use in NBL training runs.

Rev A: Incorporate SCIF-01, SCIF-02, and SCIF-03. Revise the schedule to complete work on the Cradle by the end of November 2012 in GFY 13.

Rev B: Incorporate SCIF-04. Revise the schedule to complete work and close out the CR by December 28. 2012.

7. RATIONALE
The existing HIFI-AL-SPDM NBL Mockup is primarily made of aluminum. After a decade of use in the pool, the aluminum material has significantly degraded and as a result limits training fidelity.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

A Hi-Fi Stainless Steel SPDM Mockup shall be provided per the requirements defined in MDRD-401, High Fidelity Stainless Steel Special Purpose Dexterous Manipulator (Hi-Fi SS SPDM).
TRR required as specified in MDRD-401.

9. NEED DATE: (support date in block 7 rationale) 9/4/12	10. CR SUBMISSION DATE: Sept. 22, 2011

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: s/ J Haas (in ICE) Date: 9/23/11

12. NASA POC: Frank Markle	13. PHONE: 281-483-0696	14. E-MAIL: franklin.s.markle@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~$566,700~~ Total **$584,900 $595,400 GFY12 Total $562,100, GFY13 Total $22,800 $33,300** ~~Rev A~~ **Rev B**	20. NEGOTIATED DELIVERY DATE: ~~Sept 4, 2012~~ ~~November 30~~ December 28, 2012 ~~Rev A~~**Rev B**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2482B	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

REQUIREMENTS/REFERENCES (cont.):

SCIF 01 incorporated in Rev A. Risk 01 Activated. Additional design effort and stress analysis iterations were required to complete the design of the SPDM assembly to include the load alleviator feature (which was considered highly desirable over replaceable sheer pins). The additional analysis iterations were needed to be performed to address all load conditions and issues which in turn also drove additional designer support to incorporate modifications to the model.

SCIF 02 incorporated in Rev A. Risk 05 Activated. The current THA had several items that were not usable or did not meet the MDRD requirements as expected. This caused a redesign of several components as well as new ones; new models and drawings were required to be developed for manufacture of items.

SCIF-03 incorporated in Rev A. Risk 06 Activated. Additional design iterations were required to properly weigh out the arm segments (as modeled in Pro-E). The largest impact was due to the OTCM design. During Design reviews it was determined that all efforts be made to have each OTCM weighed out when not attached to the arm causing several iterations over the plan; additional arm design effort was generated to address several high stress areas.

SCIF-04 incorporated in Rev B. Risk 05 Activated. Various parts from the existng Mockup were planned to be used on the new SPDM Mockup. The original LEE latches could not be used as planned. Three new latch sets, drawing number (b) (4) had to machined and assembled. In addition, various UHMW boxes for outfitting were not to print and had to be modified or the brackets modified or remade, as follows:
1) 4 boxes on each EP (8 total), brackets had to be modified / remade and the drawings had to be redlined and updated
2) 12 boxes on the LEE, brackets had to be modified / remade, the drawings had to be redlined and updated, and the camera had to be remade because it was not to print
3) 4 boxes on the Lower Body, brackets had to be modified / remade and the drawings had to be redlined and updated
4) 12 shrouds, 2 per OTCM (4 total), 4 on each arm (8 total), brackets had to be modified and the drawings had to be modified & updated

The Rev B changes cause a schedule delay of 2-3 weeks in final assembly, so the final delivery date is being extended to December 28, 2012. These changes also cause a GFY13 increase of $10,500 in the total cost of the project.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

See MDRD-401 – Mockup Development Requirements Document for the Development of the HIFI-SS-SPDM, Section 10 – Requirements Verification Matrix (RVM), (b) (4)

CR NO.: 2482B	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

SCHEDULE MILESTONES: (complete or reference separate project plan)

~~Rev A~~

(b) (4)

CR NO.: 2482B	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2482B	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2482B	DX CHANGE REQUEST

CR TITLE: HIFI-SS-SPDM Mockup Fabrication

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

[redacted] (b) (4)

FY12: Total Cost [redacted] (b) (4)

	DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
Rev A	[redacted] (b) (4)				

FY13: Total Cost ~~$22,800~~ $33,300 ~~Rev A~~ Rev B

	DESIGN	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
~~Rev A~~	[redacted] (b) (4)				
Rev B					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 959	12/17/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 959

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
January 11, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 959

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO959

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 12/17/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 959 is to: FY13 Orion Mockup Installation and Operations The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $7,247. Work is to be completed by January 11, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	7,247.00	7,247.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 7,247.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2209 Rev B	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

1. REQUESTOR: Glenn Johnson	2. PHONE: x39329	3. E-MAIL: glenn.f.johnson@nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION 3.6.1
☐ CONSTELLATION ☐ OTHER: (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Upgrade the fidelity of the Crew Quarters 3 per the requirements below.

Rev A: Correct pricing
Rev-B: SCIF 2209-01:Add Painting services to the cost of the CR, SCIF2209-02 Fan speed control impact.

7. RATIONALE
The port Crew Quarters in B9 Node 2 mockup needs to be powered to allow crew and engineering training of the equipment, situational awareness of operations, repairs and cleaning.

8. REQUIREMENTS AND REFERENCES:

See requirements on Page 2

Note: Per the Safety Review conducted 03/21/12 no TRR required prior to final acceptance.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 11/1/11

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Allison McIntire Date:04/21/11

12. NASA POC: Ronny Newman	13. PHONE: x31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
Rev A: ~~FY12 $53,900; FY13 $22,500 (total $76,400)~~	~~11/27/12~~
Rev A: ~~FY12 $60,500; FY13 $27,700 (total $ 88,200)~~	~~11/14/12~~
Rev B: FY12 $60,500; FY13 $35,000 (total $ 95,500)	1/11/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2209 Rev B	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

REQUIREMENTS/REFERENCES (cont.):

1. Provide IIA CQ Electrical panel ([redacted] (b) (4) [redacted]. Panel shall be outfitted with all electrical connectors (IIA);hinged panels [redacted] (b) (4) [redacted], Electrical panel connector plates (IIB, [redacted] (b) (4) [redacted] (b) (4)), battery and fuse compartment (IIA, SDG32110320-001). Provide power from NODE2 power cables to J10, J11 and J13 connectors. Fidelity IIA Electrical connectors J22, J23, J24, J25, J20, J16, J17, J18 and J21 shall provide power to GLA assembly (not yet installed and not part of this CR), Fans (already installed) and Speed Control Assembly (see below), Egress light assembly (not yet installed and not part of this CR), Rack power switch below) and Test panel (not yet installed and not part of this CR). Internal wiring is not required to be flight-like. J22 and J23 must be able to interface with UOP. Drawings for cables have been placed in the CR2209 folder on the SVMF server. Provide captive fasteners for closeout panel mounting (IIA, [redacted] (b) (4) [redacted]. Provide caps for electrical connectors (IIIA, similar to PN [redacted] (b) (4) [redacted]
2. Fabricate and install a functional Fan Speed Control Assembly
3. Install IIIA mockup of Rack power switch. The switch will turn off power of the rack when the rack is not in use.
4. Modify Bump-out blankets to have openings for fan speed control (installed by this CR) and connector plate
5. Add bump out connector plate, mark as J30, J31, J32, J33
6. J16 mates to J30 to provide fan control.
7. Review the Hazard Analysis(s) to cover the design changes, SVMF 120vdc Hazard analysis, Node-2 Hazard Analysis to determine if an update is required.
8. Update the Hazard Analysis to cover the design changes, if required.
9. Add power control switch to panel to control the power to J22 and J23.
10. Add LED indicators to the J22, J23 connectors to show if outlets are powered.
11. **Rev-B** Paint the electrical and connector panels white (SCIF1)
12. **Rev B:** Redesign the fan speed control circuit to work with the non-flight-like GFE fan (SCIF2)

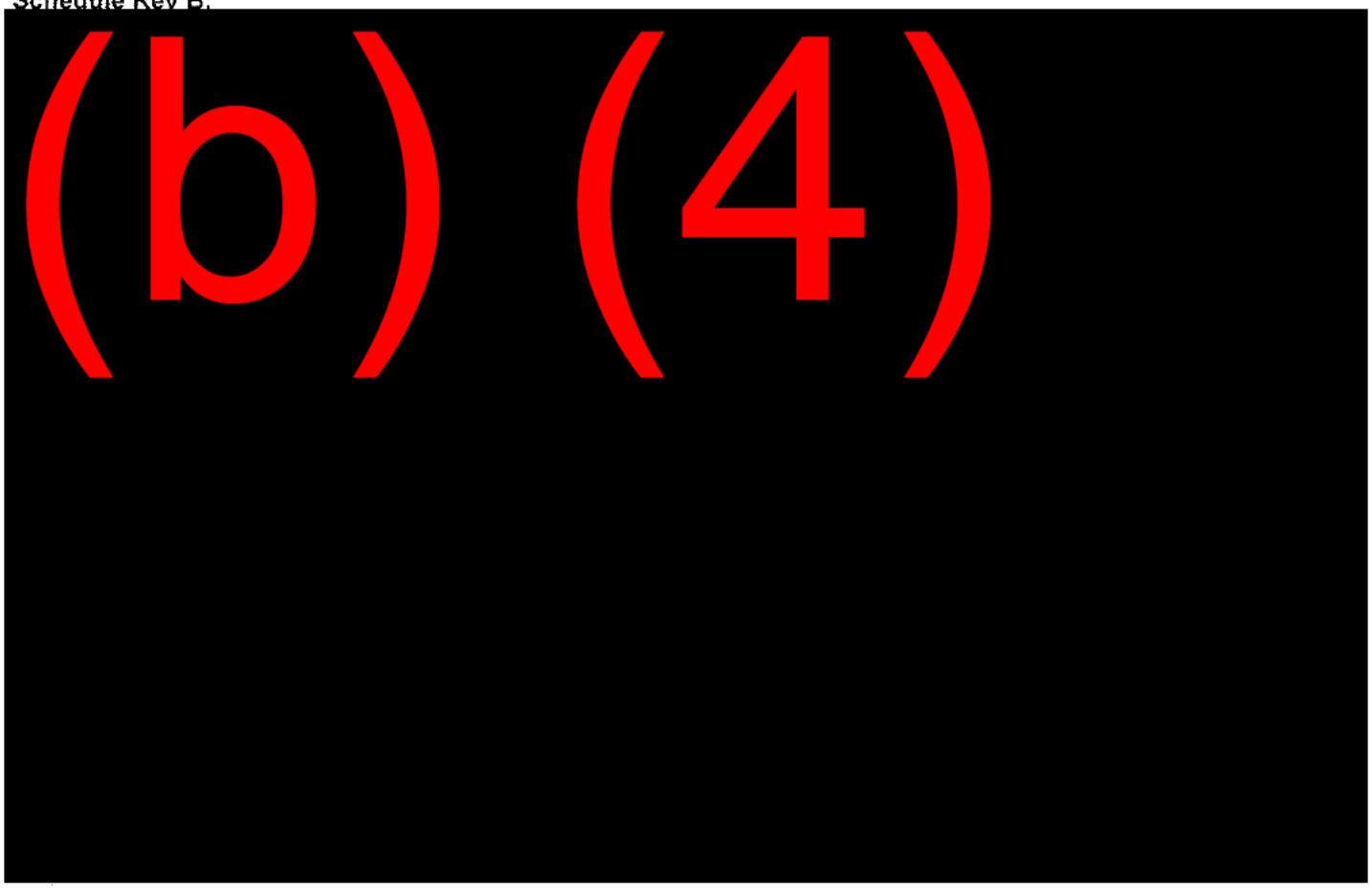
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

A separate acceptance test plan shall be provided at the time of the test.

CR NO.: 2209 Rev B	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

Schedule Rev B:



CR NO.: 2209 Rev B	DX CHANGE REQUEST

CR TITLE: Power for Crew Quarters CQ3

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design Cost	PE Cost	Administrative	Tech Cost	Material Cost
Rev A: FY12			(b) (4)		
Rev A: FY12					

Fiscal Year	Design Cost	PE Cost	Administrative	Tech Cost	Material Cost
Rev A: FY13			(b) (4)		
Rev A: FY13					
Rev B: FY13					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 960	12/17/12	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BH/ Chrystal Nevels
Tel. No.: (281) 792-7842 Fax:
E-mail: chrystal.d.nevels@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 960

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
January 10, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 960

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO960

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 12/17/12
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 960 is to: FY13 Orion Mockup Installation and Operations The estimated cost is $ (b) (4) The estimated award fe The estimated incentive The total value of this Delivery Order is $41,026 Work is to be completed by January 10, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	41,026.00	41,026.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 41,026.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2499 Rev A	DX CHANGE REQUEST	Page: 1 of 14

CR TITLE: Build High Fidelity Airlock Hatch Trainer

1. REQUESTOR:	2. PHONE:	3. E-MAIL
DX32/Alex Kanelakos DX32 (b) (4)	281-483-8687 (Alex) (b) (4)	alexandros.d.kanelakos @nasa.gov (b) (4) @nasa.gov

4. PROGRAM /PROJECT:	5. FUNCTIONAL AREA:
☐ SHUTTLE ☒ STATION ☐ CONSTELLATION ☒ OTHER: 2.6.2 (401769)	☒ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS ☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

(b) (4)

7. RATIONALE

There is currently no high fidelity EVA hatch trainer. Crewmembers are instructed 1G on the hatch via photos and then in the NBL, where the hatch operation is difficult and has a lot of overhead due to the suit umbilicals. Construction of the hatch trainer will allow instructors to teach crewmembers on the operations of the on-orbit EVA hatch and its mechanisms. A spare Space Shuttle hatch is available at the SVMF for modification. This hatch is similar to the ISS EVA hatch and can be used for this specific trainer. Trainer is required to be delivered in FY12 to utilize FY12 funding.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

EVA Hatch Train Concept 2.doc

1. Build an " L" shaped ISS EVA A/L Hatch Trainer (reference the attached drawing and photos)
   - 1a. The trainer shall have two orientations (See EVA Hatch Concept 2.doc)
     - i. One for training hatch ops: Hatch in closed position on the ground and then rotates into the stowed position vertical. Height should allow for operation in a horizontal position (reference attached – Slide #5 in the Pics.ppt file)
     - ii. One for training mechanisms operations (hatch latch and hatch hinge release) Hatch in open, locked position against "endcone end". Trainer rotated so the mechanisms on the bottom of the hatch can be studied from a standing position.
   - 1b. Use existing Space Shuttle hatch hardware from the SVMF:
     - i. Hatch catch, latch, hinge, hinge disconnect, and latch disconnect
     - ii. Crank, valve switches, gauges, labels, and handle
     - iii. Hatch cut-out (want to seat hatch on sealing surface for closure)
     - iv. Crewlock internal handle and D-ring on cutout/structure (not on hatch)
   - 1c. - 1j. Are small additional details to be added to accentuate the A/L trainer for operations or safety

9. **NEED DATE:** (support date in block 7 rationale)	10. CR SUBMISSION DATE:
September 30, 2012	April 19, 2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: /s Randy McDaniel
Date: 04/19/12

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ronny Newman	x31793	Global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractors procedures and attach ☒ No – completion of this form is adequate for planning

CR NO.: 2499 Rev A	DX CHANGE REQUEST	Page: 2 of 14

CR TITLE: Build High Fidelity Airlock Hatch Trainer

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$81.1K ($73.9K FY12) ($7.2K FY13)~~ **Rev A** $122.1K ($73.9K FY12) ($48.2K FY13)	~~6 November 2012~~ **Rev A** 10 January 2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date:_____	**COTR For CRs with Cost Impact Only** COTR:_____ Date: _____

Closed by:_____ **Date:**_____

CR TITLE: Build High Fidelity Airlock Hatch Trainer

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Fabricate an ISS EVA A/L Hatch Trainer (Use existing Space Shuttle hatch hardware from the SVMF)	(b) (4) (b) (4) UIA-hatch stowed.jpg UIA-hatch stowed 2.jpg Pics.ppt SODF_EV Hatch Hinge Disconnect.pdf SODF_EV Hatch Latch Disconnect.pdf	VMDB IO EVA Lesson Plan EVA SODF	1	IIA	(b) (4)
1a.	"L" shaped trainer with two- preferred orientations: 1. Hatch Operations Orientation: Hatch in closed position on the ground and then rotates into the stowed position vertical. Height should allow for operation in a horizontal position (reference attached – Slide #5 in the Pics.ppt file) 2. Hatch Mechanisms Orientation: Hatch in open, locked position against "endcone end". Trainer rotated so the mechanisms on the bottom of the hatch can be studied from a standing position. NOTE: DX3 instructors should be allowed to rotate the trainer on their own or have a technician assist in rotation.	Reference EVA Hatch Train Concept 2.doc		1	N/A	(b) (4)

CR TITLE: Build High Fidelity Airlock Hatch Trainer

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1b	Use existing Space Shuttle hatch hardware from the SVMF: EVA hatch details: i. Hatch catch, latch, hinge, hinge disconnect, latch disconnect, ii. Crank, valve switches, gauges, labels, handle iii. Hatch cut-out iv. Representative sealing surface v. Crewlock internal circular handrail and D-ring on cutout/structure (not on hatch)		High fidelity hardware from the FFT or CCT	1	IIA	(b) (4)
1c.	D-ring extender on A/L D-ring extender (plastic NBL version is acceptable)			1	IIB	
1d.	A flight-like hatch catch shall operate with hatch latch, depressing lever shall release hatch	Pics.ppt		1	II.B	
1e	Attach a tether point located to the hatch CG for use with ARGOS. Tether point shall not interfere with turn crank	EVA Hatch Train Concept 2.doc		1	III.C	
1f.	If not present, add grounding wire to PIP pins on EVA hatch arms.	hatch_grounding_wires.pdf		2	III.C	
1g.	A 1-G safety lock should be placed on the same side as the hatch catch to assist in holding the hatch weight in a 1G environment	Pics.ppt		1	N/A	
1h.	The EVA A/L Hatch Trainer shall be equipped with locking casters to provide mobility within the facility	Pics.ppt		4	N/A	
1i.	In Orientation 2, the EVA A/L Trainer shall have anti-slip feet	Pics.ppt		4	N/A	
1j.	A/L picture of EVA bags along "endcone" end of the trainer	Slide 2 Pic.PPT		1	N/A	
2	per the Safety Review conducted on 02/16/12 a Mockup TRR is required prior to final acceptance		PDR and CDR Hazard Analysis			

Rev A:
SCIF 01: Adds scope resulting from clarifications of ARGOS tether point design requirements, clarification of ARGOS driven lift readiness requirements, preparation effort specific to ARGOS driven TRR requirements.

SCIF 02: Incorporates additional effort incurred through realization of Risk 03 (fabrication challenges and rework), and realization of Risk 05 (trainer tilt rotation requirements) design maturity impact necessitating crane-assisted trainer lift.

SCIF 03: Incorporates additional effort resulting from realization of potential impacts identified in Assumption 10 (GFE hatch functionality) necessitating adjustments to the latching mechanism and interfacing bulkhead surfaces.

CR TITLE: Build High Fidelity Airlock Hatch Trainer

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	VERIFICATION
1	Fabricate an ISS EVA A/L Hatch Trainer (Use existing Space Shuttle hatch hardware from the SVMF)	1	IIA	
1a.	"L" shaped trainer with two- preferred orientations: 1. Hatch Operations Orientation: Hatch in closed position on the ground and then rotates into the stowed position vertical. Height should allow for operation in a horizontal position (reference attached – Slide #5 in the Pics.ppt file) 2. Hatch Mechanisms Orientation: Hatch in open, locked position against "endcone end". Trainer rotated so the mechanisms on the bottom of the hatch can be studied from a standing position. NOTE: DX3 instructors should be allowed to rotate the trainer on their own or have a technician assist in rotation	1	N/A	
1b	Use existing Space Shuttle hatch hardware from the SVMF: EVA hatch details: i. Hatch catch, latch, hinge, hinge disconnect, latch disconnect, ii. Crank, valve switches, gauges, labels, handle iii. Hatch cut-out iv. Representative sealing surface v. Crewlock internal circular handrail and D-ring on cutout/structure (not on hatch)	1 of each	IIA	
1c.	D-ring extender on A/L D-ring extender (plastic NBL version is acceptable)	1	IIB	
1d.	A flight-like hatch catch shall operate with hatch latch, depressing lever shall release hatch	1	II.B	
1e	Attach a tether point located to the hatch CG for use with ARGOS. Tether point shall not interfere with turn crank	1	III.C	EXCEPTION 01
1f.	If not present, add grounding wire to PIP pins on EVA hatch arms	2	III.C	
1g.	A 1-G safety lock should be placed on the same side as the hatch catch to assist in holding the hatch weight in a 1G environment	1	N/A	
1h.	The EVA A/L Hatch Trainer shall be equipped with locking casters to provide mobility within the facility	4	N/A	
1i.	In Orientation 2, the EVA A/L Trainer shall have anti-slip feet	4	N/A	
1j.	A/L picture of EVA bags along "endcone" end of trainer	1	N/A	

CR TITLE: Build High Fidelity Airlock Hatch Trainer

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR TITLE: Build High Fidelity Airlock Hatch Trainer

BASIS OF ESTIMATE (include and identify significant assumptions): **(complete or reference separate project plan)**

(b) (4)

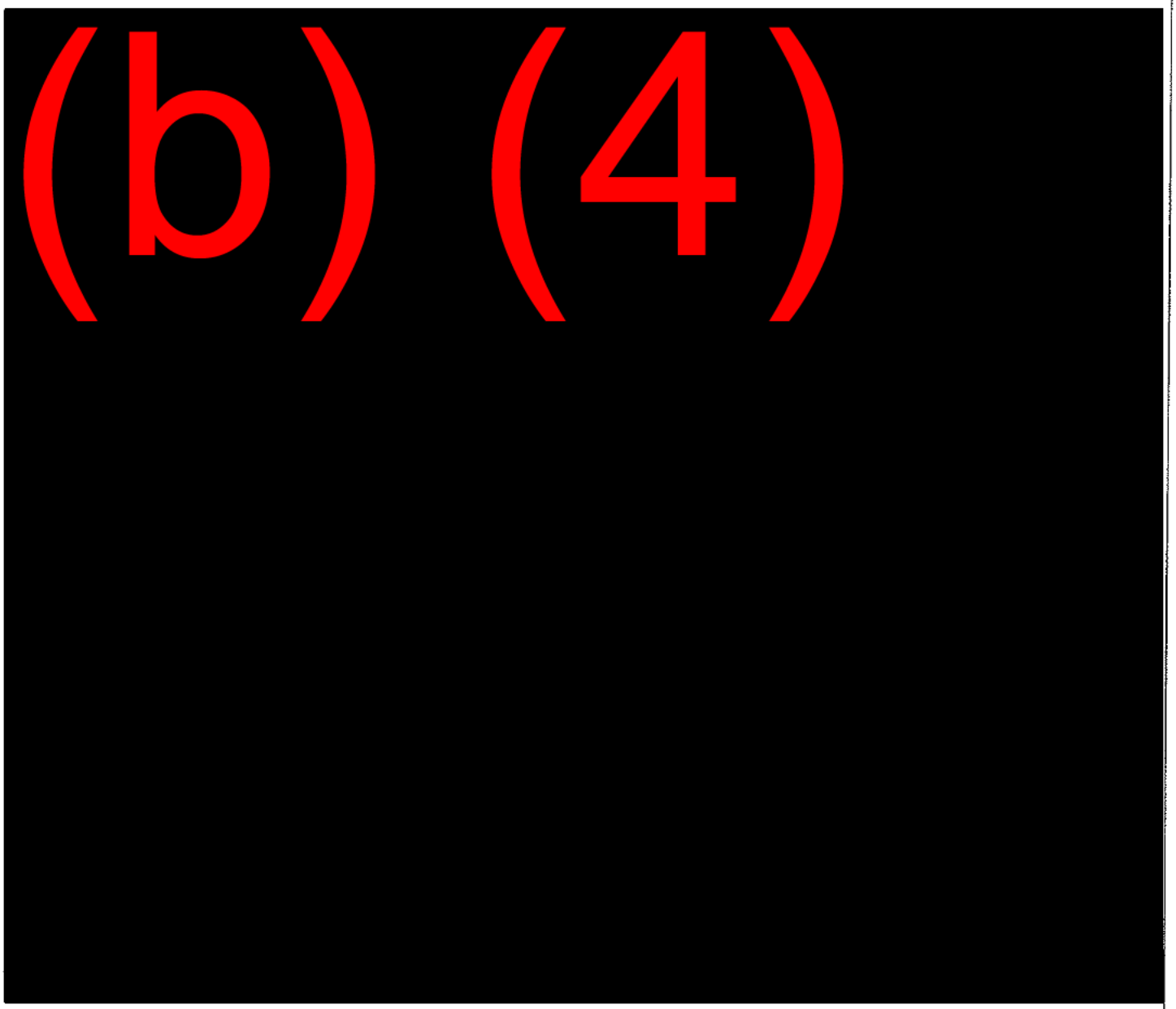
CR TITLE: Build High Fidelity Airlock Hatch Trainer

BASIS OF ESTIMATE (cont'd)

(b) (4)

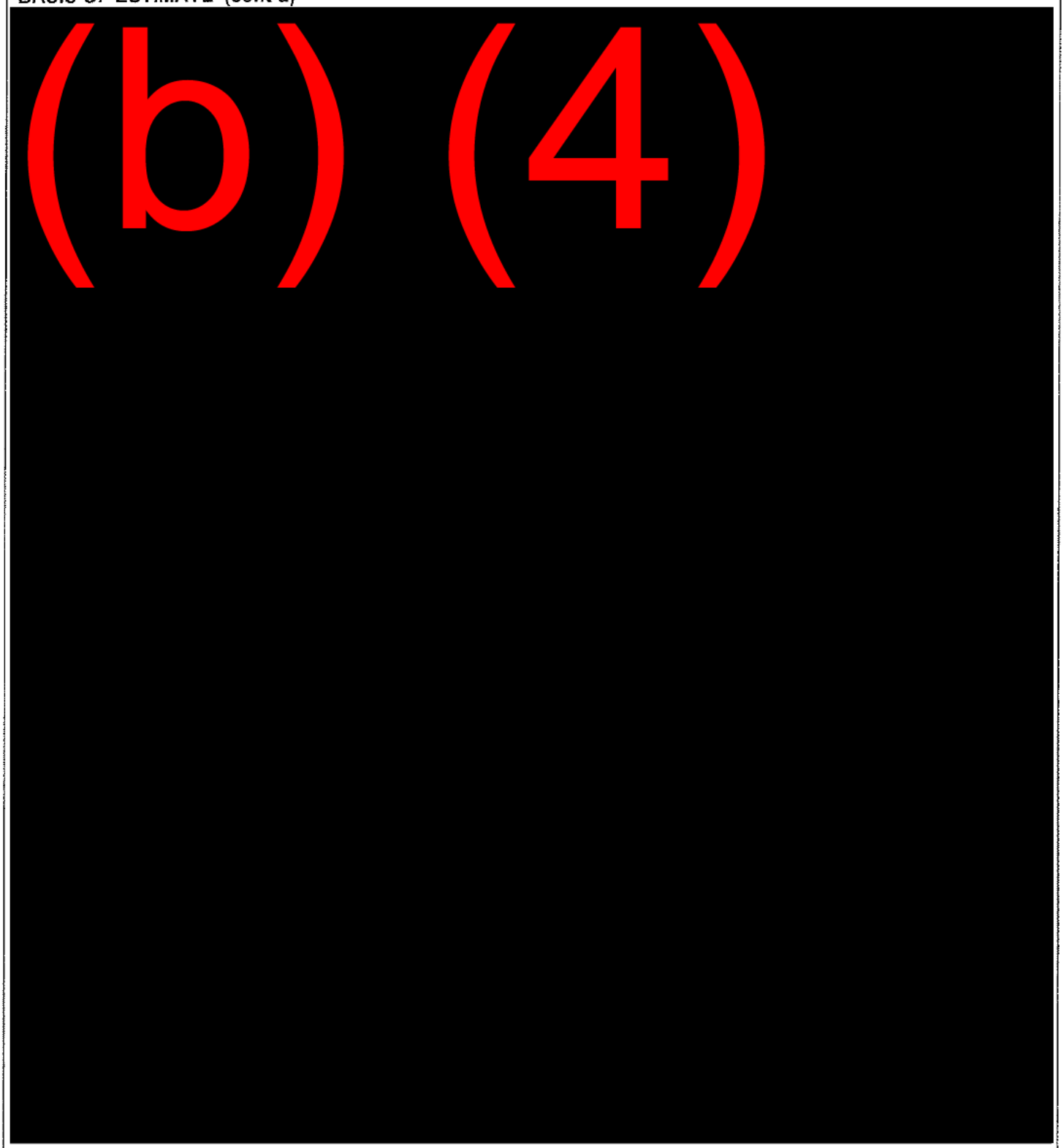
CR TITLE: Build High Fidelity Airlock Hatch Trainer

BASIS OF ESTIMATE (cont'd)



CR TITLE: Build High Fidelity Airlock Hatch Trainer

BASIS OF ESTIMATE (cont'd)



(b) (4)

CR TITLE: Build High Fidelity Airlock Hatch Trainer

RISK ASSESSMENT (cont'd)

(b) (4)

CR TITLE: Build High Fidelity Airlock Hatch Trainer

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

	Design	Engineering and Program Support	Management	Technicians	Material
Baseline FY12	(b) (4)				
~~Baseline FY13~~					
Rev A FY13					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 961	01/02/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 961

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 10, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 961

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO961

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: ~~Cynthia Maclean~~ P. Lamar Mueller

P. Lamar Mueller — Contracting Officer
1-2-13 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 961 is to: FY13 FIRST Robotics Support The estimated cost is $ (b) (4) The estimated award fe The estimated incentive The total value of this Delivery Order is $23,474 Work is to be completed by May 10, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	23,474.00	23,474.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 23,474.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative _____ Date

CR NO.: 491	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY13

1. REQUESTOR: Angela Prince	2. PHONE: 281-244-1086	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☒ OTHER ☒ FUND CODE: 2.6.3 (EC)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Establish NSOC technical support associated with the annual First Robotics Competition.

7. RATIONALE:
Annual NASA-sponsored support - confirmed externally funded.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No Safety review required – Annual event with safety processes in place from previous CR's (CR-454)

Annual NASA-sponsored support - confirmed externally funded.
- Safety oversight and facility oversight
- Manufacturing resources
- Travel in support of local competition

Such support is scheduled outside of NBL standard working hours; and therefore, will be charged at an overtime rate (x1.5) for non-exempt personnel.

This CR will be funded through an RFF with the JSC/Engineering Directorate (Mail Code EA). The NBL and LMF have supported this activity in previous years under CR-107, 166, 220, 267, 334, 407, and 454.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 12/13/2012
9/26/2013	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 12/19/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
Dan Sedej	281.244.8346	Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$23,500	5/10/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

CR NO.: 491	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY13

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

(b) (4)

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 962A	02/13/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 962A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 20, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 962A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO962A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 2/13/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 962A is to incorporate CR 2615A: AMS Hi-Fi Mockups CR 2615A The estimated cost is $ (b) (4) The estimated award fe The estimated incentive The total value of this Delivery Order is $29,917 Work is to be completed by September 20, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	29,917.00	29,917.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 29,917.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2615A	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

1. REQUESTOR: XA/ (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.1. (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Deliver a Hi-Fi NBL AMS-02 mockup per MDRD-402 and concepts developed under CR2545.

NOTE: This CR is partial development of the AMS-02 mockup defined in MDRD-402.

Rev A: This revision incorporates SCIF-01 to add resources and overtime hours in order to meet a requested hardware delivery date of 5/1/13 for the AMS Mockup to support EVA procedure development. In addition, it delays sand blasting the Mockup and final completion of the CR until after the planned EVA.

7. RATIONALE:

EVA training for AMS-02 modifications on-orbit requires the design and fabrication of a hi-fi mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Note: Safety Review and TRR are required.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
May 1, 2013	November 19, 2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: E. Turcotte Date: 11/19/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
DX/Janna Dake	36538	janna.j.dake@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: FY12	20. NEGOTIATED DELIVERY DATE:
~~$195,000~~ Rev A: $225,000	~~6/28/13~~ Rev A: 5/1/13 for Initial Delivery, 9/20/13 for completion of CR

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2615A	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

REQUIREMENTS/REFERENCES (cont.):

1. Mockup to meet the requirements of MDRD-402 as tailored in this CR.
2. Design/develop fabrication drawings and associated documentation
3. Review/adjust fabrication cost/schedules estimate after design is completed
4. Procure/fabricate hardware and assemble AMS-02 mockup per drawings
5. Perform Customer Acceptance (CAR) and Test Readiness Review (TRR)

MDRD SEC.	ITEM NAME	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE
4.1	**AMS-02 Structural Assy**			1	
4.1.1	Tracker Plane (1NS)	radiators_step_ug_6_17_10.prt.stp	EA3-2	2	IIIC
4.1.2	Transition Radiation Detector (TRD)	trd_step_10-27-10.stp	EA3-2	2	IIIC
4.1.3	Deferred ~~Time of Flight (TOF)~~				
4.1.4	Magnet Shell Cylinder	uss_step_ug_9_28_10.stp	EA3-2	1	IIIC
4.1.5	Upper Unique Support Structure (USS)	uss_step_ug_9_28_10.stp	EA3-2	2	IIIC
4.1.6	Tracker Radiator	ttcs_system_9_17_10.stp	EA3-2	2	IIIC
4.1.7	Radiator	radiators_step_ug_6_17_10.prt.stp	EA3-2	2	IIIC
4.1.8	Deferred ~~Ring Image Cherenkov Counter (RICH)~~				
4.1.9	Lower Unique Support Structure (USS)	luss_step_9_28_10.stp	EA3-2	1	IIIC
4.1.10	Deferred ~~ECAL (Electromagnetic Calorimeter)~~				
4.1.11	Keel Unique Support Structure (USS)	Reuse current Mockup H/W	NBL	1	IIIC
4.1.12	Passive Attachment Structure (PAS)	Reuse current Mockup H/W	NBL	1	IIIC
4.1.13	EVA Hardware	New and reused NBL H/W	NBL	1	IIIC
4.1.14	Deferred ~~Passive UMA and EVA Connector Panel~~				
4.1.15	MMOD Shields	Stp models provided by EA	EA3-2	1	IIIC
4.1.16	MMOD Star Tracker Tube	Stp models provided by EA	EA3-2	2	IIIC
4.2	**Deferred ~~AMS-02 MLI~~**				
4.3	**~~Storage Cradle~~/Support Stands**				

4.1.6 – Top support struts required to handle translation loads all other attachments are volumetric.
4.1.9 – Ribbed gussets not required on exposed areas
4.1.13 – Four Trunnion pins, two hi-fi and two lo-fi scuff plates, re-use PVGF and FRGF.
4.1.15 – TRD Pump cover only located on PVGF side, volumetric only
4.3 – Support stand interfaces required for in-water use only. Cradle has been Deferred.

CR NO.: 2615A	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

REQUIREMENTS/REFERENCES (cont.):

Rev A:

1) (b) (4)

2) Reprioritize the shop work to move jobs without training deadlines and allow concentration of resources on this CR.

3) (b) (4)

4) (b) (4)

5) Remove items from the existing mockup during maintenance week that are planned to be re-used. This (b) (4) is a risk reduction effort that will help with the design effort.

6) Begin fabrication of the non-structural "low risk" items early. (b) (4)
(b) (4)

7) Defer the sand blasting until after the EVA, at which time the mockup will be removed from the water, disassembled, sent out to be blasted, reassembled, inspected and reinstalled in the pool. This adds labor for that work, and adds management/support labor to extend the CR until the end of the GFY.

8) Eliminate the formal CDR. Instead include informal reviews of the documentation as available or when the shop starts work on the structural items.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

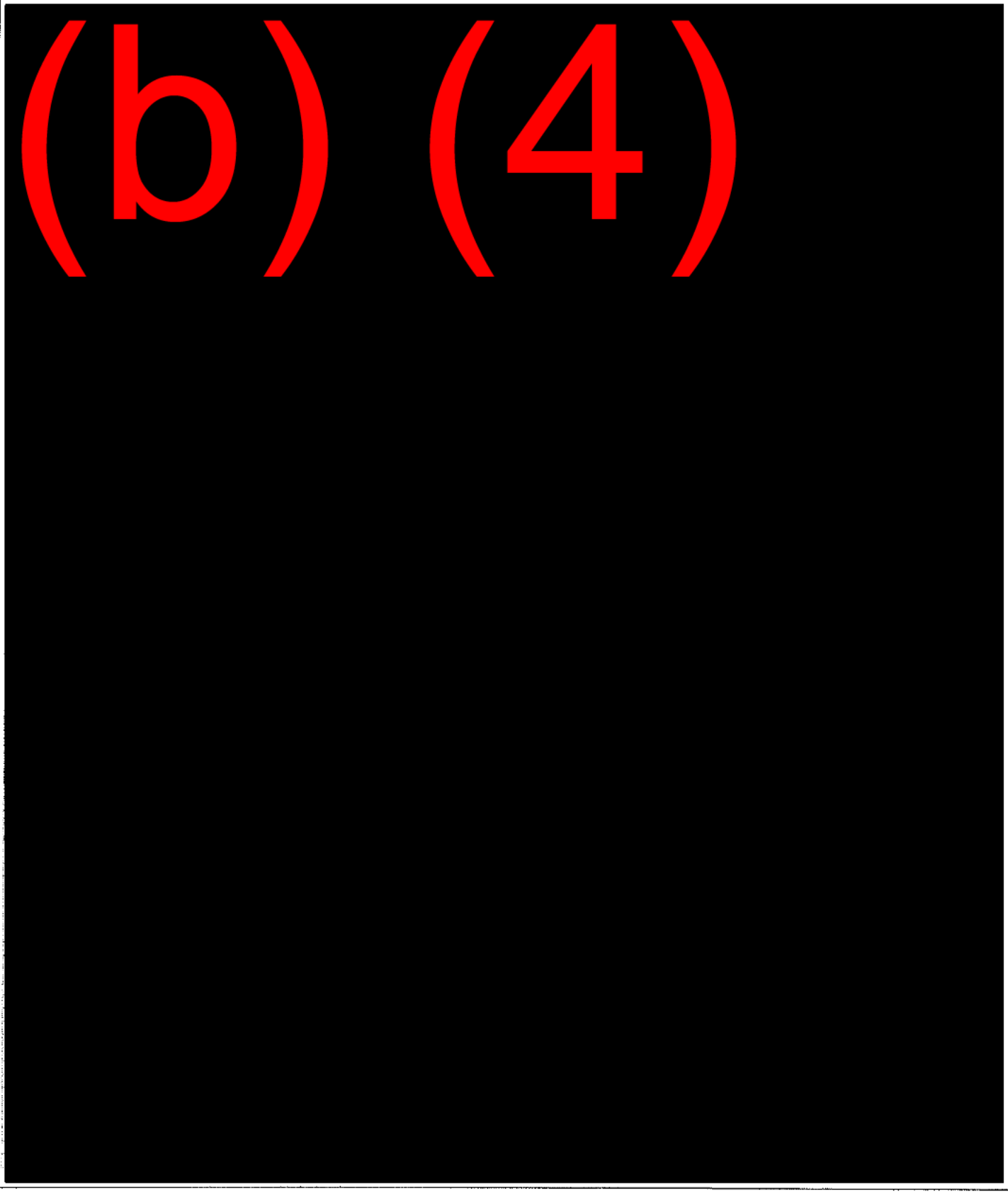
Delivery of AMS-02 mockup per requirements specified in the attached Requirements Verification Matrix RVM-CR2615-Rev-

11-08-RVM-CR-2615
.pdf

CR NO.: 2615A	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2615A	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

(b) (4)

CR NO.: 2615A	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 962B	09/03/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 962B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 20, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 962B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO962B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: JENNIFER L. KRAUSE
~~Cynthia Maclean~~
NASA CONTRACTING OFFICER
Jennifer Krause
Contracting Officer
9/3/13
Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 962B is to incorporate CR 2615B: AMS Hi-Fi Mockups CR 2615B The estimated cost is $ (b) (4) The estimated award fe The estimated incentive The total value of this Delivery Order is $21,372 Work is to be completed by September 20, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	21,372.00	21,372.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 21,372.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative
Date

CR NO.: 2615B	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

1. REQUESTOR (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.1. (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Deliver a Hi-Fi NBL AMS-02 mockup per MDRD-402 and concepts developed under CR2545.

NOTE: This CR is partial development of the AMS-02 mockup defined in MDRD-402.

Rev A: This revision incorporates SCIF-01 to add resources and overtime hours in order to meet a requested hardware delivery date of 5/1/13 for the AMS Mockup to support EVA procedure development. In addition, it delays sand blasting the Mockup and final completion of the CR until after the planned EVA.

Rev B: This revision incorporates SCIF-02 that adds resources and hours due to activating Risk-01 and SCIF-03 that adds revision to requirement 4.2 and additional cost of passivation.

7. RATIONALE:

EVA training for AMS-02 modifications on-orbit requires the design and fabrication of a hi-fi mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Note: Safety Review and TRR are required.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
May 1, 2013	November 19, 2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: E. Turcotte Date: 11/19/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
DX/E Turcotte	35730	global
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: FY12	20. NEGOTIATED DELIVERY DATE:
~~$195,000~~ ~~Rev A: $225,000~~ **Rev B:$246,400**	~~6/28/13~~ Rev A: 5/1/13 for Initial Delivery, 9/20/13 for completion of CR

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____	**COTR for CRs with Cost Impact Only**
Date: _____	COTR: _____
CCB CHAIR: _____	Date: _____
Date: _____	

CR NO.: 2615B	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

1. Mockup to meet the requirements of MDRD-402 as tailored in this CR.
2. Design/develop fabrication drawings and associated documentation
3. Review/adjust fabrication cost/schedules estimate after design is completed
4. Procure/fabricate hardware and assemble AMS-02 mockup per drawings
5. Perform Customer Acceptance (CAR) and Test Readiness Review (TRR)

MDRD SEC.	ITEM NAME	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE
4.1	**AMS-02 Structural Assy**			1	
4.1.1	Tracker Plane (1NS)	radiators_step_ug_6_17_10.prt.stp	EA3-2	2	IIIC
4.1.2	Transition Radiation Detector (TRD)	trd_step_10-27-10.stp	EA3-2	2	IIIC
4.1.3	Deferred ~~Time of Flight (TOF)~~				
4.1.4	Magnet Shell Cylinder	uss_step_ug_9_28_10.stp	EA3-2	1	IIIC
4.1.5	Upper Unique Support Structure (USS)	uss_step_ug_9_28_10.stp	EA3-2	2	IIIC
4.1.6	Tracker Radiator	ttcs_system_9_17_10.stp	EA3-2	2	IIIC
4.1.7	Radiator	radiators_step_ug_6_17_10.prt.stp	EA3-2	2	IIIC
4.1.8	Deferred ~~Ring Image Cherenkov Counter (RICH)~~				
4.1.9	Lower Unique Support Structure (USS)	luss_step_9_28_10.stp	EA3-2	1	IIIC
4.1.10	Deferred ~~ECAL (Electromagnetic Calorimeter)~~				
4.1.11	Keel Unique Support Structure (USS)	Reuse current Mockup H/W	NBL	1	IIIC
4.1.12	Passive Attachment Structure (PAS)	Reuse current Mockup H/W	NBL	1	IIIC
4.1.13	EVA Hardware	New and reused NBL H/W	NBL	1	IIIC
4.1.14	Deferred ~~Passive UMA and EVA Connector Panel~~				
4.1.15	MMOD Shields	Stp models provided by EA	EA3-2	1	IIIC
4.1.16	MMOD Star Tracker Tube	Stp models provided by EA	EA3-2	2	IIIC
4.2	**Deferred ~~AMS-02 MLI~~**				
4.3	**~~Storage Cradle~~/Support Stands**				

4.1.6 – Top support struts required to handle translation loads all other attachments are volumetric.
4.1.9 – Ribbed gussets not required on exposed areas
4.1.13 – Four Trunnion pins, two hi-fi and two lo-fi scuff plates, re-use PVGF and FRGF.
4.1.15 – TRD Pump cover only located on PVGF side, volumetric only
4.3 – Support stand interfaces required for in-water use only. Cradle has been Deferred.

Rev B: Add volumetric MLI (i.e. Kydex) to the TRD support frame to the top of the VC to prevent the crew from using structure as translational aids.

CR NO.: 2615B	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

REQUIREMENTS/REFERENCES (cont.):

Rev A:

1) (b) (4)

2) Reprioritize the shop work to move jobs without training deadlines and allow concentration of resources on this CR.

3) (b) (4)

4)

5) Remove items from the existing mockup during maintenance week that are planned to be re-used. This does not add cost but is a risk reduction effort that will help with the design effort.

6) Begin fabrication of the non-structural "low risk" items early. No additional cost has been added for this approach, but there is an increased risk that items completed early could change by the time everything else is complete (see new risk 5)

7) Defer the sand blasting until after the EVA, at which time the mockup will be removed from the water, disassembled, sent out to be blasted, reassembled, inspected and reinstalled in the pool. This adds labor for that work, and adds management/support labor to extend the CR until the end of the GFY.

8) Eliminate the formal CDR. Instead include informal reviews of the documentation as available or when the shop starts work on the structural items.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Delivery of AMS-02 mockup per requirements specified in the attached Requirements Verification Matrix RVM-CR2615-Rev-

11-08-RVM-CR-2615
.pdf

CR NO.: 2615B	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2615B	DX CHANGE REQUEST
CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup	
BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)	

(b) (4)

(b) (4)

CR NO.: 2615B	DX CHANGE REQUEST
CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup	
RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)	

(b) (4)

CR NO.: 2615B	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY13: Total Cost ~~$195,000~~ ~~Rev A $225,000~~ Rev B $246,400

	DESIGN	ENGINEERING & PROGRAM SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
		(b) (4)			
~~Rev A~~					
Rev B					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 962	01/02/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 962

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 28, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 962

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO962

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: ~~Cynthia Maclean~~ P. Lamar Mueller

P. Lamar Mueller 1-2-13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 962 is to: AMS Hi-Fi Mockups CR 2615 The estimated cost is $ (b) (4) The estimated award fe The estimated incentive The total value of this Delivery Order is $194,839 Work is to be completed by June 28, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	194,839.00	194,839.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 194,839.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2615	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

1. REQUESTOR: XA/ (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov

4. PROGRAM /PROJECT:
☐ SHUTTLE ☒ STATION
☐ CONSTELLATION ☒ OTHER: 2.6.1. (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCK-UP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Deliver a Hi-Fi NBL AMS-02 mockup per MDRD-402 and concepts developed under CR2545.

NOTE: This CR is partial development of the AMS-02 mockup defined in MDRD-402.

7. RATIONALE:

EVA training for AMS-02 modifications on-orbit requires the design and fabrication of a hi-fi mockup.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Note: Safety Review and TRR are required.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
May 1, 2013	November 19, 2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: E. Turcotte Date: 11/19/2012

12. NASA POC:	13. PHONE:	14. E-MAIL:
DX/Janna Dake	36538	janna.j.dake@nasa.gov
15. IMPLEMENTING CONTRACTOR PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: FY12	20. NEGOTIATED DELIVERY DATE:
$195,000	6/28/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2615	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

REQUIREMENTS/REFERENCES (cont.):

1. Mockup to meet the requirements of MDRD-402 as tailored in this CR.
2. Design/develop fabrication drawings and associated documentation
3. Review/adjust fabrication cost/schedules estimate after design is completed
4. Procure/fabricate hardware and assemble AMS-02 mockup per drawings
5. Perform Customer Acceptance (CAR) and Test Readiness Review (TRR)

MDRD SEC.	ITEM NAME	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE
4.1	**AMS-02 Structural Assy**			1	
4.1.1	Tracker Plane (1NS)	radiators_step_ug_6_17_10.prt.stp	EA3-2	2	IIIC
4.1.2	Transition Radiation Detector (TRD)	trd_step_10-27-10.stp	EA3-2	2	IIIC
4.1.3	Deferred ~~Time of Flight (TOF)~~				
4.1.4	Magnet Shell Cylinder	uss_step_ug_9_28_10.stp	EA3-2	1	IIIC
4.1.5	Upper Unique Support Structure (USS)	uss_step_ug_9_28_10.stp	EA3-2	2	IIIC
4.1.6	Tracker Radiator	ttcs_system_9_17_10.stp	EA3-2	2	IIIC
4.1.7	Radiator	radiators_step_ug_6_17_10.prt.stp	EA3-2	2	IIIC
4.1.8	Deferred ~~Ring Image Cherenkov Counter (RICH)~~				
4.1.9	Lower Unique Support Structure (USS)	luss_step_9_28_10.stp	EA3-2	1	IIIC
4.1.10	Deferred ~~ECAL (Electromagnetic Calorimeter)~~				
4.1.11	Keel Unique Support Structure (USS)	Reuse current Mockup H/W	NBL	1	IIIC
4.1.12	Passive Attachment Structure (PAS)	Reuse current Mockup H/W	NBL	1	IIIC
4.1.13	EVA Hardware	New and reused NBL H/W	NBL	1	IIIC
4.1.14	Deferred ~~Passive UMA and EVA Connector Panel~~				
4.1.15	MMOD Shields	Stp models provided by EA	EA3-2	1	IIIC
4.1.16	MMOD Star Tracker Tube	Stp models provided by EA	EA3-2	2	IIIC
4.2	**Deferred ~~AMS-02 MLI~~**				
4.3	**~~Storage Cradle~~/Support Stands**				

4.1.6 – Top support struts required to handle translation loads all other attachments are volumetric.
4.1.9 – Ribbed gussets not required on exposed areas
4.1.13 – Four Trunnion pins, two hi-fi and two lo-fi scuff plates, re-use PVGF and FRGF.
4.1.15 – TRD Pump cover only located on PVGF side, volumetric only
4.3 – Support stand interfaces required for in-water use only. Cradle has been Deferred.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Delivery of AMS-02 mockup per requirements specified in the attached Requirements Verification Matrix RVM-CR2615-Rev-

11-08-RVM-CR-2615
.pdf

CR NO.: 2615	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2615	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

(b) (4)

CR NO.: 2615	DX CHANGE REQUEST

CR TITLE: Design and Fabricate Alpha Magnetic Spectrometer (AMS) Hi-Fi Mockup

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY13: Total Cost $195,000

DESIGN	ENGINEERING & PROGRAM SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 963	01/30/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 963

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 963

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 963

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 1/30/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 963 is to: SSRMS FY13 Upgrades: The estimated cost is $(b) (4) The estimated award fe The estimated incentiv The total value of this Delivery Order is $99,883 Work is to be completed by September 26, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	99,883.00	99,883.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 99,883.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 493	DX CHANGE REQUEST

CR TITLE: SSRMS FY13 Upgrades

1. REQUESTOR: Paul Williamson	2. PHONE: 281.244.7814	3. E-MAIL: paul.williamson-1@nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☒ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Develop, test and implement new tools to improve NBL SSRMS system diagnostics and improve efficiencies in actuator testing. Develop, build and test a new shaft preload system in an effort to better understand or eliminate the "elbow anomaly".

a) Improve data logging in the DCR Main and Tune applications (include C1 and C2 pressures)
b) Develop a flow computation algorithm to derive flow from servo valve drive and pressure data.
c) Develop procedures and test servo valves in off-nominal conditions that may be seen in operation
d) Design build and test a "new" nut for preloading the elbow shaft and bearings.
e) Design and build a shaft coupling for the hydraulic test stand that minimizes shear and moment loads on the tested actuator.

7. RATIONALE:
These are reccomendations and follow on work from CR 488 (See report NBL-CS-ROBSS-R0069) and were deemed highest priority by DX12 NASA and NSOC personel.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See page 2

9. NEED DATE: (support date in block 7 rationale) 9/27/2013	10. CR SUBMISSION DATE: 12/17/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 12/19/2012

12. NASA POC: Paul Williamson	13. PHONE: 281.244-7814	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $99,900	20. NEGOTIATED DELIVERY DATE: 9/26/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 493	DX CHANGE REQUEST

CR TITLE: SSRMS FY13 Upgrades

REQUIREMENTS/REFERENCES (cont.):

a) Improved Data Logging
- Remove delta pressure from the log file and add C1 and C2 pressures in both main and tune mode.
- Update the log file convertor tool to convert the new files.

b) Flow Algorithm
- Create an algorithm to calculate flow as a function C1 and C2 pressures and servo drive.
- Have previsions to include valve offset, hysteresis, and flow gain correction.
- Create a tool to use the algorithm with SSRMS DCR log files.
- Validate calculations on the test stand with known flow rates.

c) Servo Valve Testing
- Create a test procedure and test set-up to simulate leaks into and out of the servo valve control volume.
- Test valves in different conditions to characterize leak patterns in log file data.

d) Elbow Shaft Nut
- Design, build and test a new shaft nut to create more reliable and repeatable shaft preload.
- Develop and validate preloading procedures.
- Test elbow actuator under different preloads and torque conditions to try and better understand or eliminate the "elbow anomaly"

e) Test Stand Coupling
- Design, build and test a test stand coupling that transmits torque but minimizes bending and shear loads due to misalignments.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
a)	Improved data logging	1	ea	Inspection		(b) (4)
b)	Flow algorithm	1	ea	Inspection		
c)	Servo valve testing	1	lot	Inspection		
d)	Elbow shaft nut	1	ea	Inspection		
e)	Test stand coupling	1	ea	Inspection		

CR NO.: 493	DX CHANGE REQUEST

CR TITLE: SSRMS FY13 Upgrades

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 964	02/27/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 964

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 24, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 964

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 963

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean
Contracting Officer
2/28/13
Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 964 is to: ASCAN Training and Evaluation Support: The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $25,916 Work is to be completed by May 24, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	25,916.00	25,916.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 25,916.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative
Date

CR NO.: 2630	DX CHANGE REQUEST

CR TITLE: ASCAN Evaluation Support

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: NASA Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV WBS 3.6.3
☐ OTHER ☒ FUND CODE: EC

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Support Astronaut Candidate (ASCAN) interview evaluations utilizing Partial Gravity Simulator (POGO).

7. RATIONALE:
POGO offers gravity off load capability to simulate Zero-G environment for ASCAN evaluations along a translation path and busy board.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2) The set up portion is covered under CR-2631.
NSOC shall provide equipment and labor to perform ASCAN evaluation using POGO operations with the following requirements as directed by CR requestor:

1. NSOC shall provide translation path with handrails from west end of POGO to the east end as directed by CR requestor.
2. The translation path shall consist of standard handrails mounted to structure utilizing the equipment set up for ARGOS as directed by CR requestor.
3. NSOC shall provide transition area in the middle of the translation path as directed by CR requestor.
4. The transition area shall provide a change in direction and altitude between the translation path utilizing the equipment set up for ARGOS as directed by CR requestor.
5. NSOC shall provide busy board at the east end of POGO with tool interfaces utilizing the equipment set up for ARGOS as directed by CR requestor.
6. The busy board shall have standard EVA tool interfaces for use with PGT supplied by customer.
7. NSOC shall provide ASCAN with protective helmet and body harness to attach to POGO.
8. NSOC shall provide approximately 48 feet of screening material to block the view of the POGO operations as directed by CR requestor.
9. NSOC shall support 5 weeks of ASCAN testing as directed by CR requestor.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 2/08/2013
Start of POGO test 2/25/2013	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: : (in ICE) Allison McIntyre Date:2/11/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ronny Newman	31793	NASA Global
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: (b) (4)	(b) (4)	NASA Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$26,000	May 24, 2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

CR NO.: 2630	DX CHANGE REQUEST

CR TITLE: ASCAN Evaluation Support

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

10. SR-570 Conducted on 2/13/13 requires an event TRR before this activity (target date 2/21)

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

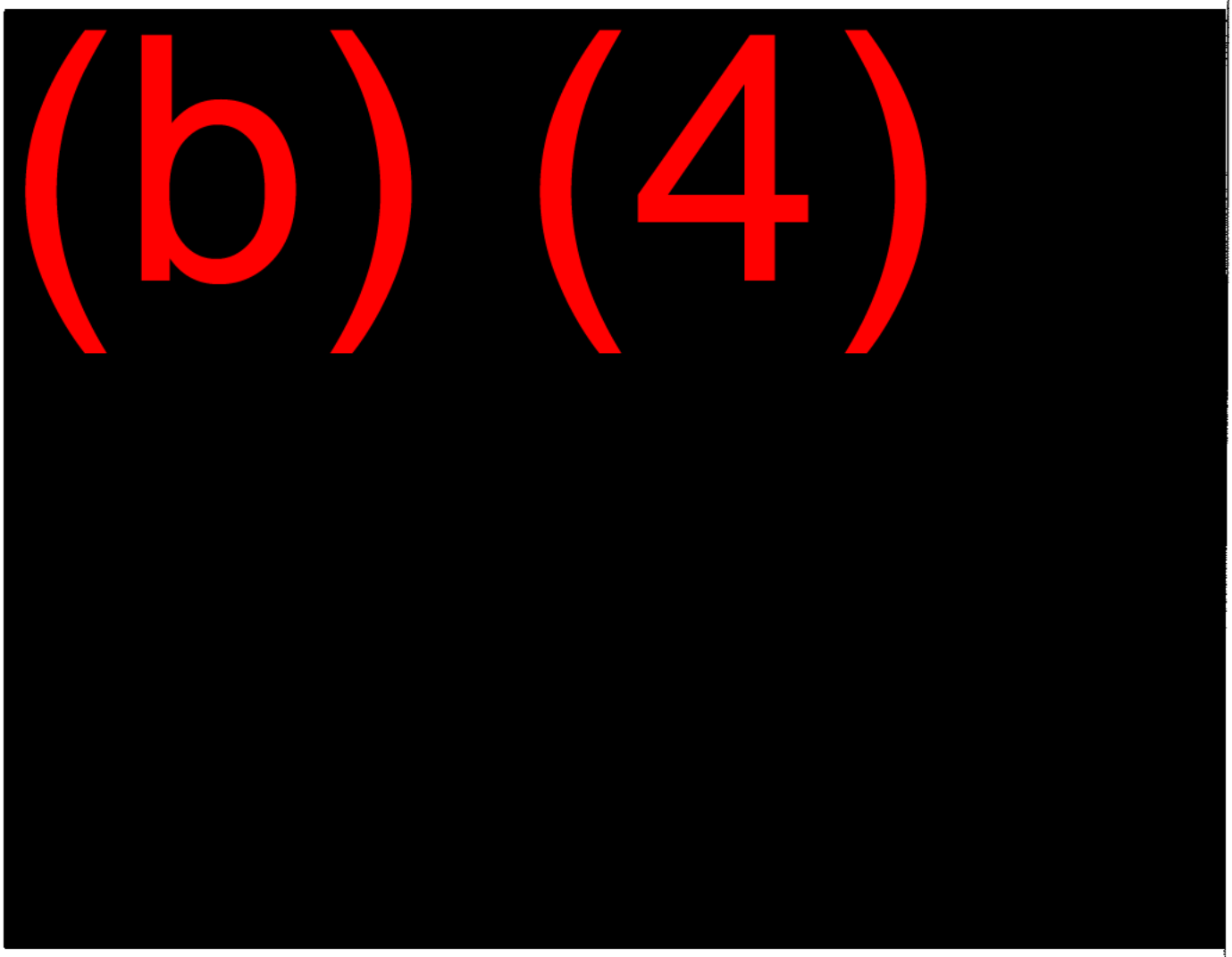
This CR provides labor and equipment to support evaluation of Astronaut Candidates (ASCAN) per direction of CR requestor, no formal requirement verification required. POGO operation and ASCAN evaluation area satisfies intent of this CR and meets the need of CR requestor.

Requirement Number	Description	CR Requestor or NASA POC Verification	Date
8.1	NSOC shall provide translation path with handrails from west end of POGO to the east end as directed by CR requestor.		
8.2	The translation path shall consist of standard handrails mounted to structure utilizing the equipment set up for ARGOS as directed by CR requestor.		
8.3	NSOC shall provide transition area in the middle of the translation path as directed by CR requestor.		
8.4	The transition area shall provide a change in direction and altitude between the translation path utilizing the equipment set up for ARGOS as directed by CR requestor.		
8.5	NSOC shall provide busy board at the east end of POGO with tool interfaces utilizing the equipment set up for ARGOS as directed by CR requestor.		
8.6	The busy board shall have standard EVA tool interfaces for use with PGT supplied by customer.		
8.7	NSOC shall provide ASCAN with protective helmet and body harness to attach to POGO.		
8.8	NSOC shall provide approximately 48 feet of screening material to block the view of the POGO operations as directed by CR requestor.		
8.9	NSOC shall support 5 weeks of ASCAN testing as directed by CR requestor. [redacted] (b) (4)		
8.10	TRR has been conducted prior to activity		

CR NO.: 2630	DX CHANGE REQUEST

CR TITLE: ASCAN Evaluation Support

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2630	DX CHANGE REQUEST

CR TITLE: ASCAN Evaluation Support

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 965	03/27/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 965

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 3, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 965

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 965

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 4/5/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 965 is to: MMSEV Reconfigurable Cabin Support Risk: The estimated cost is $(b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $29,588 Work is to be completed by May 3, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	29,588.00	29,588.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 29,588.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2634	DX CHANGE REQUEST

CR TITLE: MMSEV Reconfigurable Cabin Support

REQUESTOR:	2. PHONE:	3. E-MAIL:
Chad R. Moeller	46603	Chad.R.Moeller@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV 2.6.3
☒ OTHER ☐ FUND CODE:EC

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Support EC Division with outfitting of multiple interior configurations of a fiberglass MMSEV cabin (the 'Glassy' cabin). Support consists of procurement and technician support to fabricate and assemble interior components.

(b) (4)

7. RATIONALE:
The LMF Manufacturing department's knowledge of mock-up manufacturing use in underwater process development and training is necessary to help ensure cost effectiveness and proper fabrication/integration for the Glassy cabin with the interior configurations.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Provide material procurement and fabrication support required for outfitting the volumetric mock-up interior for the MMSEV 'Glassy' fiberglass cabin in multiple configurations as directed by EC. Effort includes attaching to a stable base for manufacturing and future testing. All direction for manufacturing activities will come through the EC project engineering. EC will require access to the mockup during fabrication and assembly to assess the configurations as they are developed. Access will be coordinated through the flight lead to ensure the mockup is available in a usable state

Safety Review Completed on 3/7/13. No TRR Required

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
May 1, 2013	2/19/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) John Haas Date: 2/21/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Dan Sedej	X48346	Daniel.T.Sedej@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
POC/Flight Lead: (b) (4)	(b) (4)	(b) (4) nasa.gov
Project Engineer:		@nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$35,300	5/3/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2634	DX CHANGE REQUEST

CR TITLE: MMSEV Reconfigurable Cabin Support

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

This CR provides labor and material to support outfitting the volumetric mock-up interior for the MMSEV 'Glassy' fiberglass cabin in multiple configurations as directed by CR requestor via the signed completed Work Order; no formal requirement verification required.

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2634	DX CHANGE REQUEST

CR TITLE: MMSEV Reconfigurable Cabin Support

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY13: Total Cost $35,300

DESIGN	ENGINEERING & PROGRAM SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 966	06/24/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 966

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 966

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 966

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 6/25/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 966 is to: Chillers 4-5 Procurement: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $291,774 Work is to be completed by September 26, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	291,774.00	291,774.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 291,774.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 467	DX CHANGE REQUEST

CR TITLE: Chillers_4-5_Procurement

1. REQUESTOR: Dan Sedej	2. PHONE: 281-244-8346	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2
(401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Procurement and delivery of replacement chillers 4 and 5 for the NBL.

[redacted] (b) (4)

7. RATIONALE:
Current chillers 4 and 5 are over 15 years old and nearing the end of their life expectancy, showing signs of deterioration and failures. Both chillers are in need of maintenance and one is not operational with major repairs needed. Replacement chillers will be high efficiency, low maintenance, energy star rated-green, and oil free. The units shall have remote control and monitoring capability.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Purchase two (2), 300 ton McQuay WMC Magnetic Bearing Centrifugal chillers, with (TBD) year extended warranties, as replacement units for existing NBL chillers 4 and 5. COD/CSC created a study to defined chiller requirements, these requirements are found on drawing M-920-L-49227 (Chiller 4 and 5 Replacement) new chillers will meet or exceed these requirements set forth by the COD study.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 3/05/2013
9/26/2013	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date:3/18/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	Global
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: [redacted] (b) (4)	[redacted] (b) (4)	Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$291,900	9/26/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 467	DX CHANGE REQUEST

CR TITLE: Chillers_4-5_Procurement

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verificaion	Verified	Technical Contact
1.	(b) (4) • Dual compressor 250 ton chiller 460 volt 3 phase • Single Point electrical connection with disconnect • 3/4 insulation on evaporator • 26 inch diameter, 12 foot long, 2 pass evaporator • 22 inch diameter, 12 foot long, 2 pass evaporator • Electonic evaporator and condensor flow switches • 1100 lbs R134A Freon Charge • Touch screen Microtech control • Electronic expansion valve	EA	2	Inspection		(b) (4)

CR NO.: 467	DX CHANGE REQUEST

CR TITLE: Chillers_4-5_Procurement

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

Only Procurement
No additional risks identified.

CR NO.: 467	DX CHANGE REQUEST

CR TITLE: Chillers_4-5_Procurement

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
	(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 968	04/04/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 968

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2013
F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 968

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 968

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 4/5/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 968 is to: Demag VFD Installation: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $49,216 Work is to be completed by September 26, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	49,216.00	49,216.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 49,216.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 499	DX CHANGE REQUEST

CR TITLE: Demag_VFD_Installation

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐X OTHER

6. DESCRIPTION OF CHANGE:
This CR is a (Turnkey Installation) for DEMAG Corp to supply parts and technician support to install VFD's on the North and South DEMAG Cranes per DEMAG Crane Modernization Data Package. These VFD's are for the hoist movement on the NBL cranes (VFD's for trolley and bridge movements were installed earlier).
CR_NBL_425_Demag_Eng_Support_Study_to_Install_Drum_VFD was completed to have DEMAG Corp. and Power Electronic work together to create a detailed Bill of Materials, Drawings and Installation Procedures (DEMAG Crane Modernization Data Package).

7. RATIONALE:
Per previously completed CR_NBL_425_Demag_Eng_Support_Study_to_Install_Drum_VFD. This new CR is to complete the VFD installation requirements set forth in DEMAG Crane Modernization Data Package.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No Safety Review required as this is turnkey procurement of COTS parts and installation from the manufacture. For Detailed Bill of Materials, Procedures, & Drawings please reference the following documentation:
DEMAG Crane Modernization Data Package

9. NEED DATE: (support date in block 7 rationale) 9/26/2013	10. CR SUBMISSION DATE: 3/5/2013

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _____
Date: 3/5/13

12. NASA POC: Dan Sedej	13. PHONE: X35730	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $49,300	20. NEGOTIATED DELIVERY DATE: 9/26/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 499	DX CHANGE REQUEST

CR TITLE: Demag_VFD_Installation

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verificaion	Verified	Technical Contact
1.	A-B # (b) (4) MicroLogix 1500 Base 120V AC	EA	2	Inspection		(b) (4)
2.	A-B # (b) (4) MicroLogix 1500 RS-232 Processor Unit	EA	2	Inspection		
3.	A-B # Memory Module	EA	2	Inspection		
4.	A-B # Point 120 VAC individually Isolated Input Module	EA	2	Inspection		
5.	A-B # (b) (4) 16 Point 120 VAC Input Module	EA	2	Inspection		
6.	A-B # 8 Point Relay Output Module	EA	2	Inspection		
7.	A-B # 2/4 Channel High Speed Counter/Encoder Module	EA	2	Inspection		
8.	A-B # (b) (4) Right End Cap/Terminator	EA	2	Inspection		
9.	A-B # (b) (4) 00ENE RS Logix 500 Programming Software	EA	1	Inspection		
10.	A-B # (b) (4) Programming Cable	EA	1	Inspection		
11.	Laptop PC with carrying bag	EA	1	Inspection		
12.	VFD Installed and Crane Operational per SOW	EA	2	Inspection		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 499	DX CHANGE REQUEST

CR TITLE: Demag_VFD_Installation

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order
NNJ10HD35C DO 969	04/15/13

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.

Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 969

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
July 15, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 969

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 969

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 4/16/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 969 is to: Underwater Pipe and Ball Sensor Test: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $28,380 Work is to be completed by July 15, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	28,380.00	28,380.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total (b) (4)

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2636	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

1. REQUESTOR: Angela Prince	2. PHONE: 281-244-1086	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.3 (ECO IDIQ)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☒ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Support the JSC Engineering Directorate as they demonstrate and refine a Ball Sensor designed to support off-shore applications. This CR will fund labor for an NBL Flight Lead and test team supporting the engineering directorate demonstration tests. NSOC will support by leading integration efforts and developing and presenting related safety reviews and TRRs. A method to support a segment of bent PVC pipe near the surface of the NBL and to provide a container to isolate a small surface segment of the NBL will need to be developed along with ancillary equipment items associated with the testing.
NOTE: This project is for non-MOD customers (EC), for which DX will be externally funded and NSOC should open a charge code under 2.7 for CR/IDIQ estimation so that charges can be tracked.

7. RATIONALE:
The JSC Engineering Directorate has been contracted to develop and demonstrate a technology capable of entering an off-shore storage system, assessing the internal conditions of the tank, and returning with samples from the top and bottom. The NBL provides an environment in which they can test their design, make slight modifications, and retest. The support systems and skills located at the NBL will enable the device to be tested in multiple configurations and the NBL underwater video capabilities will provide documentation of results. The current schedule is such at the first test is expected to occur in mid April with follow-on tests as components are developed.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See Page 2 for the requirements
Safety Review Held 3/21/13 chaired by E. Turcotte and TRR is required

9. NEED DATE: (support date in block 7 rationale) 3/15/13	10. CR SUBMISSION DATE: 2/20/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J. Haas Date: 3/6/13

12. NASA POC: Angela Prince	13. PHONE: 281-244-1086	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: Project Lead – (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $28,400	20. NEGOTIATED DELIVERY DATE: 7/15/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2636	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

REQUIREMENTS/REFERENCES (cont.):

A segment of bent PVC pipe of approximately 10-12" diameter will be placed in the NBL and a pump will be used to force water and the ball sensor down the length of the pipe. Once the sensor exits the pipe segment, it will use sonar technology to image the bottom of the pool and deploy two robotic devices which will travel to the bottom and top of the pool to retrieve samples. Multiple test dates and multiple design iterations are expected. The NSOC contractor will develop and present the safety review and TRR packages required for integration of this event. Testing is expected to occur over a (b) (4) period with no more than (b) (4) being needed. Costing information should reflect the integration costs for the event and also a per test day cost since the test duration is determined by testing results.

Phase 1:

- Provide tower stands or a platform to hold a clear plastic ~10" diameter bent pipe segment. The pipe segment will include a couple of 30-45 degree angles to demonstrate system capabilities
- Ball sensor will be outfitted with a sonar system. The pipe location shall be as close to the top as possible so that the sonar can image the bottom of the pool after exiting the pipe. Placement of the test in the NBL should provide the customer with hardware on the pool floor which can be imaged for demonstration purposes.
- The pipe segment is a friction fit to ease breakdown and transportation,
- Current design uses a 1500 gph gas powered pump to force water and thus the ball sensor through the bent pipe segment. If a gas powered pump is used in the NBL then a long exhaust hose would need to be utilized to vent to the outside. Engineering will look at renting an electric pump if needed. (This requirement for external exhaust needs to be assessed to see if volume of building and run time can negate exhaust hose requirement)
- Underwater video of the test is requested – this can be provided by stationary cameras, diver supported, and/or video ROV
- All sensors used will be under 30 volts in the water
- 13 watt sonar system is utilized. It is tuned for best performance at 60 meters. There should be enough beam width that the sensor can see the entire tank once it exits the pipe.
- Customer may want to perform one test such that the sonar images the length of the pool vs. the bottom of the pool.
- Diver support may not be required for the sonar test
- Schedule – would want to run a test in mid April (TBD) with full up sonar. No components that would be deployed. This sonar only test is expected to be three days maximum including contingency and set-up days. The majority of this time is expected to be related to the test set-up vs. the actual sonar test event.

Phase 2 (future plan not included in the cost of this CR at this time):

- A second ball sensor unit would be tested in the June timeframe with deployable components
- Diver support is expected for the sampling test
- For the sampling they need to demonstrate that they can collect and hold on to samples until the ball sensor is retrieved. Sample method for the bottom of the pool will require that a bucket or tub of clumpy sand like substance (perhaps sand and paraffin) be available on the NBL pool floor for sensor to collect. Sample method for the NBL surface will require that a containment area be developed using floating dock, blue foam, or some other design. The water inside the "containment box" will be "contaminated" with oil, glycerin or some other NBL approved product. The sample device will surface in this area and retrieve a sample of the water that can be stored internally and evaluated after the ball sensor retreats back out the bent pipe segment.
- Each design sensor is at a different phase of development and multiple tests are required to test the different design configurations.

CR NO.: 2636	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verified
1	Labor to support coordination prior to the event	1	NA	
2	Labor to provide set-up and teardown support	1	NA	
3	Labor to support during the testing	1	NA	
4	Labor and materials to provide the video data on a portable hard drive	1	NA	

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2636	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY13: Total Cost $28,400

DESIGN	ENGINEERING & PROGRAM SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 970	04/17/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 970

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 970

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 970

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 4/18/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 970 is to: ISS Major Mockup Refurbishment: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $149,459. Work is to be completed bySeptember 27, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	149,459.00	149,459.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 149,459.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2637	DX CHANGE REQUEST

CR TITLE: ISS Major Mockup Refurbishment

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
R Durkin	X25836	robert.j.durkin@nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV 2.6.2
☐ OTHER ☒ FUND CODE: 804911

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE: Under CR_NBL_472 an assessment was performed to evaluate the condition of major NBL Mockups to support EVA training through FY 2020. Recommendations were made to focus the refurbishment efforts on P1, S1, and S0 for FY2013; these recommendations are to extend the life of the major mockups located in the pool.

This CR will identify an estimated cost including labor and materials necessary to refurbish the identified mockups to support EVA training events through FY 2020.

7. RATIONALE:

Extension of the International Space Station (ISS) planned operational life necessitates refurbishment of the major NBL Mockups for safe use beyond their planned life expectancy to support EVA training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Provide resources and materials necessary to refurbish the following list of major mockups per the noted guidelines: (Refer to Page 2).

Safety Review and TRR may be waived as the refurbishment activities are replacing components based on the as-built condition or return-to-print condition.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
Sept 30, 2013	**2/25/13**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Date: 2/27/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	X35730	edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
PROJECT ENGINEER: (b) (4)	(b) (4)	(b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: **$149,500**	20. NEGOTIATED DELIVERY DATE:
	09/27/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2637	DX CHANGE REQUEST

CR TITLE: ISS Major Mockup Refurbishment

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	S0 Truss	As-built mockup	NA	1	NA	(b) (4)
2	S1 Truss	As-built mockup	NA	1	NA	
3	P1 Truss	As-built mockup	NA	1	NA	
4	P3 Truss	As-built mockup	NA	1	NA	
5	S3 Truss	As-built mockup	NA	1	NA	
6	P4 Truss	As-built mockup	NA	1	NA	
7	S4 Truss	As-built mockup	NA	1	NA	
8	P5 Truss	As-built mockup	NA	1	NA	
9	S5 Truss	As-built mockup	NA	1	NA	
10	P6 Truss	As-built mockup	NA	1	NA	
11	IEA	As-built mockup	NA	1	NA	
12	Node 3	As-built mockup	NA	1	NA	
13	COF	As-built mockup	NA	1	NA	
14	JEM PM	As-built mockup	NA	1	NA	
15	JEM-EF	As-built mockup	NA	1	NA	
16	JEM PS	As-built mockup	NA	1	NA	
17	PMA-3	As-built mockup	NA	1	NA	

Each mockup shall be removed from the pool (if not already out), and assessed utilizing the following criteria and refurbished to the extent possible within the schedule constraints due to training – any activities not able to be performed in the allotted time shall be noted for another time when the item can be rescheduled for additional work (a SCIF or CR revision may be required for the additional effort) . In order of priority:

1) **Fasteners, Cracks, and Corrosion**
   - Inspection for discontinuities resulting from lifting loads.
   - Inspection for discontinuities resulting from dead loads including stand and mockup interfaces.
   - Impact, collision and handling loads from the removal and insertion into mockup cradles
   - Fasteners to be replaced as needed.
   - Structural components cracked or damaged to be replaced as needed.
   - Structural components/parts that exhibit excessive corrosion to be replaced as needed.

2) **Refurbishment of MLI (Multi-layered Insulation)**

The replacement of the shrouds, blankets, and covers used during EVA - Fabricate new/ or refurbish MLI as necessary. Re-assemble and install.

3) **Consumables and Decals**
   - Verify all mockup outfitting including connectors, EVA translational aids, etc. are in safe and good working condition.
   - Mockup Avionic Cables/Tubing/Wiring are in good condition.
   - Replacement of labels including connector, WIF, cable, etc.

CR NO.: 2637	DX CHANGE REQUEST

CR TITLE: ISS Major Mockup Refurbishment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verified
1	S0 Truss	1	NA	
2	S1 Truss	1	NA	
3	P1 Truss	1	NA	
4	P3 Truss	1	NA	
5	S3 Truss	1	NA	
6	P4 Truss	1	NA	
7	S4 Truss	1	NA	
8	P5 Truss	1	NA	
9	S5 Truss	1	NA	
10	P6 Truss	1	NA	
11	IEA	1	NA	
12	Node 3	1	NA	
13	COF	1	NA	
14	JEM PM	1	NA	
15	JEM-EF	1	NA	
16	JEM PS	1	NA	
17	PMA-3	1	NA	

CR NO.: 2637	DX CHANGE REQUEST

CR TITLE: ISS Major Mockup Refurbishment

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2637	DX CHANGE REQUEST

CR TITLE: ISS Major Mockup Refurbishment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY'13

Design	Proj. Engr. & Support	Technician	Management	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 971	05/01/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 971

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
May 31, 2013
F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 971

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 971

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 5/1/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 971is to: Test Article Job 2: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $14,579 Work is to be completed by May 31, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	14,579.00	14,579.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 14,579.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2640	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

1. REQUESTOR: Molly Selig	2. PHONE: (281)483-6786	3. E-MAIL:molly.selig-1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV **WBS 2.6.3**
☒ OTHER: ☒ FUND CODE: **ECO**

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Support ES division by providing the modifications to a Test Article, by replacing the bladder, installing new felt "horse collar" rings and replacing the Kevlar restraint layer with a new Vectran restraint layer. This manufacturing will be performed as an external customer task and as such this CR shall be priced as an IDIQ effort.

(b) (4)

7. RATIONALE:
ES has FY funding to support the repair of the hardware and are seeking to use excess manufacturing capacity resident in the LMF to perform the work this FY.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Note: ES will provide engineering support for manufacturing throughout the life of this project. All direction for design and manufacturing activities will come through the ES project engineering. This CR provides labor only.

(b) (4)

Note: SR held on 4/11/12, No Actions, TRR Required.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
5/31/13	04/02/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) John Haas Date:4/4/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Angela R. Prince	W: (281)244-1086	angela.r.prince@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$14,600	**5/31/13**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2640	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

REQUIREMENTS/REFERENCES (cont.):

Repair Kevlar Test Article:

- Remove soft goods from core.
- Disconnect bladder from restraint layer.
- Assemble new bladder to restraint layer, per drawings [redacted]
- Fabricate, sew together and install six (6) "horse-collar" felt rings of three(3) different sizes, per drawing SEY44109123.
- Assemble soft goods to core, per drawings [redacted]
- Assist customer in low pressure pressurization checkout in LMF per OCCP [redacted] & Test plan [redacted] (Customer will provide gauge/regulator assembly, OCCP, and Procedure. One technician is required to assist customer in connecting shop air to the system. Inflation to .25-.5 psig will verify proper assembly. This task requires approximately 1 hour.)

ES will update the existing HA, OCCP and Test Plan to include the new Vectran material introduced in the new restraint layer.

The new Vectran restraint layer, the new bladder and the felt ring material will be provided by ES.
Any additional material or hardware will be provided by ES.

If there is any damage to the Stand, the scope of the repair will be evaluated and the repair work will be added as necessary.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Delivable Description	Qty	FID. Code	Verification
1	Fabricate and sew together three (3) "horse-collar" felt rings, creating two(2) assemblies per attached drawing [redacted]	1	IIB	
2	Assemble new bladder, new horse collar assemblies and the new Vectran restraint layer soft goods to the core per attached drawing [redacted]	1	IIB	
3	Assisted customer in low pressure checkout.	1	IIB	

CR NO.: 2640	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2640	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGINEER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
		(b) (4)			

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 972	05/21/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 972

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 972

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 97`2

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 5/22/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 972is to: Extend Panel 1DK Power to North Hi-Bay: The estimated cost is $(b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $41,317 Work is to be completed by September 26, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	41,317.00	41,317.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 41,317.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 500	DX CHANGE REQUEST

CR TITLE: Extend_Panel_1DK_Power_to_North_Hi-bay

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide extended electrical power from existing NBL electrical Panel 1DK 250A circuit to the NBL North Hi-bay adjacent to the existing Northwest Cable Tray drop that services this location. NSOC will contract with a NASA approved outside electrical contractor for this construction. Contractor will comply with all safety and governing regulations.

7. RATIONALE:
Facility infrastructure of permanent equipment for commercialization support.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

- No Safety Review required as this is turnkey procurement of electrical installation by a JSC qualified Electrical Service Company on existing facility electrical dedicated circuit for such.
- NSOC2 Electrical Contractor
  - All electrical installation shall meet or exceed NEC NFPA 70 and NASA Electrical Requirements.
  - Installation to use our NBL System Entry Control Program (SECP) and Electrical Safety Program (ESP) (Electrical contractor to verify circuits prior to energizing) (LOTO)

1) NBL Electrical Panel 1DK Circuit 480/250A/3Ø currently connected to user panel disconnect.
   a) Remove wiring/disconnect from existing 250A circuit breaker to adjacent user panel 400A disconnect.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
9/26/2013	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Robert Durkin (ICE)
Date: 5/03/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Dan Sedej	X35730	Global

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
PROJECT ENGINEER: (b) (4)	(b) (4)	Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$42,100	9/26/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 500	DX CHANGE REQUEST

CR TITLE: Extend_Panel_1DK_Power_to_North_Hi-bay

REQUIREMENTS/REFERENCES (cont.):

b) Extend 250A circuit breaker to add a manual 2 load transfer switch at extended location.
   i) To be installed on or near existing cable tray drop located at West side of NBL North Hi-bay.
c) Installation of 480VAC/400A/3Ø receptacle panel (Cooper Interconnect Posi-Lok E0400 Mdl. E0400-1702 or as specified by JSC or equivalent)
   i) Install adjacent to transfer switch.
   ii) Matching color Posi-Lok plugs to be supplied with delivery and installation of project.
d) All electrical equipment grounded per NEC and ground to existing facility ground grid for service dist.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	NBL Electrical Panel 1DK Circuit 480/250A/3Ø currently connected to user panel disconnect	Job	1	Inspection		(b) (4) [redacted]
1a.	Remove wiring/disconnect from existing 250A circuit breaker to adjacent user panel 400A disconnect.	Job	1	Inspection		
1b.	Extend 250A circuit breaker to add a manual transfer switch at extended location.	Job	1	Inspection		
1c.	Installation of 480VAC/400A/3Ø receptacle panel	Job	1	Inspection		
1d.	All electrical equipment grounded per NEC and ground to existing facility ground grid for service dist.	Job	1	Inspection		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4) [redacted]

CR NO.: 500	DX CHANGE REQUEST

CR TITLE: Extend_Panel_1DK_Power_to_North_Hi-bay

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 973	06/12/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 973

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
July 23, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 973

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 973

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 6/12/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 973 is to: IDA 1 & 2 Cables: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $23,933 Work is to be completed by July 23, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	23,933.00	23,933.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2648	DX CHANGE REQUEST

CR TITLE: Build International Docking Adapter 1 & 2 Cables

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4)@nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV WBS 2.6.1
☐ OTHER ☒ FUND CODE: 401769

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Manufacture 11 new International Docking Adapter (IDA) 1 & 2 cables that will replace the current IDA 1 cables. The NZGL and NATC connectors from the IDA 1 cables may be cannibalized to manufacture these new cables.
Replace J4, J400, and J8 NZGL receptacles on IDA panels with corrected NZGL receptacle sizes.

Cables W2266 and W2268 from the previous build have not changed and shall be retained.

7. RATIONALE:
Cables will be required to support NBL EVA development testing scheduled for July, 2013. Crew 1-G briefing is scheduled for July 23, 2013 with the first crew suited run scheduled for July 29, 2013.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

IDA 1&2 cable overview.pdf

Per the NBL Chief Engineer, John Hass, no SR/TRR is required by virtue of similarity to other cable CRs such as CR 2540 Build IDA Cable Harnesses and CR 2328 SARJ Outboard Jumpers.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
July 23, 2013	**May 6, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) John Haas Date: 5/14/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Janna Dake	281-483-6538	janna.j.dake@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4)@nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$24,200	7/23/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2648	DX CHANGE REQUEST

CR TITLE: Build International Docking Adapter 1 & 2 Cables

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	(b) (4) Harness	Attached drawing	Attachment	1	III-B	(b) (4)
1.a	NZGL Plug Size 15 with straight back shell	Attached drawing	Attachment	3	III-B	
1.b	NZGL Plug size 15 with 90 degree back shell	Attached drawing	Attachment	1	III-B	
2	(b) (4) Harness	Attached drawing	Attachment	1	III-B	
2.a	NZGL Plug Size 15 with straight back shell	Attached drawing	Attachment	2	III-B	
3	(b) (4) Harness	Attached drawing	Attachment	1	III-B	
3.a	NZGL Plug Size 21 with straight back shell	Attached drawing	Attachment	2	III-B	
3.b	NZGL Plug Size 17 with straight back shell	Attached drawing	Attachment	2	III-B	
3.c	NZGL Plug Size 13 with 90 degree back shell(size 15 may be substituted)	Attached drawing	Attachment	1	III-B	
4	(b) (4) Harness	Attached drawing	Attachment	1	III-B	
4.a	NZGL Plug Size 15 with straight back shell	Attached drawing	Attachment	1	III-B	
4.b	NZGL Plug Size 21 with straight back shell	Attached drawing	Attachment	1	III-B	
4.c	NZGL Plug Size 13 with 90 degree back shell(size 15 may be substituted)	Attached drawing	Attachment	1	III-B	
4.d	NZGL Plug Size 17 with 90 degree back shell	Attached drawing	Attachment	2	III-B	
5	(b) (4) Harness	Attached drawing	Attachment		III-B	
5.a	NATC plug size 25 (size 19 should be substituted due to tool constraint) with 90 degree back shell	(b) (4)	Attachment	1	II-A	
5.b	NZGL Plug Size 21 with 90 degree back shell	Attached drawing	Attachment	2	III-B	
5.c	NZGL Plug Size 25 with straight back shell	Attached drawing	Attachment	1	III-B	
6	(b) (4) Harness	Attached drawing	Attachment	1	III-B	
6.a	NATC plug size 13 with 90 degree back shell	(b) (4)	Attachment	1	II-A	
6.b	NZGL Plug Size 15 with 90 degree back shell	Attached drawing	Attachment	1	III-B	

REQUIREMENTS/REFERENCES (cont.):

7	(b) (4) Harness	Attached drawing	Attachment	1	III-B	(b) (4)
7.a	NATC plug size 25 (size 19 should be substituted due to tool constraint) with 90 degree back shell	(b) (4)	Attachment	1	II-A	
7.b	NZGL Plug Size 21 with 90 degree back shell	Attached drawing	Attachment	1	III-B	
7.c	NZGL Plug Size 15 with straight back shell	Attached drawing	Attachment	1	III-B	
8	(b) (4) Harness	Attached drawing	Attachment	1	III-B	
8.a	NATC plug size 25 (size 19 should be substituted due to tool constraint) with 90 degree back shell	(b) (4)	Attachment	1	II-A	
8.b	NZGL Plug Size 13 with 90 degree back shell (size 15 may be substituted)	Attached drawing	Attachment	1	III-B	
8.c	NZGL Plug Size 17 with 90 degree back shell	Attached drawing	Attachment	1	III-B	
8.d	NZGL Plug Size 21 with 90 degree back shell	Attached drawing	Attachment	2	III-B	
8.e	NZGL Receptacle size 15 with straight back shell – jam nut mount	Attached drawing	Attachment	1	III-B	
9	(b) (4) Harness		Attachment	1	III-B	
9.a	NATC plug size 13 with 90 degree back shell	(b) (4)	Attachment	1	II-A	
9.b	NZGL Receptacle size 15 with straight back shell – jam nut mount	Attached drawing	Attachment	2	III-B	
9.c	NZGL Plug Size 15 with 90 degree back shell	Attached drawing	Attachment	1	III-B	
9.d	NZGL Plug Size 21 with 90 degree back shell	Attached drawing	Attachment	1	III-B	
10	(b) (4) Harness		Attachment	1		
10.a	NZGL Plug Size 25 with straight back shell	Attached drawing	Attachment	1	III-B	
10.b	NZGL Receptacle size 25 with straight back shell – jam nut mount	Attached drawing	Attachment	2	III-B	
10.c	NZGL Plug Size 25 with 90 degree back shell	Attached drawing	Attachment	2	III-B	
11	(b) (4) Harness		Attachment	1	III-B	
11.a	NZGL Plug Size 25 with straight back shell	Attached drawing	Attachment	1	III-B	
11.b	NZGL Receptacle Size 25 with straight back shell	Attached drawing	Attachment	2	III-B	
11.c	NZGL Plug Size 25 with 90 degree back shell	Attached drawing	Attachment	2	III-B	
12	Add Hi-fi NATC connector J852 to Node 2 C2-02 Gore panel					
12.a	NATC receptacle size 25 Flange mount(size 19 should be substituted due to tool constraint)	NATC77H25N35PPA	Attachment	1	II-A	

REQUIREMENTS/REFERENCES (cont.):

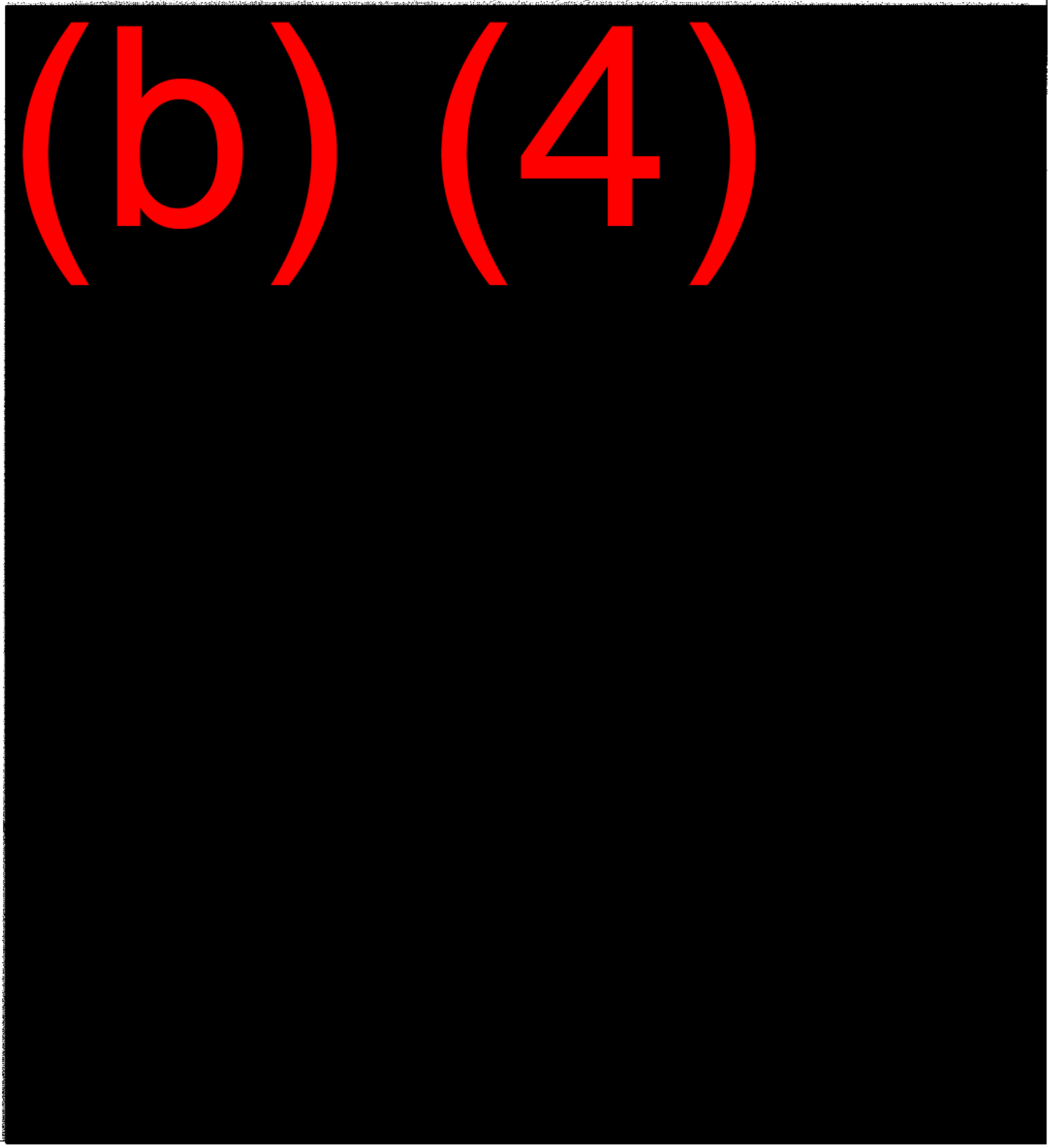
13	On IDA Zenith connector panel change J8 to a size 21 NZGL receptacle	Attached drawing	Attachment	1	III-B	(b) (4)
14	On IDA Nadir connector panel change J4 and J400 to size 21 NZGL receptacles	Attached drawing	Attachment	1	III-B	
15	Connector caps for size 25 plugs	NZGL-PPC-25	Attachment	7	III-B	
16	Connector caps for size 17 plugs	NZGL-PPC-17	Attachment	5	III-B	
17	Connector caps for size 15 plugs	NZGL-PPC-15	Attachment	12	III-B	
18	Connector caps for size 21 plugs	NZGL-PPC-21	Attachment	9	III-B	
19	Connector caps for size 25 receptacles	(b) (4)	Attachment	4	III-B	
20	Connector caps for size 21 receptacles		Attachment	3	III-B	
21	Connector caps for size 15 receptacles		Attachment	3	III-B	
22	NATC Plug Cover size 19	NATC-PPC	Attachment	4	II-A	
23	NATC Plug Cover size 13	NATC-PPC	Attachment	2	II-A	
24	Fit check harnesses to existing mockups	Attached drawing	Attachment	N/A	N/A	

1. Connectors, caps and other parts from the old IDA 1 cables may be utilized in construction of these new cables. Cables W2266 and W2268 have not changed from the previous build and shall be maintained.
2. Frog hide should be used for all cabling except as identified in note 3 below.
3. Sections of items 5-9 shall have a larger outer cable diameter of approximately 0.7 inches. The attached PDF annotates the sections of cable that shall have the larger diameter.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	(b) (4) harness	1	III-B	
2	harness	1	III-B	
3	harness	1	III-B	
4	harness	1	III-B	
5	harness	1	III-B	
6	harness	1	III-B	
7	harness	1	III-B	
8	harness	1	III-B	
9	harness	1	III-B	
10	harness	1	III-B	
11	harness	1	III-B	
12	Add high fidelity NATC connector J852 to Node 2 C2-02 gore panel	1	II-A	
13	On IDA zenith connector panel change J8 to a size 21 NZGL receptacle	1	III-B	
14	On IDA nadir connector panel change J4 and J400 to size 21 NZGL receptacles	1	III-B	
15	Connector caps for size 25 plugs	7	III-B	
16	Connector caps for size 17 plugs	15	III-B	
17	Connector caps for size 15 plugs	12	III-B	
18	Connector caps for size 21 plugs	9	III-B	
19	Connector caps for size 25 receptacles	4	III-B	
20	Connector caps for size 21 receptacles	3	III-B	
21	Connector caps for size 15 receptacles	3	III-B	
22	NATC Plug cover size 21	4	III-B	
23	NATC Plug cover size 13	2	III-B	
24	Fit check harnesses to existing mockups	1	N/A	

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	ENGINEERING & PROGRAM SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
FY13		(b) (4)			

ACCEPTANCE

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 974	07/22/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Ryan Hancock
Tel. No.: (281) 792-7978 Fax:
E-mail: joseph.r.hancock@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 974

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 1, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 974

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 974

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 7/23/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 974 is to: Build a BEAM Mockup: The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $82,933 Work is to be completed by November 1, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	82,933.00	82,933.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 82,933.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2649	DX CHANGE REQUEST

CR TITLE: Build a BEAM Mockup

1. REQUESTOR: DX32/ DX32/[redacted]	2. PHONE: [redacted]	3. E-MAIL: [redacted]@nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Build a Bigelow Expandable Activity Module (BEAM) mockup to support EVA development testing and crew training.

7. RATIONALE:
BEAM will be berthed to the Node 3 aft CBM after arriving on SpaceX in 2015. EVA must verify access to the install flight releasable grapple fixture (FRGF) pin release bolts when BEAM is berthed to Node 3, in the event the SSRMS cannot release. EVA must also verify access to the disposal FRGF pin release bolts when BEAM is held in the POA via the install FRGF. These evaluations will be performed during the November, 2013 NBL development testing.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

TRR required per Safety Review held on 6-20-2013

See pages 2 – 4.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
November 1, 2013	**May 9, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas Date:6/3/13 In ICE

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
PROJECT ENGINEER: [redacted]	[redacted]	[redacted]@nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: FY13 $50,000, FY14 $33,000; TOTAL $83,000	20. NEGOTIATED DELIVERY DATE: 11/1/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

CR NO.: 2649	DX CHANGE REQUEST

CR TITLE: Build a BEAM Mockup

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	REQUIREMENTS/NOTES	QTY	FID. CODE	TECHNICAL CONTACT
1	Build BEAM mockup in the packed configuration	BEAM Packed – Express 3D CAD model (can be found in: \\jsc-mod-nbl1\TRANSFER FOLDER\A-L Transfer\Brandon, Danny\BEAM)	1.1 The mockup shall be capable of being installed on Node 3 aft 1.2 Endcone with FRGFs shall be removable 1.3 The mockup shall be capable of being installed on the POA via FRGF 1. Just the endcone with FRGFs can be attached if POA cannot accommodate the entire BEAM mockup 1.4 Inflated/expanded configuration not required 1.5 See Figure 1	1	II/.C	(b) (4)
2	FRGF		2.1 Both shall have two ½" grapple shaft release bolts (static or free spinning) 2.2 Both shall allow for a LEE mockup to be attached 2.3 FRGF 1 shall be capable of being attached to the POA such that it supports the entire mockup or endcone 2.4 Note: CAD model shows interference between FRGF 2 and BEAM structure. FRGF 2 position will be confirmed.	2	II.C	
3.	Handrails		3.1 Handrails shall be 12". Flight P/N is (b) (4) 3.2 Handrails and underlying structure shall support BRT loads 3.3 Position in CAD model is incorrect; correct position will be provided.	2	II.B	
4.	Soft good translation aids		4.1 Shall support crew translation loads 4.2 Shall be similar to translation aid on P6 long spacer aft blanket (P/N (b) (4) 4.3 Exact location, number, and configuration of translation aids will be provided. 4.4 See Figure 2	5	II.C	

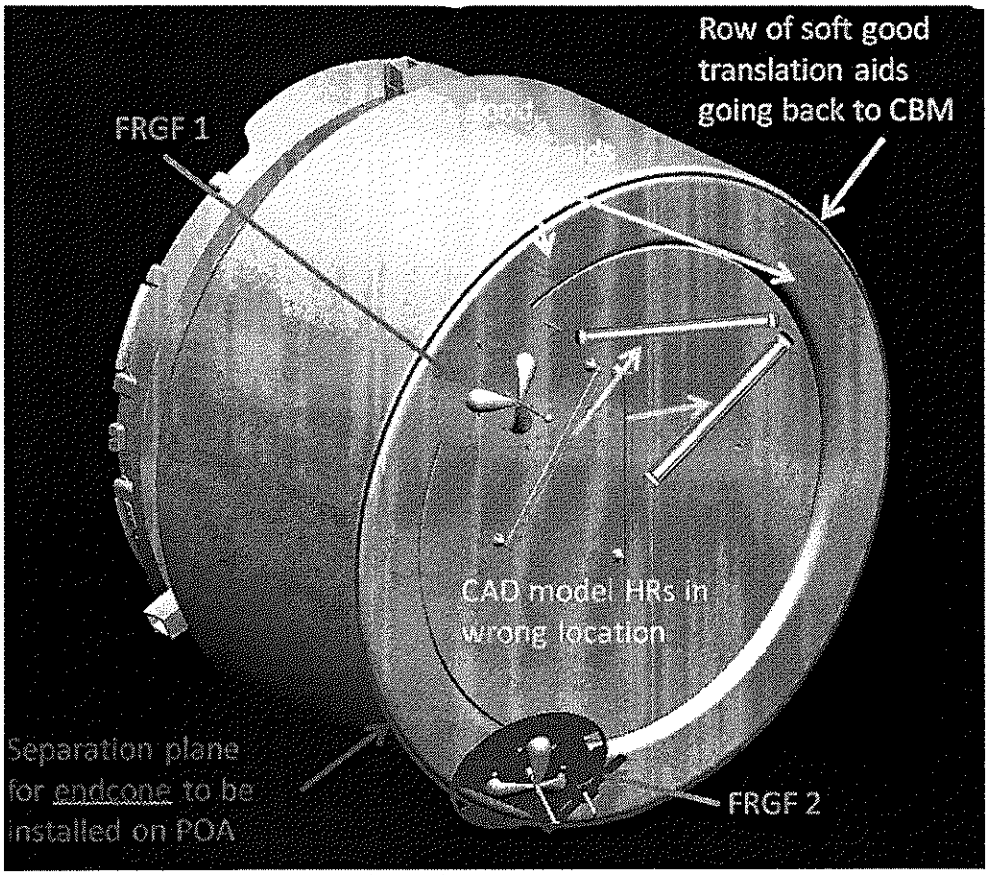


Figure 1- BEAM in packed configuration

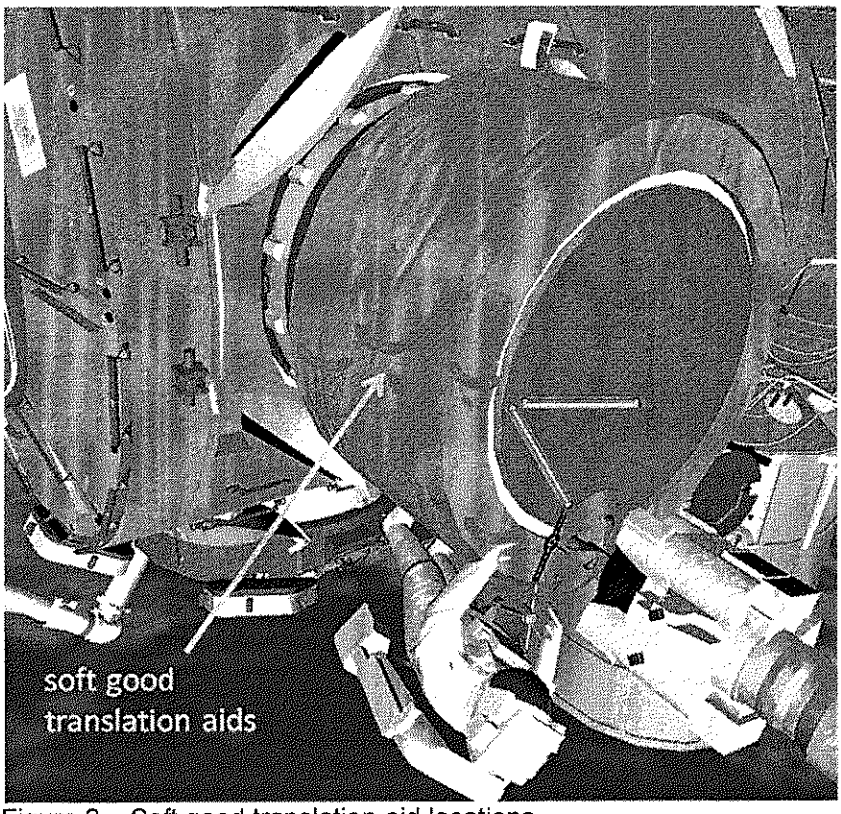
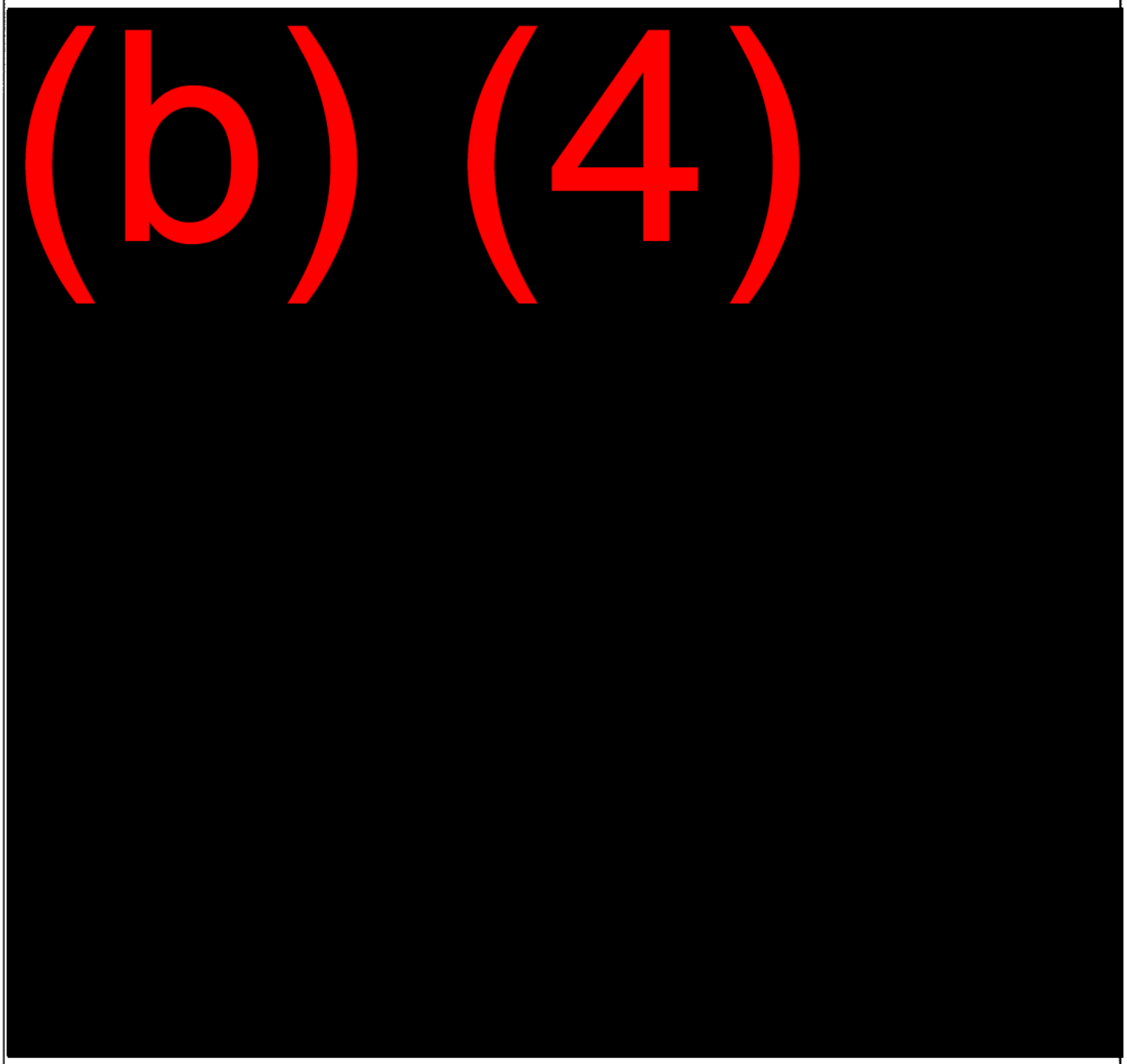


Figure 2 – Soft good translation aid locations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	REQUIREMENTS/NOTES	QTY	FID. CODE	Verification
1	Build BEAM mockup in the packed configuration	1.6 The mockup shall be capable of being installed on Node 3 aft 1.7 Endcone with FRGFs shall be removable 1.8 The mockup shall be capable of being installed on the POA via FRGF 1. Just the endcone with FRGFs can be attached if POA cannot accommodate the entire BEAM mockup 1.9 Inflated/expanded configuration not required 1.10 See Figure 1	1	II.C	
2	FRGF	2.5 Both shall have two ½" grapple shaft release bolts (static or free spinning) 2.6 Both shall allow for a LEE mockup to be attached 2.7 FRGF 1 shall be capable of being attached to the POA such that it supports the entire mockup or endcone 2.8 Note: CAD model shows interference between FRGF 2 and BEAM structure. FRGF 2 position will be confirmed.	2	II.C	
3.	Handrails	3.4 Handrails shall be 12". Flight P/N is (b) (4) 3.5 Handrails and underlying structure shall support BRT loads 3.6 Position in CAD model is incorrect; correct position will be provided.	2	II.B	
4.	Soft good translation aids	4.5 Shall support crew translation loads 4.6 Shall be similar to translation aid on P6 long spacer aft blanket (P/N 1012554-001) 4.7 Exact location, number, and configuration of translation aids will be provided. 4.8 See Figure 2	5	II.C	

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY13: $50,000

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

FY14: $33,000

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 974A	09/30/20	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Ryan Hancock
Tel. No.: (281) 792-7978 Fax:
E-mail: joseph.r.hancock@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 974A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
November 1, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 974A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 974A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/30/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 974 is to: Build a BEAM Mockup: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $8,937 Work is to be completed by November 1, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	8,937.00	8,937.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 8,937.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2649A	DX CHANGE REQUEST

CR TITLE: Build a BEAM Mockup

1. REQUESTOR: DX32/ DX32/ (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov sa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Build a Bigelow Expandable Activity Module (BEAM) mockup to support EVA development testing and crew training.

REV A Due to delays receiving the complete CAD Models, and late changes in the design, additional time was required to complete the mockup design.

7. RATIONALE:
BEAM will be berthed to the Node 3 aft CBM after arriving on SpaceX in 2015. EVA must verify access to the install flight releasable grapple fixture (FRGF) pin release bolts when BEAM is berthed to Node 3, in the event the SSRMS cannot release. EVA must also verify access to the disposal FRGF pin release bolts when BEAM is held in the POA via the install FRGF. These evaluations will be performed during the November, 2013 NBL development testing.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

TRR required per Safety Review held on 6-20-2013

See pages 2 – 4.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
November 1, 2013	**May 9, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas Date:6/3/13 In ICE

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~FY13 $50,000; FY14 $33,000; TOTAL $83,000~~ Rev A: FY13 $30,300 FY14 $61,600; TOTAL $90,900	20. NEGOTIATED DELIVERY DATE: 11/1/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 2649A	DX CHANGE REQUEST
CR TITLE: Build a BEAM Mockup	
Closed by:_____ Date: _____	

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	REQUIREMENTS/NOTES	QTY	FID. CODE	TECHNICAL CONTACT
1	Build BEAM mockup in the packed configuration	BEAM Packed – Express 3D CAD model (can be found in: \\jsc-mod-nbl1\TRANSFER FOLDER\A-L Transfe(b) (4) (b) (4) BEAM)	1.1 The mockup shall be capable of being installed on Node 3 aft 1.2 Endcone with FRGFs shall be removable 1.3 The mockup shall be capable of being installed on the POA via FRGF 1. Just the endcone with FRGFs can be attached if POA cannot accommodate the entire BEAM mockup 1.4 Inflated/expanded configuration not required 1.5 See Figure 1	1	II/.C	(b) (4)
2	FRGF		2.1 Both shall have two ½" grapple shaft release bolts (static or free spinning) 2.2 Both shall allow for a LEE mockup to be attached 2.3 FRGF 1 shall be capable of being attached to the POA such that it supports the entire mockup or endcone 2.4 Note: CAD model shows interference between FRGF 2 and BEAM structure. FRGF 2 position will be confirmed.	2	II.C	(b) (4)
3.	Handrails		3.1 Handrails shall be 12". Flight P/N is SEG33106347-307 3.2 Handrails and underlying structure shall support BRT loads 3.3 Position in CAD model is incorrect; correct position will be provided.	2	II.B	(b) (4)
4.	Soft good translation aids		4.1 Shall support crew translation loads 4.2 Shall be similar to translation aid on P6 long spacer aft blanket (P/N 1012554-001) 4.3 Exact location, number, and configuration of translation aids will be provided. 4.4 See Figure 2	5	II.C	(b) (4)

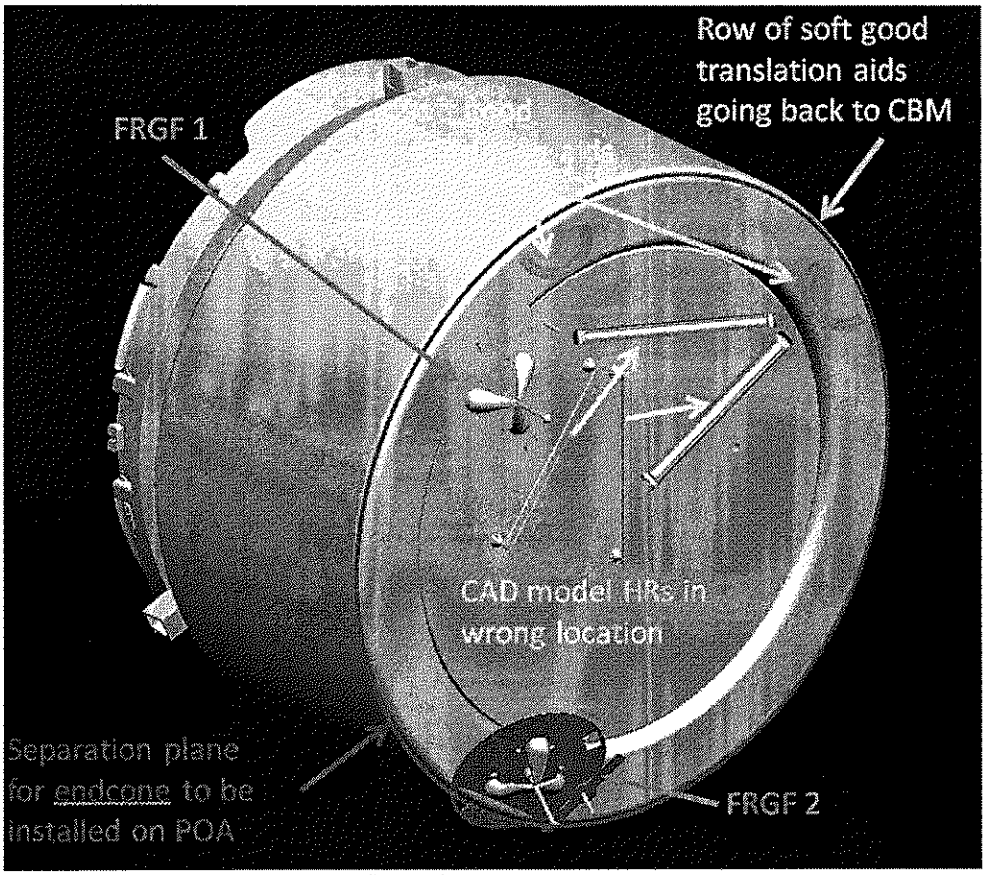


Figure 1- BEAM in packed configuration

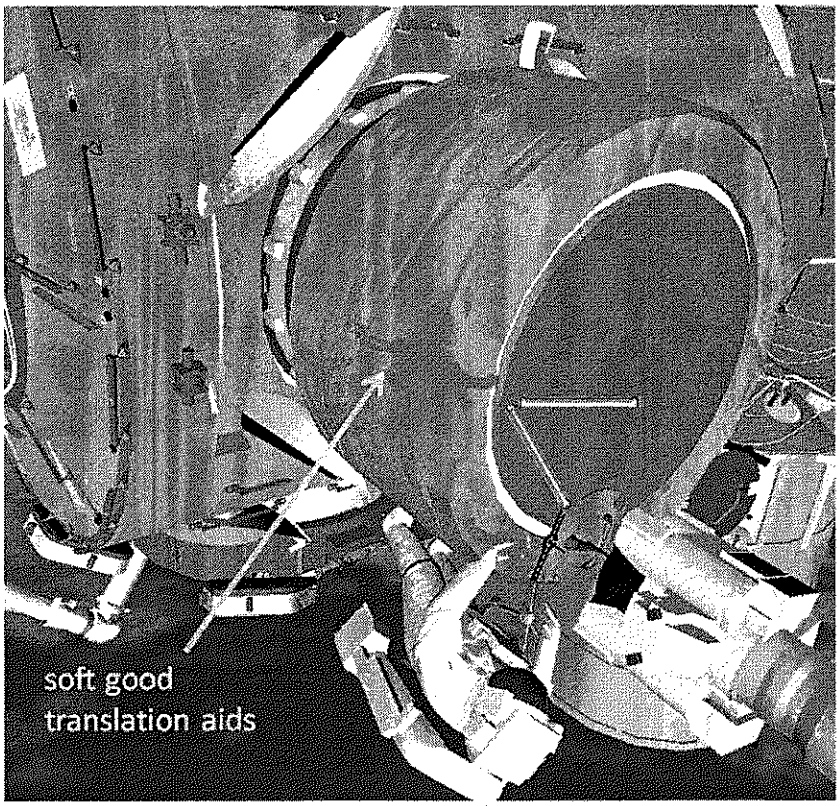
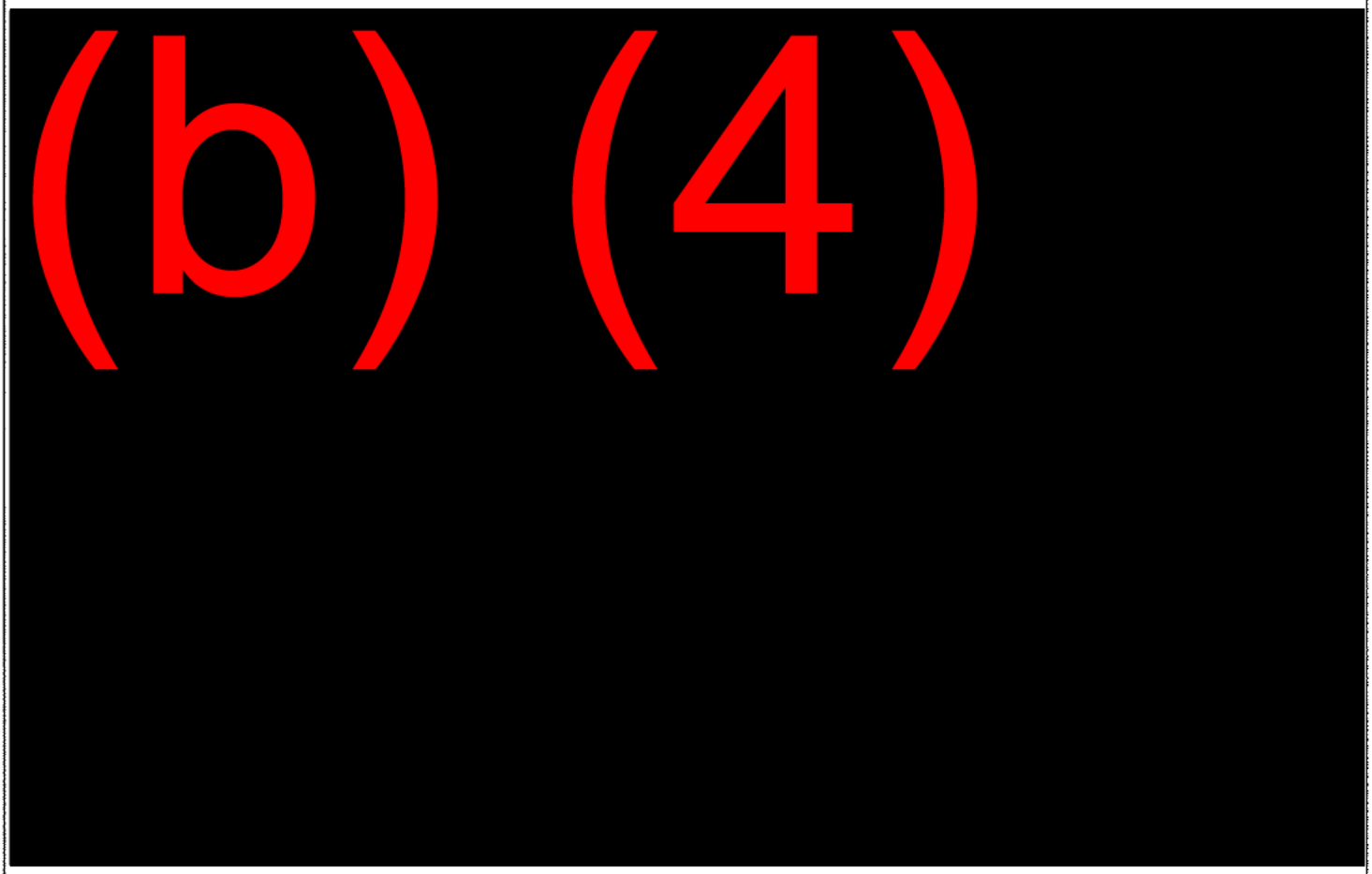


Figure 2 – Soft good translation aid locations

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	REQUIREMENTS/NOTES	QTY	FID. CODE	Verification
1	Build BEAM mockup in the packed configuration	1.6 The mockup shall be capable of being installed on Node 3 aft 1.7 Endcone with FRGFs shall be removable 1.8 The mockup shall be capable of being installed on the POA via FRGF 1. Just the endcone with FRGFs can be attached if POA cannot accommodate the entire BEAM mockup 1.9 Inflated/expanded configuration not required 1.10 See Figure 1	1	II.C	
2	FRGF	2.5 Both shall have two ½" grapple shaft release bolts (static or free spinning) 2.6 Both shall allow for a LEE mockup to be attached 2.7 FRGF 1 shall be capable of being attached to the POA such that it supports the entire mockup or endcone 2.8 Note: CAD model shows interference between FRGF 2 and BEAM structure. FRGF 2 position will be confirmed.	2	II.C	
3.	Handrails	3.4 Handrails shall be 12". Flight P/N is SEG33106347-307 3.5 Handrails and underlying structure shall support BRT loads 3.6 Position in CAD model is incorrect; correct position will be provided.	2	II.B	
4.	Soft good translation aids	4.5 Shall support crew translation loads 4.6 Shall be similar to translation aid on P6 long spacer aft blanket (P/N 1012554-001) 4.7 Exact location, number, and configuration of translation aids will be provided. 4.8 See Figure 2	5	II.C	

SCHEDULE MILESTONES: (complete or reference separate project plan)
REV A Schedule



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

~~Design~~	~~Engineering and Program Support~~	~~Management~~	~~Technicians~~	~~Material~~
(b) (4)				

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

(b) (4)

~~Design~~	~~Engineering and Program Support~~	~~Management~~	~~Technicians~~	~~Material~~
(b) (4)				

(b) (4)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 976	08/08/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Ryan Hancock
Tel. No.: (281) 792-7978 Fax:
E-mail: joseph.r.hancock@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 976

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 976

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 976

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 8/9/13
Contracting Officer Date

11. Schedule

ITEM NO	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 976 is to: Procure Rapid Prototype Machine, Ice Machine, and Suit Room Equipment The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $297,177 Work is to be completed by September 27, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	297,177.00	297,177.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 297,177.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2654	DX CHANGE REQUEST

CR TITLE: Procure Rapid Prototype Machine, Ice Machine and Suit Room Equipment

1. REQUESTOR: Ronny Newman	2. PHONE: 31793	3. E-MAIL: NASA Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV WBS 3.6.1
☐ OTHER ☐ FUND CODE: 609524

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Procure Rapid Prototype Machine, Ice Machine and Suit Room Equipment

7. RATIONALE:
These items are required to maintain and enhance SVMF capabilities to support its mission.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

- 8.1 Rapid Prototype Machine with polymer jet technology and a tray size of 500x400x200 mm and with a variety of RPM resins
- 8.2 Movable Tables for suit rooms (qty 16)
- 8.3 Rolling (qty 26) and stationary (qty 44) chairs for suit rooms
- 8.4 2 Rolling white (dry erase) boards for suit rooms
- 8.5 2 large computer monitors (60" or greater) for suit rooms
- 8.6 2 laser pointers for suit rooms
- 8.7 Replacement Ice machine for support of suited training in SVMF

NOTE: Safety Review Waived 7/22/2013 per SVMF Office Chief, no TRR required.

9. NEED DATE: (support date in block 7 rationale) Sept. 15, 2013	10. CR SUBMISSION DATE: 7/18/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) Allison McIntyre
Date:7/19/13

12. NASA POC: Ronny Newman	13. PHONE: 31793	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $297,200 FY13	20. NEGOTIATED DELIVERY DATE: 9/27/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2654	DX CHANGE REQUEST

CR TITLE: Procure Rapid Prototype Machine, Ice Machine and Suit Room Equipment

REQUIREMENTS/REFERENCES (cont.):

- 8.8 POGO Solenoid Valve (qty 1)
- 8.9 POGO Control Potentiometer (qty 1)
- 8.10 POGO Pilot Valve (qty1)
- 8.11 Thermal Label Printer for Loose Equipment (qty 1)
- 8.12 Labels and supplies for Thermal Printer(2 rolls of label, one cutter)
- 8.13 iPad cover with strap (qty 6)
- 8.14 iPad protective screen cover (qty 6)

CR NO.: 2654	DX CHANGE REQUEST

CR TITLE: Procure Rapid Prototype Machine, Ice Machine and Suit Room Equipment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Inspection	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Inspection	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Inspection	Label requirement satisfied.		
8.1	Verify that one rapid prototype machine with polymer jet technology and a tray size of 500 by 400 by 200 mm with a variety of resins have been delivered.	Inspection	Inspect delivery receipt of items.		
8.2	Verify that 16 movable tables for the suit rooms have been delivered	Inspection	Inspect delivery receipt of items		
8.3	Verify that 26 rolling chairs and 44 stationary chairs have been delivered.	Inspection	Inspect delivery receipt of items		
8.4	Verify that 2 rolling white dry erase boards for the suit room have been delivered.	Inspection	Inspect delivery receipt of items		
8.5	Verify that two large computer monitors 60 inches diagonal or greater have been delivered.	Inspection	Inspect delivery receipt of items		
8.6	Verify that two laser pointers for suit room have been delivered.	Inspection	Inspect delivery receipt of items		
8.7	Verify that a replacement ice machine to support suited training has been delivered.	Inspection	Inspect delivery receipt of items		
8.8	Verify that one POGO solenoid valve has been delivered.	Inspection	Inspect delivery receipt of items		
8.9	Verify that one POGO control potentiometer has been delivered.	Inspection	Inspect delivery receipt of items		
8.10	Verify that one POGO pilot control valve has been delivered.	Inspection	Inspect delivery receipt of items		
8.11	Verify that one thermal label printer for loose equipment has been delivered.	Inspection	Inspect delivery receipt of items		
8.12	Verify that thermal printer labels (3 by 1 in and 4 by 2 in) have been delivered and one cutter for labels delivered.	Inspection	Inspect delivery receipt of items		
8.13	Verify that 6 iPad covers have been delivered.	Inspection	Inspect delivery receipt of items		
8.14	Verify that 6 iPad protective screen covers have been delivered.	Inspection	Inspect delivery receipt of items		

Dry Run:

_____ _____ _____ _____

Mission Assurance/QA Date Project Engineer Date

Final Acceptance:

_____ _____ _____ _____

CR Requestor Date NASA POC Date

_____ _____ _____ _____

Mission Assurance/QA Date Project Engineer Date

CR NO.: 2654	DX CHANGE REQUEST

CR TITLE: Procure Rapid Prototype Machine, Ice Machine and Suit Room Equipment

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.: NNJ10HD35C DO 977

2. Date of Order: 08/14/13

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.

Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 977

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: [redacted] x Fax: [redacted]
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 977

8. Type of Order:

☐ PURCHASE:
Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 977

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 977 is to: Provide IDA Ingress/Egress Trainer by reusing the ODS Trainer by using the ODS Training Cradle. The estimated cost is [redacted] The estimated award [redacted] The estimated incent[redacted] The total value of this Delivery Order is $38,569 Work is to be completed by September 27, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	38,569.00	38,569.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:

☒ COMP. ☐ PART. PPC

13. Total 38,569.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY [signature] 8/15/13
Authorized U.S. Government Representative Date

CR NO.: 2653	DX CHANGE REQUEST

CR TITLE: Create IDA Ingress/Egress Trainer Detailed IDIQ Estimate

1. REQUESTOR: Ernesto Prado	2. PHONE: x34902	3. E-MAIL: global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 3.6.1 (609524)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Create a detailed estimate to provide an IDA Ingress/Egress Trainer by reusing the ODS Trainer Cradle. This project will be priced as an IDIQ and is NTE $40K in FY13.

7. RATIONALE:
To provide a detailed estimate of supplying an ingress/egress training to crew for the IDA system that will be flown to ISS. The mockup will familiarize crew with the volumetric constraints of the IDA, any procedures that will be used in ingress/egress ops, and associated hardware and interfaces.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See page 2

Note: DX14 chief on 8/1/13 determined no safety review would be required.

9. NEED DATE: (support date in block 7 rationale) 30 September 2013	10. CR SUBMISSION DATE: 24 June 13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) Allison McIntyre Date:7/15/13

12. NASA POC: Ernesto Prado	13. PHONE: x34902	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $38,600	20. NEGOTIATED DELIVERY DATE: 9/27/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2653	DX CHANGE REQUEST

CR TITLE: Create IDA Ingress/Egress Trainer Detailed IDIQ Estimate

REQUIREMENTS/REFERENCES (cont.):

1. Provide a detailed IDIQ estimate to manufacture IDA Ingress/Egress Trainer with following considerations:
    a. Create IDA Ingress/Egress Trainer.
    b. Trainer shall interface with Hi-fi VOT PMA.
        i. Fabricate six alignment guides for PMA/IDA interface.
    c. Reuse ODS Trainer Cradle.
        i. Modify as necessary.
    d. Trainer shall support two persons.
    e. Trainer shall represent interior of IDA, NDS, and a representative Visiting Vehicle volume.
        i. Reuse large diameter portion of ODS to represent generic Visiting Vehicle volume.
            1. Strip and repaint large diameter portion of ODS white.
            2. Remove all current internal outfitting.
        ii. Fabricate new Docking Target Assembly.
        iii. Fabricate generic vehicle hatch from foam-core and photo façade.
    f. Fabricate access platform for ingress/egress through PMA side.
        i. Reuse access stairs for Visiting Vehicle side.
    g. Refer to IDA/NDS MDRD for detailed requirements.
        i. As they become available.
2. Provide a project plan.
3. Provide all documentation necessary for PDR which will be held in last month of FY13. Example of required documents below; not all may be applicable. Mockup Manager and PE can work together to determine necessity:
    a. Top level drawings
    b. Preliminary Drawing tree and drawing system
    c. Preliminary Stress Analysis
    d. Preliminary Engineering Design
    e. Structural Verification Plan
    f. Design philosophy of functional/semi-functional components
    g. Functional Interfaces
    h. Preliminary Materials Assessment
    i. Preliminary Hazard Analysis
    j. Software specifications and development plans (if appropriate)
    k. Preliminary Schedule
    l. Preliminary Manufacturing Plan
    m. Electrical and Avionics schematics/flowcharts (if appropriate)
    n. Applicable Requirements Matrix
    o. Rigging points (if appropriate)

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Separate ATP will be provided.

CR NO.: 2653	DX CHANGE REQUEST

CR TITLE: Create IDA Ingress/Egress Trainer Detailed IDIQ Estimate

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2653	DX CHANGE REQUEST

CR TITLE: Create IDA Ingress/Egress Trainer Detailed IDIQ Estimate

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering	Management and Support	Technicians	Material
FY13	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 978	08/21/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 978

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
December 4, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 978

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 978

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 978 is to: Build New Stanchion Mount ORU Cover Trainer The estimated cost is $(b) (4) The estimated award f(b) (4) The estimated incentiv(b) (4) The total value of this Delivery Order is $76,434 Work is to be completed by December 4, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	76,434.00	76,434.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 76,434.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY Jennifer Krause
Authorized U.S. Government Representative
8/21/13
Date

CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
DX32 (b) (4)	(b) (4)	(b) (4) nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

1. Build a high fidelity (1-G only) training mockup of the modified Stanchion Mount ORU Cover primary panel, now an assembly comprised of two pieces (Fwd/Cover A and Aft/Cover B). Use Front plate (b) (4) Stanchion assembly (b) (4) Stanchion handle (b) (4) (b) (4) Slider release (b) (4) Slide lock assembly (b) (4) Bumpers (b) (4) and Tether loop assembly (b) (4) from the existing class III stanchion cover mockup. Add snap fasteners to the Front plate in a quantity of 6 ea. Snaps can be COTS items.
2. Modify the existing low fidelity Stanchion on Stanchion Mount ORU Cover to accommodate the low fidelity Main Bus Switching Unit (MBSU) mockup without pulling the cover paddle. Currently, the cover paddle has to be pulled out in order to install the cover onto the MBSU.
3. Build high fidelity (1-G only) Thermal Garments:
    1. 3-Panel Thermal Garment (two parts)
    2. 2-Panel Thermal Garment (two parts)
    3. Build IIB fidelity connector cover P/N (b) (4) in a quantity of 1 ea.
    4. Add snap fasteners to mid ORU cover (P/N (b) (4) and to Secondary ORU cover (P/N (b) (4)

7. RATIONALE:
The original Stanchion Mount ORU Cover does not accommodate the MBSU mockup. A modified primary panel was designed and built. It is scheduled to launch to ISS on Space-X3. A high fidelity training unit is necessary to train crewmembers for the on-orbit hardware.

CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Reference:

- http://topssnet.ndc.nasa.gov/topssnet2/predive-test/wiki/index.php?title=Stanchion_Mount_ORU_Cover
- ASSEMBLY AND OPERATIONS SUPPORT PLAN - EVA ORU COVER KIT MODIFICATION (EDMS)
- REQUIREMENTS/VERIFICATION FOR MODIFIED STANCHION MOUNT CLASS ORU PROTECTIVE COVER (EDMS)

Primary Panel (new)

- Panel Assy, FWD, Primary - ORU Cover (b) (4)
  - Operations Nomenclature - EVA ORU Cover - A
  - Located on the forward portion of the cover that covers blind mate connectors
- Panel Assy, AFT, Primary - ORU Cover (b) (4)
  - Operations Nomenclature - EVA ORU Cover - B
  - Located on the aft portion of the cover with the stanchion

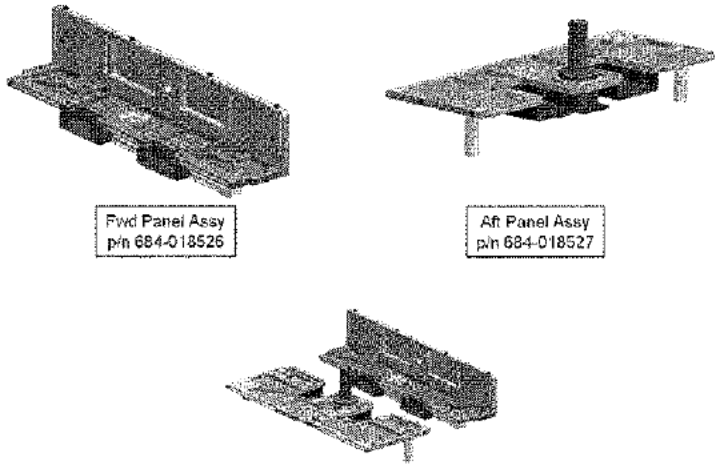


Figure 1: Stanchion Mount ORU Cover – Primary Panel Assembly (Fwd & Aft panels)

Build high fidelity (IIB) (1-G only) Thermal Garments:

1. 3-Panel Thermal Garment (Two Parts, Assy P/N (b) (4)
2. 2-Panel Thermal Garment (Two Parts, Assy P/N (b) (4)
3. Build IIB fidelity connector cover P/N (b) (4) in a quantity of 1 ea.
4. Add snap fasteners to mid ORU cover (P/N (b) (4) and to Secondary ORU cover (P/N (b) (4) (b) (4)

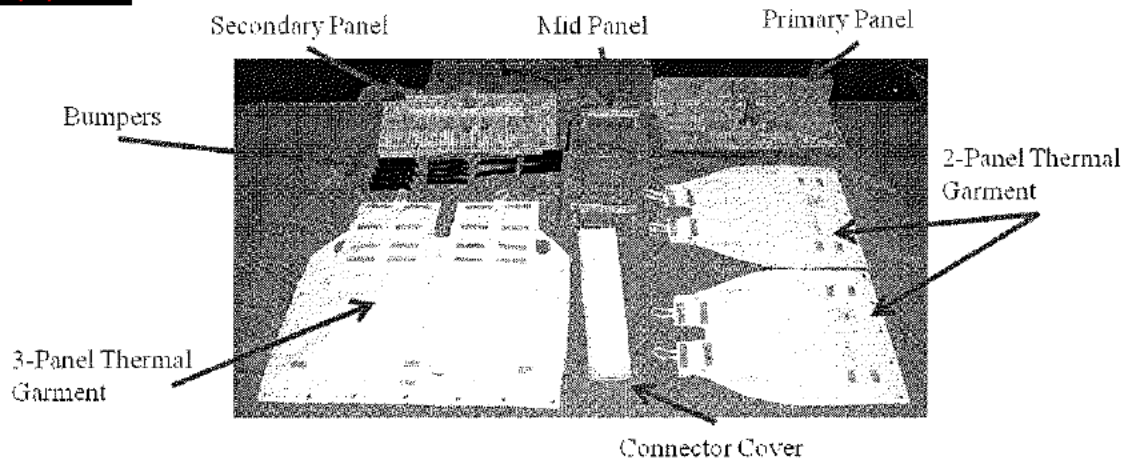


Figure 2: Stanchion Mount ORU Cover Components

CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
September 20, 2013	**May 31, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Ed Turcotte Date:6/12/13 in ICE

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed J. Turcotte	281.483.5730	edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$76,500 (FY13 - $29,300; FY14 – $47,200)	12/4/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
1	High Fidelity Stanchion Mount ORU Cover	http://topssnet.jsc.nasa.gov/topssnet2/predive-test/wiki/index.php?title=Stanchion_Mount_ORU_Cover ASSEMBLY AND OPERATIONS SUPPORT PLAN - EVA ORU COVER KIT MODIFICATION (EOMS) REQUIREMENTS/VERIFICATION FOR MODIFIED STANCHION MOUNT CLASS ORU PROTECTIVE COVER (EDMS)	DX3 - WIKI EDMS EDMS	1	II.B	(b) (4)
1a	Panel Assy, FWD, Primary - ORU Cover (Ops Nom - EVA ORU Cover - A) Note: Located on the forward portion of the cover that covers blind mate connectors	(b) (4)	VMDB	1	II.B	
1b	Panel Assy, AFT, Primary - ORU Cover Located on the aft portion of the cover with the stanchion	(b) (4)	VMDB	1	II.B	
2	Verify/add functionality of the low fidelity cover to interface the MBSU mockup is necessary for crew training in the NBL and for EVA procedure development. NBL part numbers ORU-CVR-CARR-03-PT-1, ORU-CVR-CARR-03-PT-2, and ORU-CVR-CARR-03-PT-3	Stanchion Mount Protective Cover v5.1 ORU-CVR-CARR-02-PT-1-2-3.JPG	Attached	1	III.B	
3	Build high fidelity (1-G only) Thermal Garments					
3a	3-Panel Thermal Garment	(b) (4)	VMDB	1	II.B	
3b	2-Panel Thermal Garment		VMDB	1	II.B	

CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	(b) (4)		Inspection	(b) (4)		
2	Modify the existing low fidelity Stanchion on Stanchion Mount ORU Cover to accommodate the low fidelity Main Bus Switching Unit (MBSU) mockup without pulling the cover paddle. Currently, the cover paddle has to be pulled out in order to install the cover onto the MBSU.		Inspection	The existing low fidelity Stanchion on Stanchion Mount ORU Cover was modified to accommodate the low fidelity Main Bus Switching Unit (MBSU) mockup without pulling the cover paddle.		
3	(b) (4)		Inspection	(b) (4)		
4	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.		Inspection	Finished product is safe for contact		
5	Verify there are no unidentified pinch points.		Inspection	Finished product is safe for use.		
6	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection			

CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

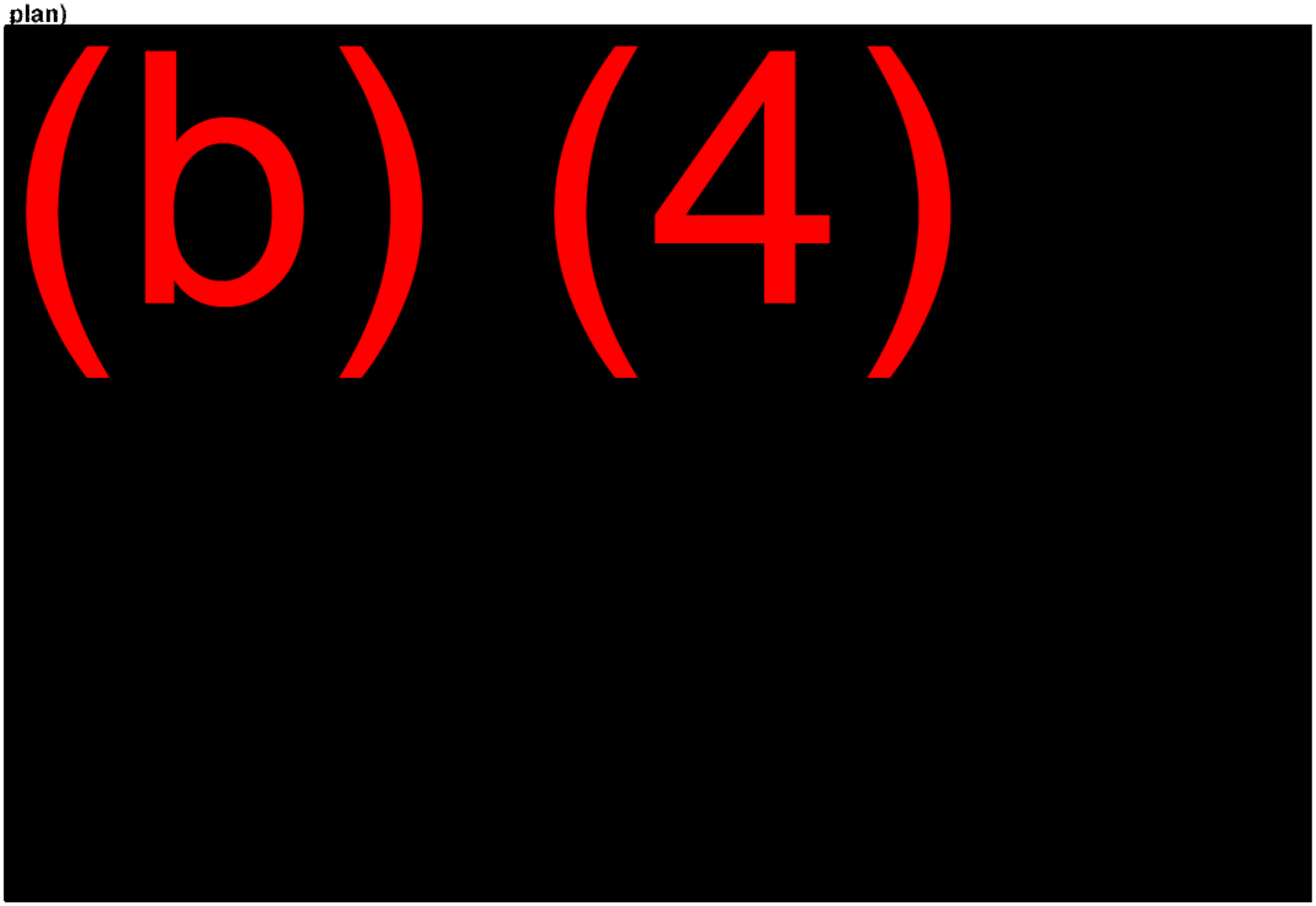
SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



CR NO.: 2578	DX CHANGE REQUEST

CR TITLE: Build New Stanchion Mount ORU Cover Trainer

[redacted]

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
FY13		[redacted]			
FY14					

8

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 979	09/03/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 979

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 979

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 979

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: JENNIFER L. KRAUSE
NASA CONTRACTING OFFICER
Jennifer Krause 9/3/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 979 is to incorporate the Waterjet Machining Center: Waterjet Machining Center The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $287,742 Work is to be completed bySeptember, 27 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	287,742.00	287,742.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 287,742.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 502	DX CHANGE REQUEST

CR TITLE: Waterjet Machining Center

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Procurement and delivery of OMAX 55100 Jetmachining Center or equivalent
Note: This CR is for procurement only, not covered by this CR is the effort for installation design, demolition/removal of existing equipment and installation.

7. RATIONALE:
To increase manufacturing capability within NBL space systems support.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
No Safety Review required as this CR is to provide:

Purchase OMAX 55100 Abrasive Jet Machining Center or equivalent with the following equivalent accessories:

- Enduro MAX Pump P3060V
- Terrain Follower 24,000BTU/HR 460V 3PH chiller assembly used to cool water entering the pump to provide maximum seal life. Water Supply Temperature required 45-70° F (7-21° C) but recommended 45-60° F (7-16° C)
- Integral Solids Removal System - variable speed – Models 55100
- Weir Tank System: Baffles in tank slow water flow to let sediment settle out (Required w/Closed Loop System)

http://www.omax.com/waterjet-cutting/machine/model/55100

9. NEED DATE: (support date in block 7 rationale) 9/26/2013	10. CR SUBMISSION DATE: 8/12/2013

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 8/14/2013

12. NASA POC: Ed Turcotte	13. PHONE: 281-483-5730	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $287,700	20. NEGOTIATED DELIVERY DATE: 9/27/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 502	DX CHANGE REQUEST

CR TITLE: Waterjet Machining Center

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Accuracy of Motion

Over one foot travel +/-0.003" 0.08 mm
Repeatability +/-0.0013" 0.033 mm
Squareness 0.0013" per foot 0.11 mm/m
Straightness 0.0017" per foot 0.14 mm/m
Backlash 0.0007" max 0.018 mm

Work Envelope/Cutting Table

Cutting X-Axis Travel* 100" 2540 mm
Cutting Y-Axis Travel* 55" 1397 mm
X-Axis Table Size 126" 3200 mm
Y-Axis Table Size 65" 1650 mm
Material Supports Slats Size 4" x 1/8" Galvanized Steel 100 mm x 3 mm

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Receipt of Abrasive Jet Machining Center	EA	1	Inspection		(b) (4)

CR NO.: 502	DX CHANGE REQUEST

CR TITLE: Waterjet Machining Center

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 980	09/03/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 980

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 980

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 979

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: JENNIFER L. KRAUSE
NASA CONTRACTING OFFICER
Jennifer L Krause 9/3/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 979 is to incorporate the AAD Rendering Farm Upgrade FY13: The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $114,803 Work is to be completed by September 27, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	114,803.00	114,803.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 114,803.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 507	DX CHANGE REQUEST

CR TITLE: AAD Rendering Farm Upgrade FY13

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Procure and delivery of new AAD Rendering Farm equipment to upgrade existing system.
Note: This CR is for procurement only, not covered by this CR is the effort for installation design, demolition/removal of existing equipment and installation.

7. RATIONALE:

1. To increase the Animation and Analysis capability within NBL space systems support.
2. Current workstations and equipment all exceed NBL IT expected life span of 4 years.
3. Newer technology and devices greatly improve performance, quality and efficiency.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
No Safety Review required as this CR is to provide:

Purchase necessary following equipment or substitute with equivalent specifications:

- (b) (4) ASUS Z9PE-D8 WS Dual LGA 2011 Intel C602 SATA 6Gb/s USB 3.0 SSI EEB Intel Motherboard
- (b) (4) CPU - Intel® Xeon® Processor E5-2687W (20M Cache, 3.10 GHz, 8.00 GT/s Intel® QPI)
- (b) (4) Dynatron R17 92mm 2 Ball Intel Sandy Bridge Romley-EP/EX Processors up to TDP 160 Watts Overclocking
- (b) (4) RAM 16GB kit (8GBx2) DDR3 PC3-12800 • CL=11 • Dual Ranked • x8 based • Registered • ECC • DDR3-1600 • 1.35V • 1024Meg x 72

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: TBD

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$114,800	9/27/2013

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 507	DX CHANGE REQUEST

CR TITLE: AAD Rendering Farm Upgrade FY13

REQUIREMENTS/REFERENCES (cont.):

- (b) (4) Power Supply - Antec TPQ-1200 1200W Continuous Power with PowerCache Technology SLI Ready CrossFire Certified 80 PLUS SILVER Certified Modular Active PFC Power Supply
- (b) (4) Crucial m4 256GB 2.5-Inch (9.5mm) Solid State Drive with Easy Desktop Install Kit CT256M4SSD2BAA
- (b) (4) Crucial m4 512GB 2.5-Inch (9.5mm) SATA 6Gb/s Solid State Drive CT512M4SSD2
- (b) (4) Bracket35225 Tower Conversion Kit
- (b) (4) Windows 7 Ultimate 64 bit
- (b) (4) Graphics Card - Video Card Quadro K5000 4GB DDR5 256Bit PCI-E3.0 DVI-I/DVI-D/DP
- (b) (4) EVGA GeForce GTX TITAN Hydro Co 6 NVIDIA GTX TITAN 2688
- (b) (4) NVIDIA TESLA C2075 Graphics
- (b) (4) NVIDIA TESLA K20 GRAPHICS CARD

CR NO.: 507	DX CHANGE REQUEST

CR TITLE: AAD Rendering Farm Upgrade FY13

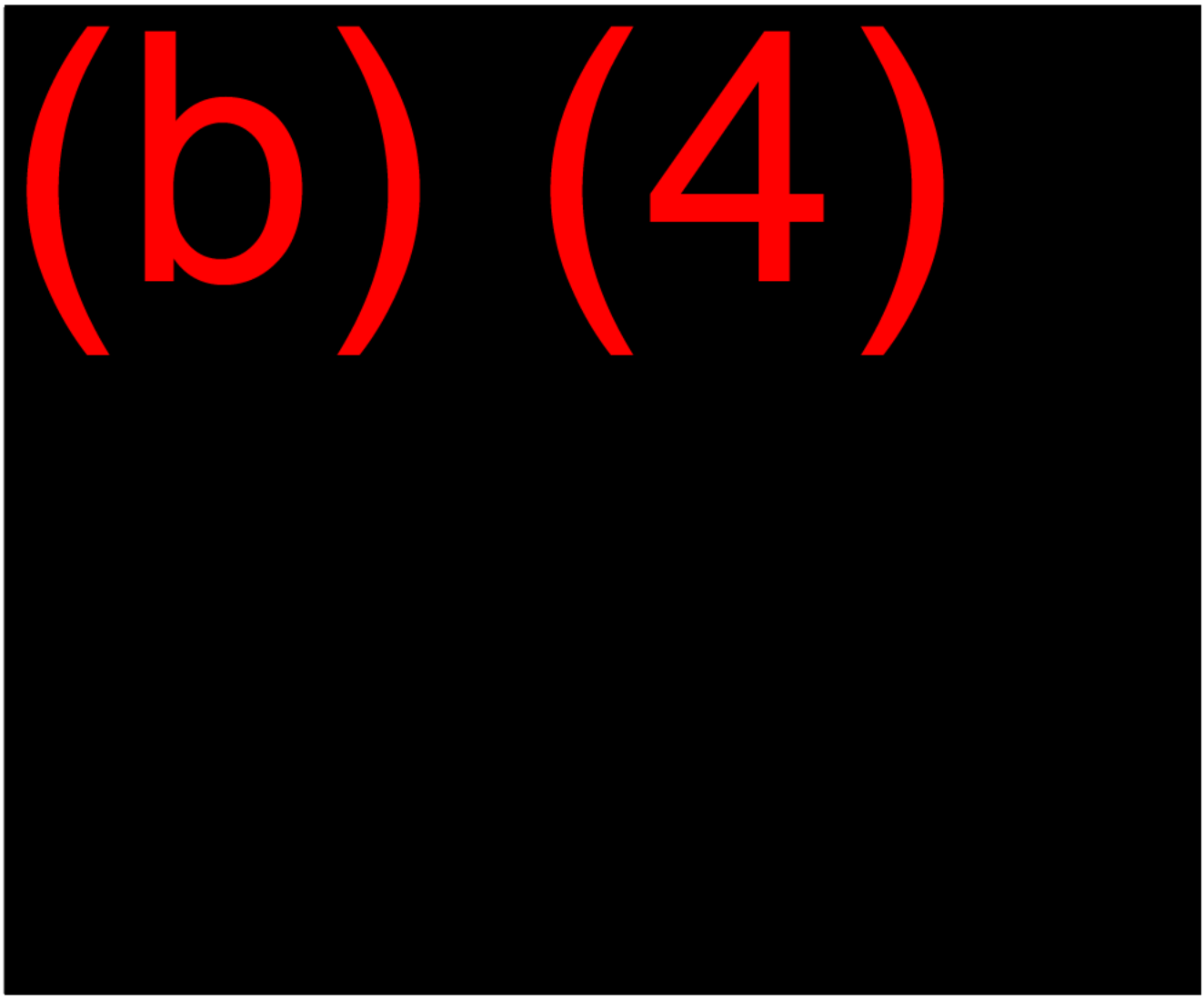
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	ASUS Z9PE-D8 WS Dual LGA 2011 Intel C602 SATA 6Gb/s USB 3.0 SSI EEB Intel Motherboard	EA	(b) (4)	Inspection		(b) (4)
2.	CPU - Intel® Xeon® Processor E5-2687W (20M Cache, 3.10 GHz, 8.00 GT/s Intel® QPI)	EA	(b) (4)	Inspection		
3.	Dynatron R17 92mm 2 Ball Intel Sandy Bridge Romley-EP/EX Processors up to TDP 160 Watts Overclocking	EA	(b) (4)	Inspection		
4.	RAM 16GB kit (8GBx2) DDR3 PC3-12800 • CL=11 • Dual Ranked • x8 based • Registered • ECC • DDR3-1600 • 1.35V • 1024Meg x 72	EA	(b) (4)	Inspection		
5.	Power Supply - Antec TPQ-1200 1200W Continuous Power with PowerCache Technology SLI Ready CrossFire Certified 80 PLUS SILVER Certified Modular Active PFC Power Supply	EA	(b) (4)	Inspection		
6.	Crucial m4 256GB 2.5-Inch (9.5mm) Solid State Drive with Easy Desktop Install Kit CT256M4SSD2BAA	EA	(b) (4)	Inspection		
7.	Crucial m4 512GB 2.5-Inch (9.5mm) SATA 6Gb/s Solid State Drive CT512M4SSD2	EA	(b) (4)	Inspection		
8.	Bracket35225 Tower Conversion Kit	EA	(b) (4)	Inspection		
9.	Windows 7 Ultimate 64 bit	EA	(b) (4)	Inspection		
10.	Graphics Card - Video Card Quadro K5000 4GB DDR5 256Bit PCI-E3.0 DVI-I/DVI-D/DP	EA	(b) (4)	Inspection		
11.	EVGA GeForce GTX TITAN Hydro Co 6 NVIDIA GTX TITAN 2688	EA	(b) (4)	Inspection		
12.	NVIDIA TESLA C2075 Graphics	EA	(b) (4)	Inspection		
13.	NVIDIA TESLA K20 GRAPHICS CARD	EA	(b) (4)	Inspection		

CR NO.: 507	DX CHANGE REQUEST

CR TITLE: AAD Rendering Farm Upgrade FY13

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

CR NO.: 507	DX CHANGE REQUEST

CR TITLE: AAD Rendering Farm Upgrade FY13

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 981	09/17/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 981

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 27, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 981

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 981

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: ~~Cynthia Maclean~~ Kathryn McCarin
Kathryn McCarin 9/17/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 981 is to incorporate the Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design costs: The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $72,002 Work is to be completed by September 27, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	72,002.00	72,002.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 72,002.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 508	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines , Gym Equipment, Jib Crane Design

1. REQUESTOR: Edgar Turcotte	2. PHONE: 3-5730	3. E-MAIL: global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Procure 9" monitors, crane safety line connectors, gym equipment and Design Hours for Jib Crane modification.

7. RATIONALE:

These items are required to maintain and enhance NBL capabilities to support its mission.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1) 11ea sets - Marshall Dual 9" panel number V-R102DP-2C - ROV control racks or equivalent (10.4" Dual-Rack Mount 2.4 Megapixel Anti-Glare LCDs, NTSC/PAL Auto-Switch, with HD/SD-SDI, Component, Composite, S-Video, VGA, and DVI-I Inputs)
2) 2ea - Latchways Mansafe Horizontal lifeline or equivalent
3) 1ea - Body Solid Pro-Dual Leg Extension/Leg Curl machine or equivalent
4) 1ea - Body Solid Leg Press / Hack Squat machine or equivalent
5) Build upon the work performed on CR-NBL-494 and CR-NBL-497 by performing the following tasks:
   a) Review, interpret and apply ANSI/SIA A92.5 and ANSI/SIA A92.2 to the alteration of the NBL Jib Crane design to accommodate a 5000 pound capacity using new hydraulic and structural components.
   b) Adjust the inputs used in the MathCAD model developed in CR-NBL-497 to validate requirement 1 above.
   c) Collaborate with Petrofac stakeholders to agree upon and document vertical rates
   d) Consider modification to the Jib Crane design to replace the pneumatic rotation components and controls to accommodate hydraulic actuation for smoother operation and to avoid a hydraulic/pneumatic hybrid system; all in compliance with the standards cited above in requirement 1.
   e) Develop a draft FY14 CR to progress the design and implementation of the design state produced by the above listed requirements to the point that it is ready for Block 11 approval
   f) Initiate the crane design modification required to meet the above requirements.

   Note: It is understood that the requirements in (5) above may not yield a detailed drawing package

NOTE: Safety Review not required for procurement items per NBL Deputy Office Chief, no TRR required. SR for Jib Crane completed under prior CR. Jib Crane Design work is design only - no implementation.

9. NEED DATE: (support date in block 7 rationale) 09/26/13	10. CR SUBMISSION DATE: 08/27/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE) Date:9/3/13

12. NASA POC: Ed Turcotte	13. PHONE: global	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

CR NO.: 508	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines , Gym Equipment, Jib Crane Design

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
FY13 - $72,000	9/27/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Marshall 9" panel number V-R102DP-2C - ROV control racks or equivalent (10.4" Dual-Rack Mount 2.4 Megapixel Anti-Glare LCDs, NTSC/PAL Auto-Switch, with HD/SD-SDI, Component, Composite, S-Video, VGA, and DVI-I Inputs)	EA	22	Inspection		
2.	Latchways Mansafe Horizontal lifeline or equivalent	EA	2	Inspection		
3.	Body Solid Pro-Dual Leg Extension/Leg Curl machine or equivalent	EA	1	Inspection		
4.	Body Solid Leg Press / Hack Squat machine or equivalent	EA	1	Inspection		
5.	a) thru b) Engineering Summary	EA	1	Review		
	c) document vertical rates requirements	EA	1	Review		
	d) Consider modification to the Jib Crane design	EA	1	Review		
	e) Draft CR ready for Block 11 Approval	EA	1	Review		
	f) Initiate the crane design modification	EA	1	Review		

CR NO.: 508	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines , Gym Equipment, Jib Crane Design

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

(b) (4)

CR NO.: 508	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines , Gym Equipment, Jib Crane Design

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 982 Rev B	01/29/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 982 Rev B

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
January 31, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 982 Rev B

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 982 Rev B

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 1/29/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 982 Rev B is to: Test Article Repair Job 2: The estimated cost i(b) (4) The estimated award The estimated incen The total value of this Delivery Order is $5,223 Work is to be completed by January 31, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	5,223.00	5,223.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 5,223.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2640 Rev. B	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

1. REQUESTOR: Molly Selig	2. PHONE: (281)483-6786	3. E-MAIL:molly.selig-1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV **WBS 2.6.3**
☒ OTHER: ☒ FUND CODE: **ECO**

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Support ES division by providing the modifications to a Test Article, by replacing the bladder, installing new felt "horse collar" rings and replacing the Kevlar restraint layer with a new Vectran restraint layer. This manufacturing will be performed as an external customer task and as such this CR shall be priced as an IDIQ effort.
Rev.A – SCIF-01 Rev.A increase by -(b) (4) to provide additional engineering work and measurement support and moved due date out to 9/27/13 from 5/31/13, SCIF-02 increase by -(b) (4) to add BEAM HVI tasks, SCIF-03 Decrease for FY13 by -(b) (4) & Increase for FY14 by –(b) (4) push these tasks from FY13 to FY14: Requirement #2 - Assemble new bladder to restraint layer, install existing horse collar and assemble softgoods to core. Requirement #3 - Assist customer in low pressure pressurization checkout, and support functions associated with these tasks.
Rev. B (1/14/14) – SCIF-04 increase of (b) (4) to modify the new bladder to cut to proper length and add bolt holes, SCIF-05 (b) (4) to push the date out due to data delays on the bladder modification and SCIF-06 increase of $(b) (4) to provide support for an additional inflation test and extend the end date.

(b) (4)

7. RATIONALE:
ES has FY funding to support the repair of the hardware and are seeking to use excess manufacturing capacity resident in the LMF to perform the work this FY.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Note: ES will provide engineering support for manufacturing throughout the life of this project. All direction for design and manufacturing activities will come through the ES project engineering. This CR provides labor only.

(b) (4) Horse-Collar
(b) (4) Test Article Assembly
(b) (4) Core Assembly
Beam HVI Charts Rev A

Note: SR held on 4/11/12, No Actions, ~~TRR Required~~ update per J. Haas email 10/25/13 Rev.A.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
~~5/31/13~~ ~~Rev. A 9/27/13~~ **Rev. B 1/10/14**	04/02/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) John Haas Date:4/4/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Angela R. Prince	W: (281)244-1086	angela.r.prince@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$14,600~~ ~~Rev. A $30,700~~ **Rev. B $36,000** **(FY13: $19,500; FY14: ~~$11,200~~ Rev. B $16,500)**	~~5/31/13~~ ~~Rev. A 11/15/13~~ **Rev. B 1/31/14**

AUTHORIZATION TO PROCEED	
OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____
Closed by:_____ **Date:** _____	

REQUIREMENTS/REFERENCES (cont.):

Repair Kevlar Test Article:

1.) Remove soft goods from core. Disconnect bladder from restraint layer. Rev. A
2.) Assemble new bladder to restraint layer, per drawings (b) (4) and (b) (4) Install existing six(6) "horse-collar" felt rings of three(3) different sizes, per drawing (b) (4) and Assemble soft goods to core, per drawings (b) (4) and (b) (4) Rev. A
3.) Assist customer in low pressure pressurization checkout in LMF per OCCP ES4-13-015, & Test plan ES2-13-001. (Customer will provide gauge/regulator assembly, OCCP, and Procedure. One technician is required to assist customer in connecting shop air to the system. Inflation to .25-.5 psig will verify proper assembly. This task requires approximately 1 hour.)

ES will update the existing HA, OCCP and Test Plan to include the new Vectran material introduced in the new restraint layer.

The new Vectran restraint layer, the new bladder and the felt ring material will be provided by ES.
Any additional material or hardware will be provided by ES.

If there is any damage to the Stand, the scope of the repair will be evaluated and the repair work will be added as necessary.

4.) Sew loops on the ends of 4 straps per BEAM HVI Charts Rev A.pptx. Provide 4 straps to (b) (4) for testing, do not continue until directed by (b) (4) Rev. A
5.) To mark under load 84 Pieces (see Page 1 of attached file "BEAM HVI Charts.pptx") and then sew individually onto themselves using a box stitch in 2 places on each (see Page 2 of attached file "BEAM HVI Charts Rev A..pptx"). Rev. A
6.) Once those are all completed, we need 2 assemblies of 23 single straps sewn together edge to edge (see Page 3 of attached file "BEAM HVI Charts.pptx"). Rev. A

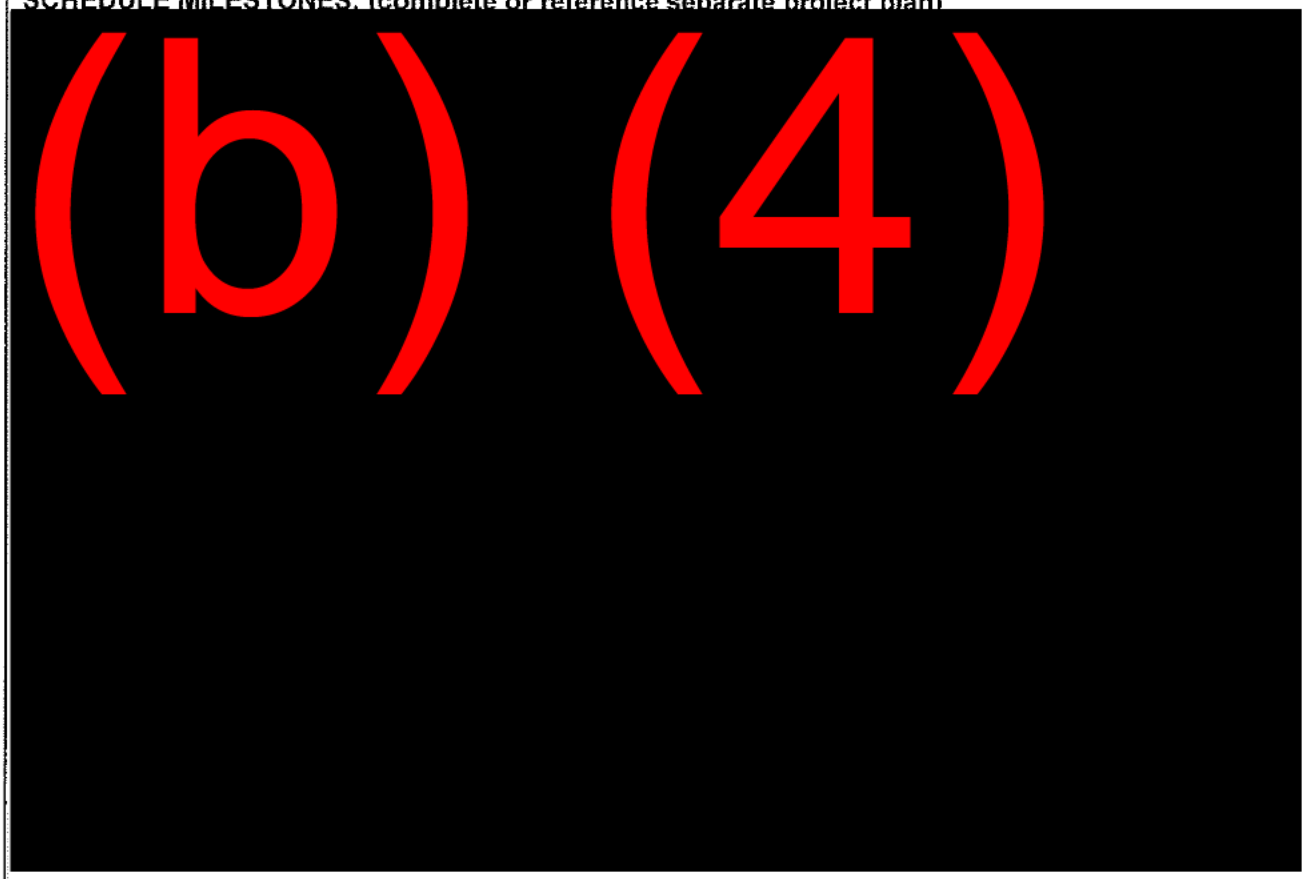
Push tasks: Requirement #2 - Assemble new bladder to restraint layer, install existing six(6) horse collars felt rings and assemble softgoods to core. And Requirement #3 - Assist customer in low pressure pressurization checkout, and support functions associated with these tasks, from FY13 and into FY14(11/15/13). Rev. A

7.) Modify new bladder to cut to proper length and add bolt holes. Rev. B (1/14/14)
8.) Provide support for an additional inflation test to allow for additional measurements. Rev. B (1/14/14)

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Delivable Description	Qty	FID. Code	Verification
1	Remove soft goods from core. Disconnect bladder from restraint layer. Rev. A	1	IIB	
2	Assemble new bladder to restraint layer, per drawings (b) (4) and (b) (4) Install existing six(6) "horse-collar" felt rings of three(3) different sizes, per drawing (b) (4) and Assemble soft goods to core, per drawings (b) (4) and (b) (4) Rev. A	1	IIB	
3	Assisted customer in low pressure checkout.	1	IIB	
4	Provide 4 – 1" wide Vectran straps marked and sewn per per BEAM HVI Charts Rev A..pptx Rev. A	4	IB	
5	Provide 84 - 1" wide Vectran straps marked and sewn per BEAM HVI Charts Rev A..pptx Rev. A	84	IB	
6	Fabricate 2 assemblies of 23 straps from above sewn together edge to edge per BEAM HVI Charts Rev A..pptx.(provide additional unused straps to (b) (4) Rev. A	2	IB	
7	**Modify new bladder to cut to proper length and add bolt holes. Rev. B**	**1**	**IIB**	
8	**Provide support for an additional inflation test. Rev. B**	**1**	**IIB**	

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGI EER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
	(b) (4)				
Rev. A FY13					
~~Rev. A FY14~~					
Rev. B FY14					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 982	09/27/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 982

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
Novmeber 15, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 982

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 982

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 9/27/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 982 is to: Test Article Job 2: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $16,053 Work is to be completed by November 15, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	16,053.00	16,053.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 16,053.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2640 Rev. A	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

1. REQUESTOR: Molly Selig	2. PHONE: (281)483-6786	3. E-MAIL:molly.selig-1@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV WBS 2.6.3
☒ OTHER: ☒ FUND CODE: ECO

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Support ES division by providing the modifications to a Test Article, by replacing the bladder, installing new felt "horse collar" rings and replacing the Kevlar restraint layer with a new Vectran restraint layer. This manufacturing will be performed as an external customer task and as such this CR shall be priced as an IDIQ effort.
Rev.A – SCIF-01 Rev.A increase by -(b) (4) o provide additional engineering work and measurement support and moved due date out to 9/27/13 from 5/31/13, SCIF-02 increase by - (b) (4) o add BEAM HVI tasks, SCIF-03 Decrease for FY13 by -(b) (4) & Increase for FY14 by – (b) (4) ush these tasks from FY13 to FY14: Requirement #2 - Assemble new bladder to restraint layer, install existing horse collar and assemble softgoods to core. Requirement #3 - Assist customer in low pressure pressurization checkout, and support functions associated with these tasks.

(b) (4)

7. RATIONALE:
ES has FY funding to support the repair of the hardware and are seeking to use excess manufacturing capacity resident in the LMF to perform the work this FY.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Note: ES will provide engineering support for manufacturing throughout the life of this project. All direction for design and manufacturing activities will come through the ES project engineering. This CR provides labor only.

PDF (b)(4) Horse-Collar
PDF (b) (4) Article Assembly
PDF (b) (4) Assembly
PDF Beam HVI Charts Rev A

Note: SR held on 4/11/12, No Actions, TRR Required.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
~~5/31/13~~ **Rev. A 9/27/13**	04/02/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) John Haas Date:4/4/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Angela R. Prince	W: (281)244-1086	angela.r.prince@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$14,600~~ Rev A. $30,700 (FY13: $19,500; FY14: $11,200)	**~~5/31/13~~ Rev. A 11/15/13**

AUTHORIZATION TO PROCEED

CR NO.: 2640 Rev. A	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ Date: _____

REQUIREMENTS/REFERENCES (cont.):

Repair Kevlar Test Article:

1.) Remove soft goods from core. Disconnect bladder from restraint layer. Rev. A

2.) Assemble new bladder to restraint layer, per drawings (b) (4) and (b) (4) nstall existing six(6) "horse-collar" felt rings of three(3) different sizes, per drawing(b) (4) and Assemble soft goods to core, per drawings SEY44109124 and SEY44106760. Rev. A

3.) Assist customer in low pressure pressurization checkout in LMF per OCCP ES4-13-015, & Test plan ES2-13-001. (Customer will provide gauge/regulator assembly, OCCP, and Procedure. One technician is required to assist customer in connecting shop air to the system. Inflation to .25-.5 psig will verify proper assembly. This task requires approximately 1 hour.)

ES will update the existing HA, OCCP and Test Plan to include the new Vectran material introduced in the new restraint layer.

The new Vectran restraint layer, the new bladder and the felt ring material will be provided by ES.
Any additional material or hardware will be provided by ES.

If there is any damage to the Stand, the scope of the repair will be evaluated and the repair work will be added as necessary.

4.) Sew loops on the ends of 4 straps per BEAM HVI Charts Rev A.pptx. Provide 4 straps to (b) (4) for testing, do not continue until directed by(b) (4) Rev. A

5.) To mark under load 84 Pieces (see Page 1 of attached file "BEAM HVI Charts.pptx") and then sew individually onto themselves using a box stitch in 2 places on each (see Page 2 of attached file "BEAM HVI Charts Rev A..pptx"). Rev. A

6.) Once those are all completed, we need 2 assemblies of 23 single straps sewn together edge to edge (see Page 3 of attached file "BEAM HVI Charts.pptx"). Rev. A

Push tasks: Requirement #2 - Assemble new bladder to restraint layer, install existing six(6) horse collars felt rings and assemble softgoods to core. And Requirement #3 - Assist customer in low pressure pressurization checkout, and support functions associated with these tasks, from FY13 and into FY14(11/15/13). Rev. A

CR NO.: 2640 Rev. A	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Delivable Description	Qty	FID. Code	Verification
1	**Remove soft goods from core. Disconnect bladder from restraint layer. Rev. A**	1	IIB	
2	**Assemble new bladder to restraint layer, per drawings (b) (4) and (b) (4) Install existing six(6) "horse-collar" felt rings of three(3) different sizes, per drawing (b) (4) and Assemble soft goods to core, per drawings (b) (4) and (b) (4) Rev. A**	1	IIB	
3	Assisted customer in low pressure checkout.	1	IIB	
4	**Provide 4 – 1" wide Vectran straps marked and sewn per per BEAM HVI Charts Rev A..pptx Rev. A**	4	IB	
5	**Provide 84 - 1" wide Vectran straps marked and sewn per BEAM HVI Charts Rev A..pptx Rev. A**	84	IB	
6	**Fabricate 2 assemblies of 23 straps from above sewn together edge to edge per BEAM HVI Charts Rev A..pptx.(provide additional unused straps to (b) (4) Rev. A**	2	IB	

CR NO.: 2640 Rev. A	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2640 Rev. A	DX CHANGE REQUEST

CR TITLE: Test article repair Job 2

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGI EER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
	(b) (4)				
Rev. A FY13					
Rev. A FY14					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 983	09/30/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakey-Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 983

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
October 31, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 983

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 983

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Jennifer Krause — Contracting Officer
9/30/13 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 983 is to: Underwater Pipe and Ball Sensor Test: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $30,197 Work is to be completed by October 31, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	30,197.00	30,197.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 30,197.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2636A	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.3 (ECO IDIQ)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☒ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☒ OTHER

6. DESCRIPTION OF CHANGE:
Support the JSC Engineering Directorate as they demonstrate and refine a Ball Sensor designed to support off-shore applications. This CR will fund labor for an NBL Flight Lead and test team supporting the engineering directorate demonstration tests. NSOC will support by leading integration efforts and developing and presenting related safety reviews and TRRs. A method to support a segment of bent PVC pipe near the surface of the NBL and to provide a container to isolate a small surface segment of the NBL will need to be developed along with ancillary equipment items associated with the testing.
Rev A – Incorporates SCIF-01 ($30,200) to use the baseline test as a proof of concept test, add a new test for the final test and add 7 standalone sonar ball tests.

(b) (4)

7. RATIONALE:
The JSC Engineering Directorate has been contracted to develop and demonstrate a technology capable of entering an off-shore storage system, assessing the internal conditions of the tank, and returning with samples from the top and bottom. The NBL provides an environment in which they can test their design, make slight modifications, and retest. The support systems and skills located at the NBL will enable the device to be tested in multiple configurations and the NBL underwater video capabilities will provide documentation of results. The current schedule is such at the first test is expected to occur in mid April with follow-on tests as components are developed.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
See Page 2 for the requirements
Safety Review Held 3/21/13 chaired by E. Turcotte and TRR is required

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
3/15/13	2/20/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J. Haas Date: 3/6/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Angela Prince	281-244-1086	Global
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
Project Lead – (b) (4)	(b) (4)	(b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$28,400~~ Rev.A – $58,600 (FY'13 - $32.3K / FY'14 - $26.3K)	~~7/15/~~13 Rev.A – 10/31/13

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____
Date: _____
CCB CHAIR: _____
Date: _____

COTR for CRs with Cost Impact Only
COTR: _____
Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2636A	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

REQUIREMENTS/REFERENCES (cont.):

A segment of bent PVC pipe of approximately 10-12" diameter will be placed in the NBL and a pump will be used to force water and the ball sensor down the length of the pipe. Once the sensor exits the pipe segment, it will use sonar technology to image the bottom of the pool and deploy two robotic devices which will travel to the bottom and top of the pool to retrieve samples. Multiple test dates and multiple design iterations are expected. The NSOC contractor will develop and present the safety review and TRR packages required for integration of this event. Testing is expected to occur over a (b) (4) period with no more than (b) (4) being needed. Costing information should reflect the integration costs for the event and also a per test day cost since the test duration is determined by testing results.

Phase 1:

- Provide tower stands or a platform to hold a clear plastic ~10" diameter bent pipe segment. The pipe segment will include a couple of 30-45 degree angles to demonstrate system capabilities
- Ball sensor will be outfitted with a sonar system. The pipe location shall be as close to the top as possible so that the sonar can image the bottom of the pool after exiting the pipe. Placement of the test in the NBL should provide the customer with hardware on the pool floor which can be imaged for demonstration purposes.
- The pipe segment is a friction fit to ease breakdown and transportation,
- Current design uses a 1500 gph gas powered pump to force water and thus the ball sensor through the bent pipe segment. If a gas powered pump is used in the NBL then a long exhaust hose would need to be utilized to vent to the outside. Engineering will look at renting an electric pump if needed. (This requirement for external exhaust needs to be assessed to see if volume of building and run time can negate exhaust hose requirement)
- Underwater video of the test is requested – this can be provided by stationary cameras, diver supported, and/or video ROV
- All sensors used will be under 30 volts in the water
- 13 watt sonar system is utilized. It is tuned for best performance at 60 meters. There should be enough beam width that the sensor can see the entire tank once it exits the pipe.
- Customer may want to perform one test such that the sonar images the length of the pool vs. the bottom of the pool.
- Diver support may not be required for the sonar test
- Schedule – would want to run a test in mid April (TBD) with full up sonar. No components that would be deployed. This sonar only test is expected to be (b) (4) maximum including contingency and set-up days. The majority of this time is expected to be related to the test set-up vs. the actual sonar test event.

Phase 2 (future plan not included in the cost of this CR at this time):

- A second ball sensor unit would be tested in the June timeframe with deployable components
- Diver support is expected for the sampling test
- For the sampling they need to demonstrate that they can collect and hold on to samples until the ball sensor is retrieved. Sample method for the bottom of the pool will require that a bucket or tub of clumpy sand like substance (perhaps sand and paraffin) be available on the NBL pool floor for sensor to collect. Sample method for the NBL surface will require that a containment area be developed using floating dock, blue foam, or some other design. The water inside the "containment box" will be "contaminated" with oil, glycerin or some other NBL approved product. The sample device will surface in this area and retrieve a sample of the water that can be stored internally and evaluated after the ball sensor retreats back out the bent pipe segment.
- Each design sensor is at a different phase of development and multiple tests are required to test the different design configurations.

Revision A:

• Utilize the baseline test support for a proof of concept verification test in late August.

• Provide support for (b) (4) sonar ball tests (not planned to be more than 1 per week) in the NBL, which consists of escort and coordination during each test.

• Provide additional setup, teardown and test support for an integrated sonar and stuffing box test with pipe, pump in the NBL in the first week of October (may pull back a week).

• Plan to leave the equipment in place between the August and October tests if possible, but the estimate is worst case assuming removal is required.

CR NO.: 2636A	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verified
1	Labor to support coordination prior to the event	1	NA	
2	Labor to provide set-up and teardown support	1	NA	
3	Labor to support during the testing	1	NA	
4	Labor and materials to provide the video data on a portable hard drive	1	NA	

Revision A:

Item #	Deliverable Description	QTY	FID. CODE	Verified
5	Labor to suppor[redacted] (b) (4) tandalone sonar ball tests	1	NA	
6	Labor to support coordination prior to the final event	1	NA	
7	Labor to provide set-up and teardown support for the final test	1	NA	
8	Labor to support during the final testing	1	NA	
9	Labor and materials to provide the video data from the final test on a portable hard drive	1	NA	

CR NO.: 2636A	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2636A	DX CHANGE REQUEST

CR TITLE: Underwater Pipe and Ball Sensor Test

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

REV	DESIGN	ENGINEERING & PROGRAM SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
Baseline		(b) (4)			
Rev.A FY'13					
Rev.A FY'14					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 984A	06/17/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 984A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357
Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 20, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 984A

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:
☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 984A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean
Cynthia W. Maclean — Contracting Officer
06/17/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 984 is to incorporate SCIFs 1 &2 to the NBL LEE FSE Mockup: The estimated cost is (b) (4) The estimated award The estimated incent , The total value of this Delivery Order is $37,975. Work is to be completed by June 20, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	37,975.00	37,975.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 37,975.00

14. Quantities In "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative — Date

CR NO.: 2555A	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

1. REQUESTOR: (b) (4)	2. PHON(b) (4)	3. E-MAIL: (b) (4) @nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (609524)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Build a high fidelity LEE FSE mockup with Multi-Layer Insulation (MLI) for EVA training in the NBL.

7. RATIONALE:
The current NBL LEE FSE mockup is based on an earlier version of the hardware that was never flown. This mockup also has none of the associated MLI that is designed for it. The crew currently has no flight-like hardware to train with. Due to the increase in visiting vehicles that visit ISS requiring the SSRMS, the LEE R&R task has been generically added to the Increment Definition Requirements Document (IDRD). Therefore, assigned ISS crewmembers will need to be trained to generically perform a LEE R&R. Training this task will be greatly enhanced with the addition of flight-like hardware. A separate CR will be submitted to build the LEE MLI. The mockup is required by March 15, 2014 to support Increment 41 specific EVA training.

REV A: Incorporates SCIFs 1 & 2 and extends the due date to 6/13/14.

SCIF 1: Risk 1 & 4(b) (4)
The two HI-FI LEEs were inspected side by side. Both LEEs are missing the four latch attachments that allow the FSE clamps to attach to the LEE. These will need to be designed, fabricated and welded in place. One of the LEEs has an AL EDF interface that is not the same as the SS one (size and shape). Additional effort will be required to redesign the AL EDF interface and adjust the height to allow both LEEs to be interchangeable in the FSE. Modifications may require the LEE weigh outs to be adjusted accordingly.

SCIF 2: Added the following requirements: (b) (4)

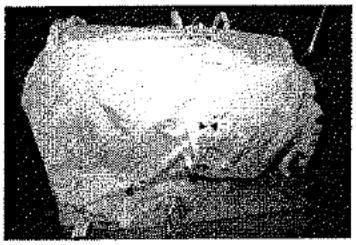
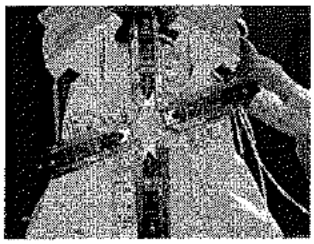
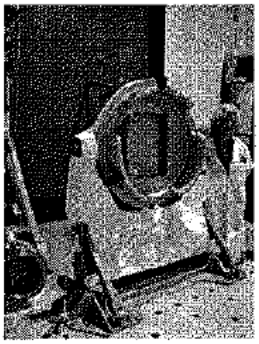
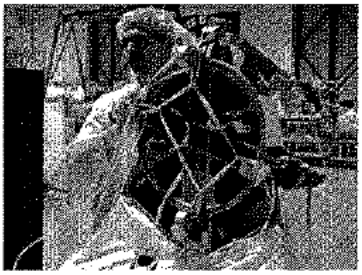
4. Add stickers:
   a. Clamp (eng & rel)
   b. PIP Pin sticker (2x on FSE)
   c. SS LEE & POA LEE
      i. Blind mate fastener location
      ii. EDF #1 barber-pole
      iii. EDF #4 solid bar
5. Adjust SS LEE weigh out to allow it to be installed from side (temp stow ring)
6. Add EDF Barber pole and solid bar on both rings on FSE.
7. Add Micro Squares to SS LEE
8. Install hard stop at release location on FSE clamps.

CR NO.: 2555A	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Build high fidelity LEE FSE to be used in the NBL pool. See requirements table below for specific requirements.

No Safety Review Required per J. Haas, e-mail on 9/13/13.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
March 15, 2014	**August 12, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) John Haas
Date: 8/20/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
John Haas	281.792.5925	john.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:** (b) (4)	**17. E-MAIL:** (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~FY14 - $175,000~~ FY14 - $213,000 Rev A	~~3/10/14~~ 6/20/14 Rev A

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2555A	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
		(b) (4)			n/a	(b) (4)
					n/a	
					n/a	
1.	SAPA FRAM (can use existing mockup FRAM)		Ref. LEE FSE Fam.ppt (slide 2 – 3)	1	II.B	
1i.	Intermediate Plate with labels (can use from existing mockup if in good shape)		Ref. LEE FSE Fam.ppt (slide 4) No drawing file; rough dimensions can be derived from 51612-4420 for placement of components.	1	III.C	
1i.a.	Pivot Bracket PIP pin stowage location		Ref. LEE FSE Fam.ppt (slide 4, 9)	2	III.C	
1i.b.	Pivot Brace stowage bracket ("Brace Bracket")(will need to reverse engineer)		Ref. LEE FSE Fam.ppt (slide 4, 9) No drawing available	2	III.C	
1i.c.	Electrical heater cable/connector and interface (volumetric only)		Ref. LEE FSE Fam.ppt (slide 4) No drawing available, approximate location acceptable.	1	III.D	
1ii.	Temp Stow Ring (labeled)(can use from existing mockup if in good shape) – desire 5 turn threaded interface with LEE instead of EDF interface		Ref. LEE FSE Fam.ppt (slide 4, 10) No drawing available	1	II.B	
2.	Fixed Bracket		Ref. LEE FSE Fam.ppt (slide 4 – 8)	1	II.B	
2i.	Latch Bracket		Ref. LEE FSE Fam.ppt (slide 4, 6)	2	II.B	
2ii.	Clamp Mechanism		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.B	
2ii.a	Clamp Mechanism Primary bolt "A" (7/16" EVA bolt), thread for bolt must turn 25 turns to hard-stop.		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.B	
2ii.b.	Clamp Mechanism Secondary bolt "B" (7/16" EVA bolt) – free spinning bolt	(b) (4)	Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.C	

CR NO.: 2555A	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
2ii.c.	Clamp Mechanism Hook Nut "C" (7/16" EVA bolt head) – free spinning	(b) (4)	Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.C	(b) (4)
2.ii.d.	Clamp Mechanism Slider "S1" – non-functional volumetrically accurate		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	III.D	
2.ii.e.	Clamp Mechanism Slider "S2" – non-functional volumetrically accurate		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	III.D	
2ii.f.	Clamp Mechanism PIP Pins with lanyards		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	III.B	
2iii.	Clamp Mechanism MLI with labels (may need to reverse engineer)		Ref. LEE FSE Fam.ppt (slide 5 – 8) No drawing available	1	III.C	
3.	Pivot Bracket	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	1	II.B	
3i.	Pivot Brace (1, 2)	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3i.a.	Pivot Brace PIP pins with lanyard	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3i.b.	Pivot Brace PIP Pin Velcro Tabs	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3ii.	Pivot Bracket PIP pins with lanyard	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3iii.	Pivot Bracket LEE Stowage Ring (labeled) - desire 5 turn threaded interface with LEE instead of EDF interface	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	1	II.B	
3iv.	¼ turn fasteners	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 13)	2	III.B	(b) (4)

Rev A (SCIF 2)

4	Add Labels to FSE				III.B	(b) (4)
4i	ENG and REL (4 places)		Ref. LEE FSE Fam.ppt	4	III.B	
4ii	PIP PIN STOW		Ref. LEE FSE Fam.ppt	2	III.B	
4iii	SS LEE and POA LEE Blind mate fastener location					
4iii.a	EDF #1 Barber-pole		Ref. LEE FSE Fam.ppt	2	III.B	
4iii.b	EDF #4 Solid-bar		Ref. LEE FSE Fam.ppt	2	III.B	
5	Weigh out SS LEE			1	III.B	
6	Add EDF markings labels to rings (pole & bar).		Ref. LEE FSE Fam.ppt	2	III.B	
7	Add Micro Squares to LEE			2	III.B	
8	Install clamp hard stops			4	III.B	

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1.	SAPA FRAM (can use existing mockup FRAM)	1	II.B	
1i.	Intermediate Plate with labels (can use from existing mockup if in good shape)	1	III.B	
1i.a.	Pivot Bracket PIP pin stowage location	2	III.B	
1i.b.	Pivot Brace stowage bracket ("Brace Bracket")	2	III.B	
1i.c.	Electrical heater cable/connector and interface	1	III.C	
1ii.	Temp Stow Ring (labeled)(can use from existing mockup if in good shape) – desire 5 turn threaded interface with LEE	1	II.B	
2.	Fixed Bracket	1	II.B	
2i.	Latch Bracket	2	II.B	
2ii.	Clamp Mechanism	4	II.B	
2ii.a	Clamp Mechanism Primary bolt "A" (7/16" EVA bolt), thread for bolt must turn 25 turns to hard-stop.	4	II.B	
2ii.b.	Clamp Mechanism Secondary bolt "B" (7/16" EVA bolt) – free spinning bolt	4	II.C	
2ii.c.	Clamp Mechanism Hook Nut "C" (7/16" EVA bolt head) – free spinning	4	II.C	
2.ii.d.	Clamp Mechanism Slider "S1" – non-functional volumetrically accurate	4	III.D	
2.ii.e.	Clamp Mechanism Slider "S2" – non-functional volumetrically accurate	4	III.D	
2ii.f.	Clamp Mechanism PIP Pins with lanyards	4	III.B	
2iii.	Clamp Mechanism MLI with labels (may need to reverse engineer)	1	III.C	
3.	Pivot Bracket	1	II.B	
3i.	Pivot Brace (1, 2)	2	III.B	

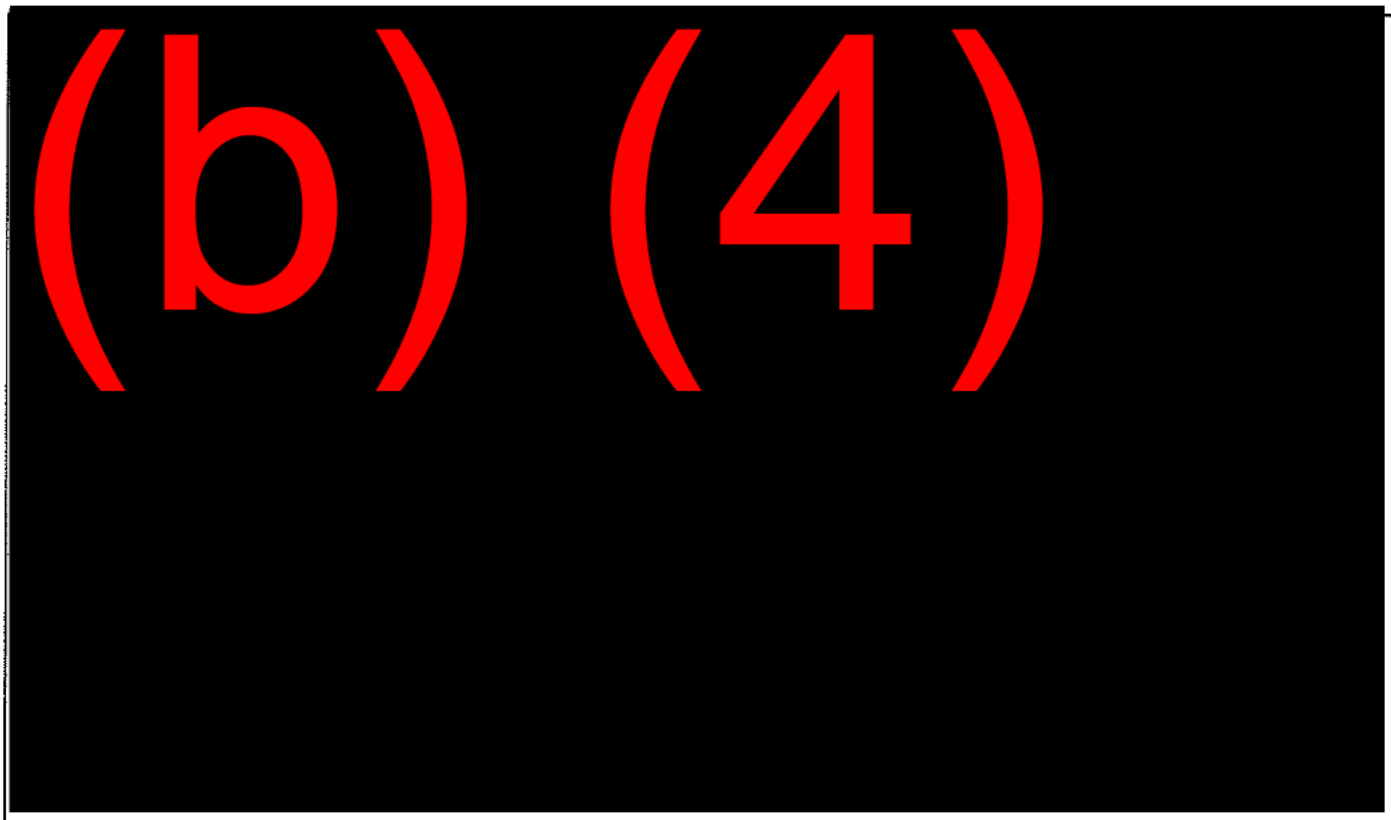
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
3i.a.	Pivot Brace PIP pins with lanyard	2	III.C	
3i.b.	Pivot Brace PIP Pin Velcro Tabs	2	III.C	
3ii.	Pivot Bracket PIP pins with lanyard	2	III.C	
3iii.	Pivot Bracket LEE Stowage Ring (labeled) - desire 5 turn threaded interface with LEE instead of EDF interface	1	II.B	
3iv.	¼ turn fasteners	2	III.B	

REV A (SCIF 2)

4	Add Labels to FSE		III.B	
4i	ENG and REL (4 places)	4	III.B	
4ii	PIP PIN STOW	2	III.B	
4iii	SS LEE and POA LEE Blind mate fastener location		III.B	
4iii.a	EDF #1 Barber-pole	2	III.B	
4iii.b	EDF #4 Solid-bar	2	III.B	
5	Weigh out SS LEE	1	III.B	
6	Add EDF markings labels to rings (pole & bar).	2	III.B	
7	Add Micro Squares to LEE	2	III.B	
8	Install clamp hard stops	4	III.B	

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY14: Total Cost ~~$175,000~~ $213,000 Rev A

	DESIGN	ENGINEERING & PROGRAM SUPPORT	TECHNICIAN SUPPORT	MANAGEMENT	MATERIAL
~~FY14~~		(b) (4)			
FY14 A					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 984	10/17/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 984

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
Bay Terrace II
555 Forge River Road, Suite 120
Webster, TX 77598-4357

Phone (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 10, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 984

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 984

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Jennifer Krause — Contracting Officer — 10/17/13 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 984 is to incorporate the Build NBL Latching End-Effector (LEE) Flight Support Equipment Mockup costs: The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $174,965. Work is to be completed by March 10, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	174,965.00	174,965.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 174,965.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2555	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

(b) (4)	(b) (4)	(b) (4) @nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

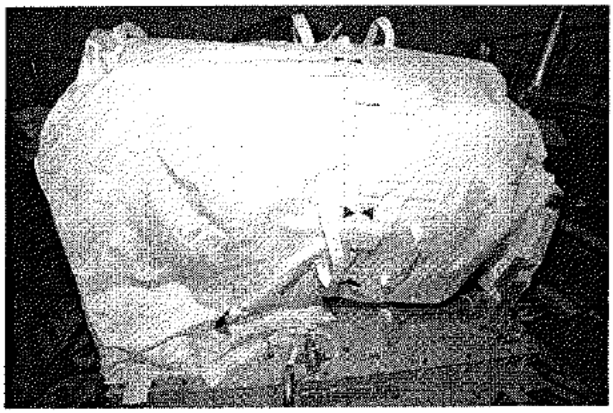
6. DESCRIPTION OF CHANGE:

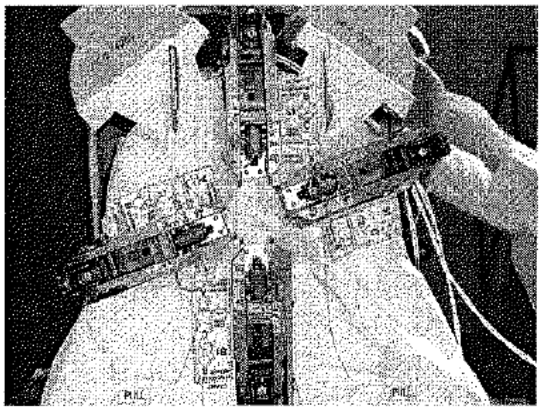
Build a high fidelity LEE FSE mockup with Multi-Layer Insulation (MLI) for EVA training in the NBL.

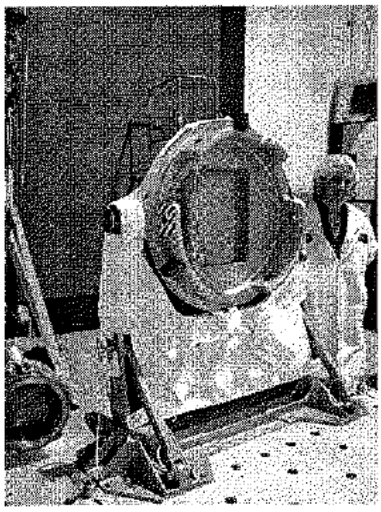
7. RATIONALE:

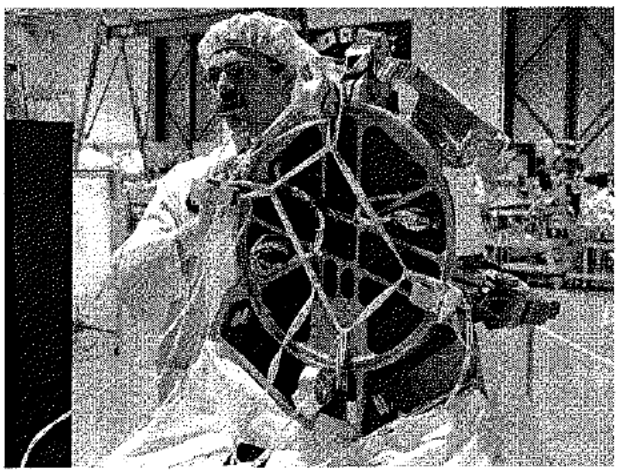
The current NBL LEE FSE mockup is based on an earlier version of the hardware that was never flown. This mockup also has none of the associated MLI that is designed for it. The crew currently has no flight-like hardware to train with. Due to the increase in visiting vehicles that visit ISS requiring the SSRMS, the LEE R&R task has been generically added to the Increment Definition Requirements Document (IDRD). Therefore, assigned ISS crewmembers will need to be trained to generically perform a LEE R&R. Training this task will be greatly enhanced with the addition of flight-like hardware. A separate CR will be submitted to build the LEE MLI. The mockup is required by March 15, 2014 to support Increment 41 specific EVA training.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Build high fidelity LEE FSE to be used in the NBL pool. See requirements table below for specific requirements.









No Safety Review Required per J. Haas, e-mail on 9/13/13.

CR NO.: 2555	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
March 15, 2014	**August 12, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) John Haas
Date: 8/20/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
John Haas	281.792.5925	john.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** (b) (4) [redacted]@nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
FY14 - $175,000	3/10/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2555	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
		(b) (4)			n/a	(b) (4)
					n/a	
					n/a	
1.	SAPA FRAM (can use existing mockup FRAM)		Ref. LEE FSE Fam.ppt (slide 2 – 3)	1	II.B	
1i.	Intermediate Plate with labels (can use from existing mockup if in good shape)		Ref. LEE FSE Fam.ppt (slide 4) No drawing file; rough dimensions can be derived from 51612-4420 for placement of components.	1	III.C	
1i.a.	Pivot Bracket PIP pin stowage location		Ref. LEE FSE Fam.ppt (slide 4, 9)	2	III.C	
1i.b.	Pivot Brace stowage bracket ("Brace Bracket")(will need to reverse engineer)		Ref. LEE FSE Fam.ppt (slide 4, 9) No drawing available	2	III.C	
1i.c.	Electrical heater cable/connector and interface (volumetric only)		Ref. LEE FSE Fam.ppt (slide 4) No drawing available, approximate location acceptable.	1	III.D	
1ii.	Temp Stow Ring (labeled)(can use from existing mockup if in good shape) – desire 5 turn threaded interface with LEE instead of EDF interface		Ref. LEE FSE Fam.ppt (slide 4, 10) No drawing available	1	II.B	
2.	Fixed Bracket		Ref. LEE FSE Fam.ppt (slide 4 – 8)	1	II.B	
2i.	Latch Bracket		Ref. LEE FSE Fam.ppt (slide 4, 6)	2	II.B	
2ii.	Clamp Mechanism		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.B	
2ii.a	Clamp Mechanism Primary bolt "A" (7/16" EVA bolt), thread for bolt must turn 25 turns to hard-stop.		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.B	
2ii.b.	Clamp Mechanism Secondary bolt "B" (7/16" EVA bolt) – free spinning bolt		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.C	

CR NO.: 2555	DX CHANGE REQUEST

CR TITLE: Build NBL Latching End-Effector (LEE) Flight Support Equipment (FSE) Mockup

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
2ii.c.	Clamp Mechanism Hook Nut "C" (7/16" EVA bolt head) – free spinning	(b) (4)	Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	II.C	(b) (4)
2.ii.d.	Clamp Mechanism Slider "S1" – non-functional volumetrically accurate		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	III.D	
2.ii.e.	Clamp Mechanism Slider "S2" – non-functional volumetrically accurate		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	III.D	
2ii.f.	Clamp Mechanism PIP Pins with lanyards		Ref. LEE FSE Fam.ppt (slide 5 – 8)	4	III.B	
2iii.	Clamp Mechanism MLI with labels (may need to reverse engineer)		Ref. LEE FSE Fam.ppt (slide 5 – 8) No drawing available	1	III.C	
3.	Pivot Bracket	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	1	II.B	
3i.	Pivot Brace (1, 2)	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3i.a.	Pivot Brace PIP pins with lanyard	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3i.b.	Pivot Brace PIP Pin Velcro Tabs	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3ii.	Pivot Bracket PIP pins with lanyard	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	2	III.B	
3iii.	Pivot Bracket LEE Stowage Ring (labeled) - desire 5 turn threaded interface with LEE instead of EDF interface	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 9 & 10)	1	II.B	
3iv.	¼ turn fasteners	CAD file: To be delivered	Ref. LEE FSE Fam.ppt (slide 13)	2	III.B	

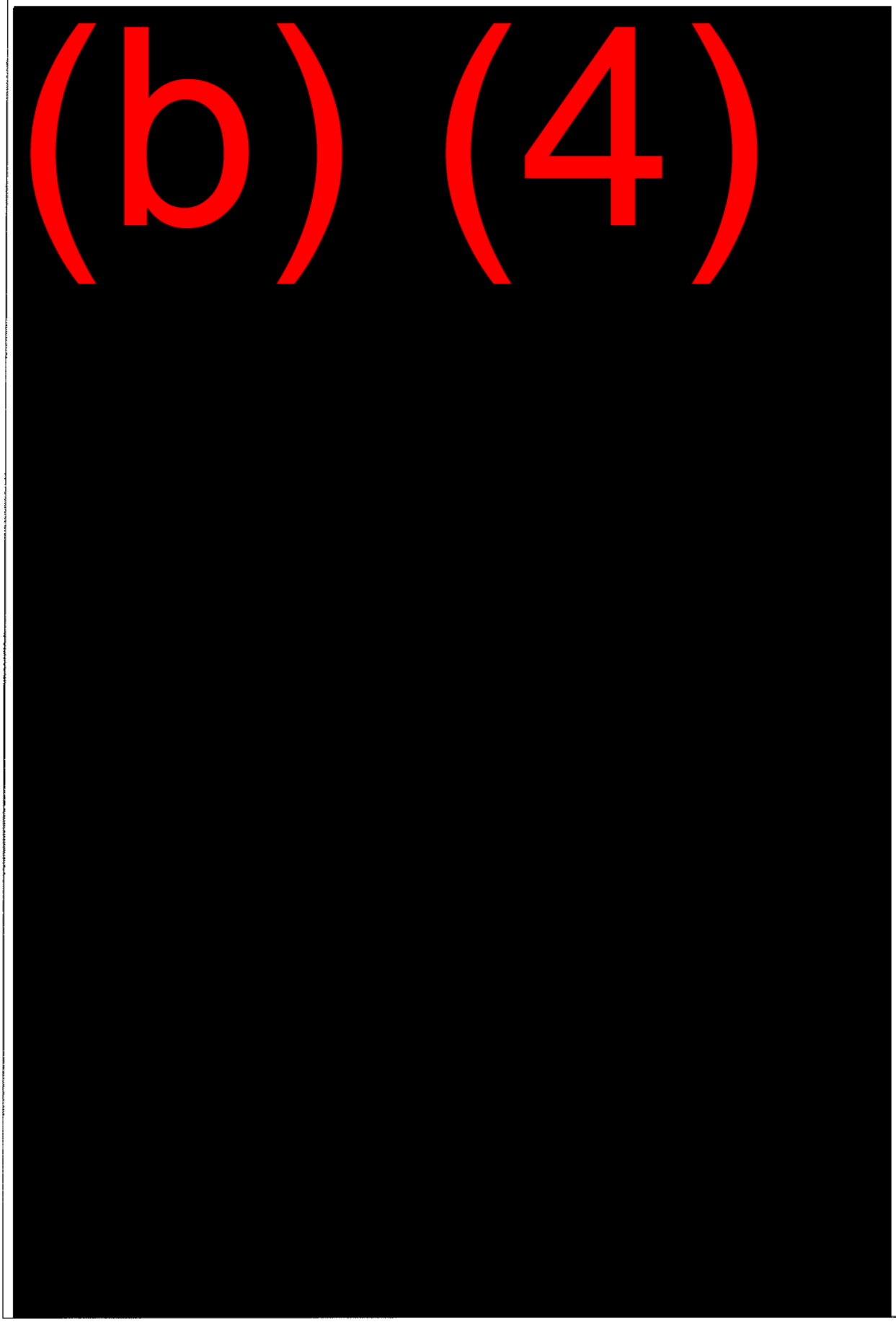
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1.	SAPA FRAM (can use existing mockup FRAM)	1	II.B	
1i.	Intermediate Plate with labels (can use from existing mockup if in good shape)	1	III.B	
1i.a.	Pivot Bracket PIP pin stowage location	2	III.B	
1i.b.	Pivot Brace stowage bracket ("Brace Bracket")	2	III.B	
1i.c.	Electrical heater cable/connector and interface	1	III.C	
1ii.	Temp Stow Ring (labeled)(can use from existing mockup if in good shape) – desire 5 turn threaded interface with LEE	1	II.B	
2.	Fixed Bracket	1	II.B	
2i.	Latch Bracket	2	II.B	
2ii.	Clamp Mechanism	4	II.B	
2ii.a	Clamp Mechanism Primary bolt "A" (7/16" EVA bolt), thread for bolt must turn 25 turns to hard-stop.	4	II.B	
2ii.b.	Clamp Mechanism Secondary bolt "B" (7/16" EVA bolt) – free spinning bolt	4	II.C	
2ii.c.	Clamp Mechanism Hook Nut "C" (7/16" EVA bolt head) – free spinning	4	II.C	
2.ii.d.	Clamp Mechanism Slider "S1" – non-functional volumetrically accurate	4	III.D	
2.ii.e.	Clamp Mechanism Slider "S2" – non-functional volumetrically accurate	4	III.D	
2ii.f.	Clamp Mechanism PIP Pins with lanyards	4	III.B	
2iii.	Clamp Mechanism MLI with labels (may need to reverse engineer)	1	III.C	
3.	Pivot Bracket	1	II.B	
3i.	Pivot Brace (1, 2)	2	III.B	

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

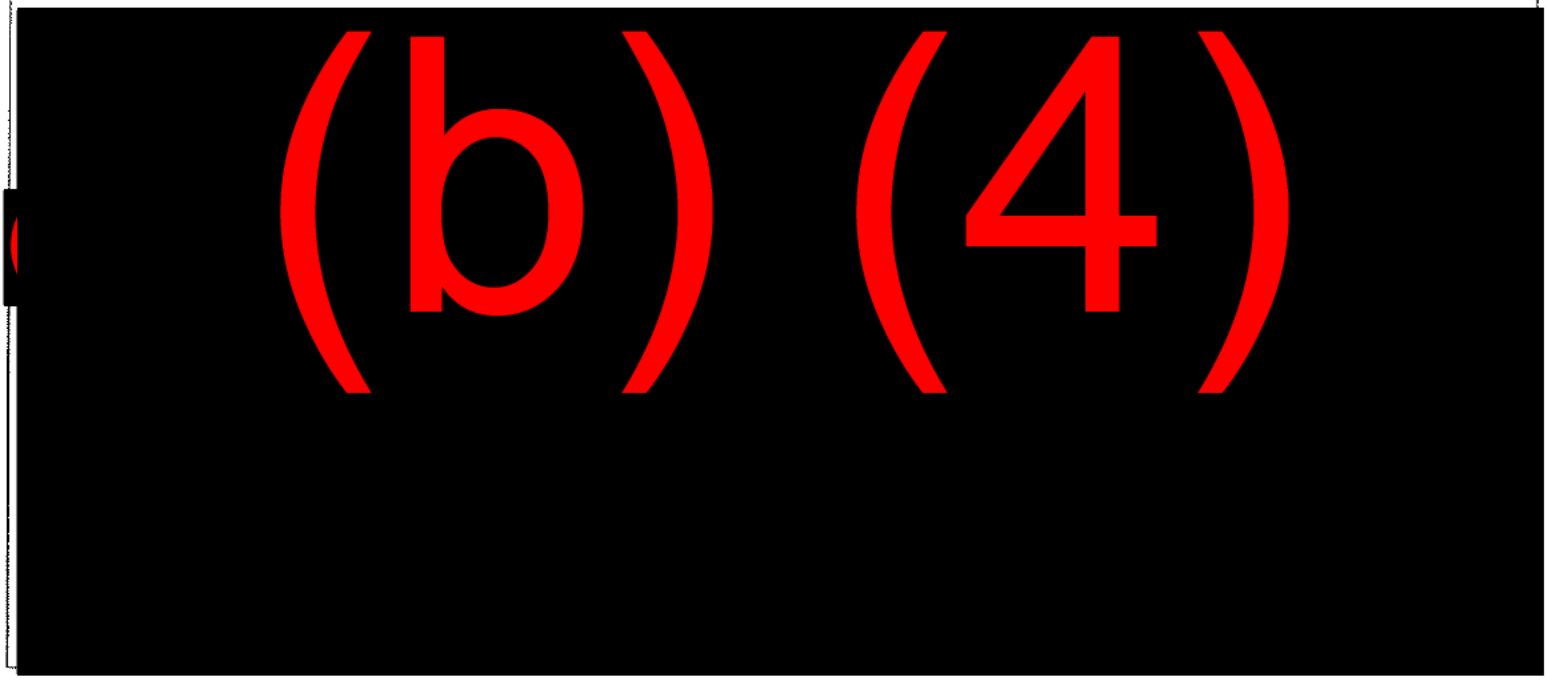
Item #	Deliverable Description	QTY	FID. CODE	Verification
3i.a.	Pivot Brace PIP pins with lanyard	2	III.C	
3i.b.	Pivot Brace PIP Pin Velcro Tabs	2	III.C	
3ii.	Pivot Bracket PIP pins with lanyard	2	III.C	
3iii.	Pivot Bracket LEE Stowage Ring (labeled) - desire 5 turn threaded interface with LEE instead of EDF interface	1	II.B	
3iv.	¼ turn fasteners	2	III.B	

SCHEDULE MILESTONES: (complete or reference separate project plan)



BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)



National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 985A	05/22/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 985A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 30, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 985A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 985A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

Cynthia W. Maclean
Contracting Officer

5/23/14
Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 985A is to incorporate revisions into the Build External Wireless Instrumentation System Mockup The estimated cost (b) (4) The estimated awar The estimated ince , The total value of this Delivery Order is $18,800. Work is to be completed by June 30, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	18,800.00	18,800.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 18,800.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative
Date

Order No.
NNJ10HD35C DO 985A

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 985	10/24/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 985

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
December 24, 2013

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 985

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 985

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 10/24/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 985 is to incorporate the Build External Wireless Instrumentation System Mockups costs: The estimated cost is $(b) (4) The estimated award f The estimated incentiv , The total value of this Delivery Order is $66,038. Work is to be completed by December 24, 2013. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	66,038.00	66,038.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 66,038.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2656	DX CHANGE REQUEST

CR TITLE: Build External Wireless Instrumentation System Mockups

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4) @nasa.gov

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Manufacture the following External Wireless Instrumentation System (EWIS) NBL for S6 and P5 mockups.

P5 Outfitting	S6 Outfitting
2 – TAA	4 - TAA
1 – RSU	2 - RSU
2 – Antenna	4 – Antenna

Modify P4/SR RSU and TAA mockups to include soft handles and guide pins.

*TAA – Triaxial Accelerometer Assembly
**RSU – Remote Sensor Unit

7. RATIONALE:
Required to support NBL development testing scheduled for November 18, 2013 (1-G).

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
(b) (4)

Note: No SR or TRR required. J. Haas 9/13/13

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
November 18, 2013	**August 28, 2013**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE) Date:9/12/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281.483.5730	edgar.j.turcotte@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
PROJECT ENGINEER: (b) (4)	(b) (4)	(b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$66,100	**12/24/13**

AUTHORIZATION TO PROCEED

CR NO.: 2656	DX CHANGE REQUEST
CR TITLE: Build External Wireless Instrumentation System Mockups	
OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____
Closed by:_____ **Date:** _____	

CR NO.: 2656	DX CHANGE REQUEST

CR TITLE: Build External Wireless Instrumentation System Mockups

REQUIREMENTS/REFERENCES (cont.):

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
	S6 EWIS hardware	(b) (4)	VMDB			(b) (4)
1	Assy, TAA EWIS (TAA-09)		NBL Drawing Sys	1	III-B	
1.1	Plate Assy Mounting - EWIS		VMDB	1	III-D	
1.2	Mounting Bracket, Long TAA - EWIS		VMDB	1	III-D	
1.3	Bracket Assy, TAA - EWIS		VMDB	1	III-D	
2	Assy, TAA EWIS (TAA-07)		NBL Drawing Sys	1	III-B	
2.1	Plate Assy Mounting, TAA - EWIS		VMDB	1	III-D	
2.2	Bracket, Gusset, TAA - EWIS		VMDB	1	III-D	
3	Assy, TAA EWIS (TAA-10)		NBL Drawing Sys	1	III-B	
3.1	Plate Assy Mounting - EWIS	(b) (4)	VMDB	1	III-D	
3.2	Bracket Assy, TAA - EWIS		VMDB	2	III-D	
4	Assy, TAA EWIS (TAA-08)		NBL Drawing Sys	1	III-B	
4.1	Plate Assy Mounting, TAA - EWIS		VMDB	1	III-D	
4.2	Bracket, Gusset, TAA - EWIS		VMDB	1	III-D	
5	Assy, RSU EWIS (04 & 05)		NBL Drawing Sys	2	III-B	
5.1	Plate Assy, mounting, RSU - EWIS		VMDB	1	III-D	
5.2	Bracket, Gusset, RSU-EWIS		VMDB	4	III-D	
6	Ant, EVA Assy EWIS (ANT –07)		VMDB	1	III-B	
6.1	Bracket, Antenna, Upper, P5-EWIS		VMDB	1	III-D	
7	Ant, EVA Assy EWIS (ANT –08)		VMDB	1	III-B	
7.1	Bracket, Antenna, Upper, P5-EWIS		VMDB	1	III-D	
8	Ant, EVA Assy EWIS (ANT –09)		VMDB	1	III-B	
8.1	Bracket, Antenna, Upper, P5-EWIS		VMDB	1	III-D	
9	Ant, EVA Assy EWIS (ANT –10)		VMDB	1	III-D	
9.1	Bracket, Antenna, Upper, P5-EWIS		VMDB	1	III-D	
	P5 EWIS Hardware					
10	Assy, TAA EWIS (TAA-05)		NBL Drawing Sys	1	III-B	
10.1	Plate, Mounting, TAA ASSY, P5-EWIS		VMDB	1	III-D	
11	Assy, TAA EWIS (TAA-06)		NBL Drawing Sys	1	III-B	
11.1	Plate, Mounting, TAA ASSY, P5-EWIS		VMDB	1	III-D	
11.2	Bracket, TAA, P5 EWIS		VMDB	1	III-D	
12	Assy, RSU EWIS (RSU-03)		NBL Drawing Sys	1	III-B	
12.1	Plate, Mounting, RSU ASSY, P5-EWIS		VMDB	1	III-D	
12.2	Bracket, RSU, P5-EWIS		VMDB	1	III-D	
13	Ant, EVA Assembly EWIS (ANT-05)		VMDB	1	III-B	(b) (4)
13.1	Plate ASSY, Ant Lower, P5-EWIS		VMDB	1	III-D	
13.2	Bracket, Antenna, Lower		VMDB	1	III-D	
13.3	Plate, Adapter Antenna - EWIS		VMDB	1	III-D	
14	Ant, EVA Assembly EWIS (ANT-06)		VMDB	1	III-B	
14.1	Bracket, Antenna, Upper, P5-EWIS		VMDB	1	III-D	
	P4/S4 EWIS Mods					
15	Add soft handle and guide pins to existing RSU, TAA and ANT mockups			1	III-D	

1. Mounting brackets maybe eliminated or modified as required to support mounting plates install to NBL mockup.

CR NO.: 2656	DX CHANGE REQUEST

CR TITLE: Build External Wireless Instrumentation System Mockups

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item #	Deliverable Description	QTY	FID. CODE	Verification
1	Assy, TAA EWIS (TAA-09)	1	III-B	
2	Assy, TAA EWIS (TAA-07)	1	III-B	
3	Assy, TAA EWIS (TAA-10)	1	III-B	
4	Assy, TAA EWIS (TAA-08)	1	III-B	
5	Assy, RSU EWIS (04 & 05)	2	III-B	
6	Ant, EVA Assy EWIS (ANT –07)	1	III-B	
7	Ant, EVA Assy EWIS (ANT –08)	1	III-B	
8	Ant, EVA Assy EWIS (ANT –09)	1	III-B	
9	Ant, EVA Assy EWIS (ANT –10)	1	III-B	
10	Assy, TAA EWIS (TAA-05)	1	III-B	
11	Assy, TAA EWIS (TAA-06)	1	III-B	
12	Assy, RSU EWIS (RSU-03)	1	III-B	
13	Ant, EVA Assembly EWIS (ANT-05)	1	III-B	
14	Ant, EVA Assembly EWIS (ANT-06)	1	III-B	
15	Add soft handle and guide pins to existing RSU, TAA and ANT mockups	1	III-D	

CR NO.: 2656	DX CHANGE REQUEST

CR TITLE: Build External Wireless Instrumentation System Mockups

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2656	DX CHANGE REQUEST

CR TITLE: Build External Wireless Instrumentation System Mockups

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2656	DX CHANGE REQUEST

CR TITLE: Build External Wireless Instrumentation System Mockups

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	MANAGEMENT	PROJECT ENGINEER & SUPPORT	TECHNICIAN SUPPORT	MATERIAL
FY14	(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 986A	08/07/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 986A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
9/26/2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 986A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 986A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia W. Maclean

CYNTHIA MACLEAN — Contracting Officer
08/14/07 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 1014 is to incorporate revised requirements for CR-2659A to provide an IDA/NDS Ingress/Egress Trainer by reusing the ODS Trainer Cradle. The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $ 43,099.00 Work is to be completed by 9/26/2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	43,099.00	43,099.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 43,099.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2659A	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

1. REQUESTOR: Ernesto Prado	2. PHONE: x34902	3. E-MAIL: global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV WBS 3.6.1
☐ OTHER ☒ FUND CODE: ~~609524~~ Rev A 871056

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide an IDA/NDS Ingress/Egress Trainer by reusing the ODS Trainer Cradle. This project will be priced as an IDIQ.

Rev A adds SCIF 01 (b) (4), SCIF 02 (b) (4), SCIF 03 (b) (4), SCIF 04 (b) (4), SCIF 05 (b) (4), SCIF 06 (b) (4)

7. RATIONALE:
Supply an ingress/egress trainer to crew for the IDA/NDS system that will be flown to ISS. The mockup will familiarize crew with the volumetric constraints of the IDA/NDS, any procedures that will be used in ingress/egress ops, and associated hardware and interfaces.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. The IDA/NDS Ingress/egress trainer shall be created per MDRD-403 requirements.
   a. The project plan provided by CR-2653 "Create IDA Ingress/Egress Trainer Detailed IDIQ Estimate," will be used to create the trainer.
2. Design Revisions from IDA and NDS CDR shall be incorporated into the IDA/NDS trainer.
   a. NDS CDR is scheduled for June 2014.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 24 Sep 13
30 September 2014	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) Allison McIntyre Date:9/16/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ernesto Prado	x34902	global
15. IMPLEMENTING CONTRACTOR:	**16. PHONE:**	**17. E-MAIL:**
PROJECT ENGINEER: (b) (4)	(b) (4)	global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$374,300~~ Rev A $417,400	9/26/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2659A	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

REQUIREMENTS/REFERENCES (cont.):

Rev A changes:

3. Calculate IDIQ revision costs to incorporate approved SCIFs (SCIF 01)

4. Purchase two sets of fidelity IA duct couplings from the flight manufacturer, and delete the Raytheon tasks of designing and machining and assembling two sets of fidelity IIB duct couplings. (SCIF 02)

Assembly EVA IDA POGO trainer

5a. Assemble the following Boeing provided parts to create a passive PMA and mount on a stand (SCIF 03)

1. Attach SCS 3 alignment pins and 3 contact sensors to EEMS 3002 APAS Ring
2. Attach 3 capture plates to the EEMS APAS Ring
3. Orient numbered Capture Plates w.r.t. fine alignment pins/holes (as shown in attached PMA3 on-orbit photo)
4. Place SCS Ring onto SCS alignment pins
5. Orient numbered Guide Petals w.r.t. numbered Capture Plates (as shown in attached PMA3 on-orbit photo)
6. Attach SCS Ring and EEMS 3002 APAS Ring (new brackets needed)

5b. Mount Passive PMA assembly to the APAS cart (SCIF 03)

1. Remove tunnel segment on the APAS cart
2. Build brackets to mount the SCS ring to the APAS ring.

5c. Make the mating surface of the Passive PMA at 42 inches +/- 1 inch (SCIF 03)

5d. Build and attach structure to the APAS(IDA) to attach to POGO (SCIF 03)

5e. Perform a safety review for the new hardware and TRR if required (SCIF 03)

6. Remove the material cost of painting the ODS/VV from this CR. Painting provided as GSE. (SCIF 04)

7. IDA POGO trainer modifications:

7a. Add handrails to POGO IDA and PMA mockups per engineer's direction. (SCIF 05)

7b. Add handrail 1401 to MAPAS POGO simulator (IDA) approximately 31 inches (+/- 1.5 inches) from existing handrail 1400 and 4 inches above the mating surface of the PMA/IDA. (SCIF 05)

7c. Add handrail 1404 to MAPAS POGO simulator (IDA) approximately 26 inches (+/- 1.5 inches) from existing handrail 1403 and 14 inches above the mating surface of the PMA/IDA. (SCIF 05)

7d. Add handrail 0412 to PMA POGO simulator approximately 4 inches (+/- 1.5 inches) from handrail 1401 and 24 inches below the mating surface of the PMA/IDA. (SCIF 05)

7e. Add handrail 0418 to PMA POGO simulator approximately 10 inches (+/- 1.5 inches) from handrail 1404 and 15 inches below the mating surface for the PMA/IDA. (SCIF 05)

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

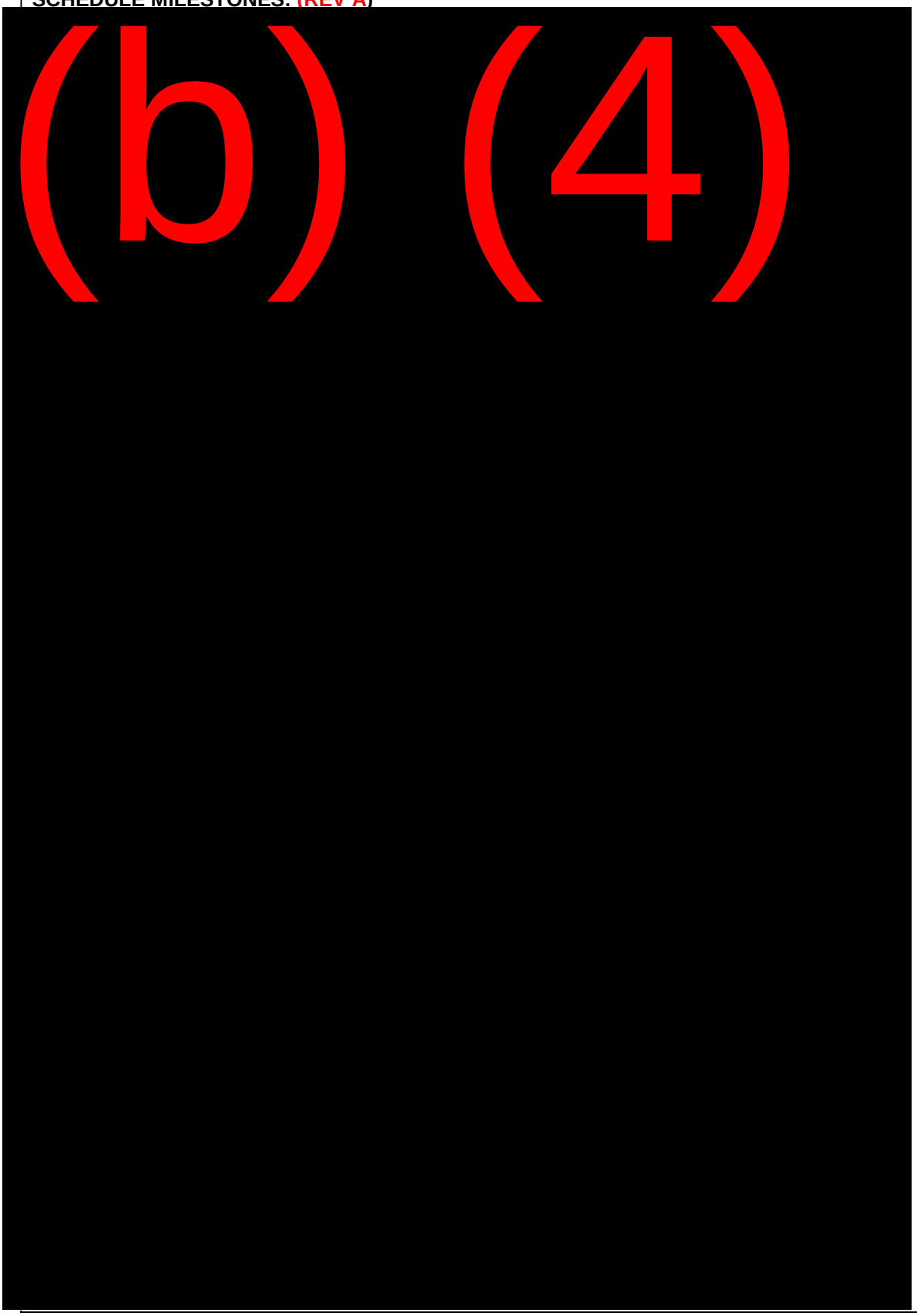
A Requirements Verification Matrix will be provided within 3 weeks of Authorization to Proceed.

Rev A: Revised Requirements Verification Matrix will be provided by 8/22/14

CR NO.: 2659A	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

SCHEDULE MILESTONES: (REV A)



(b) (4)

CR NO.: 2659A	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2659A	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering	Management and Support	Technicians	Material
~~FY14~~					
Rev A					

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement	
If Deliverable Exceeded Requirements Provide Explanation:	
Implementing Contractor Verification: Date: _____	NASA POC Acceptance: Date: _____
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 986	10/24/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 986

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 986

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 986

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 10/24/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 986 is to incorporate the IDA/NDS Ingress/Egress Trainer costs: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $374,210. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	374,210.00	374,210.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 374,210.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2659	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV WBS 3.6.1
☐ OTHER ☒ FUND CODE: 609524

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide an IDA/NDS Ingress/Egress Trainer by reusing the ODS Trainer Cradle. This project will be priced as an IDIQ.

7. RATIONALE:
Supply an ingress/egress trainer to crew for the IDA/NDS system that will be flown to ISS. The mockup will familiarize crew with the volumetric constraints of the IDA/NDS, any procedures that will be used in ingress/egress ops, and associated hardware and interfaces.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1. The IDA/NDS Ingress/egress trainer shall be created per MDRD-403 requirements.
   a. The project plan provided by CR-2653 "Create IDA Ingress/Egress Trainer Detailed IDIQ Estimate," will be used to create the trainer.
2. Design Revisions from IDA and NDS CDR shall be incorporated into the IDA/NDS trainer.
   a. NDS CDR is scheduled for June 2014.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 24 Sep 13
30 September 2014	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: (ICE) Allison McIntyre Date:9/16/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ernesto Prado	x34902	global
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$374,300	9/26/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2659	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

A Requirements Verification Matrix will be provided within 3 weeks of Authorization to Proceed.

CR NO.: 2659	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

SCHEDULE MILESTONES: (complete or reference separate project plan)

[redacted]

CR NO.: 2659	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2659	DX CHANGE REQUEST
CR TITLE: Create IDA/NDS Ingress/Egress Trainer	
BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)	

(b) (4)

CR NO.: 2659	DX CHANGE REQUEST

CR TITLE: Create IDA/NDS Ingress/Egress Trainer

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering	Management and Support	Technicians	Material
FY14					

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 987 Rev A	04/21/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 987 Rev A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 987 Rev A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 987 Rev A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

CYNTHIA MACLEAN — Contracting Officer
04/24/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 987A is to Rev A adds requirements to represent flight design changes to Orion interior. The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $19,256. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	19,256.00	19,256.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 19,256.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 2663A	DX CHANGE REQUEST

CR TITLE: FY14 Orion Mockup Installation and Operations

REQUIREMENTS/REFERENCES (cont.):

Note: Safety review SR 604 conducted on 10/15/13 states that a hazard analysis update might be required depending on the hardware installed. A determination will be made at the time of each test.

Rev A adds

5. Remove pallet and struts from the Med-Fi Orion Mockup and store in a Connex Box in the laydown yard.
6. Remove Locker Bay C from the Med-Fi.
7. Relocate WMS lights and control box to the new Bay F position under the hatch, in a mirrored configuration.
8. Fabricate and install a removable load bearing Waste Management System (WMS) cover from aluminum floor grating using perimeter support structure, and proof load the installed cover to a minimum Safe Working Load (SWL) of 600 pounds.
9. Modify D&C panel support struts based on customer supplied lengths, and relocate/reorient strut mount brackets based on customer provided CAD images and model.

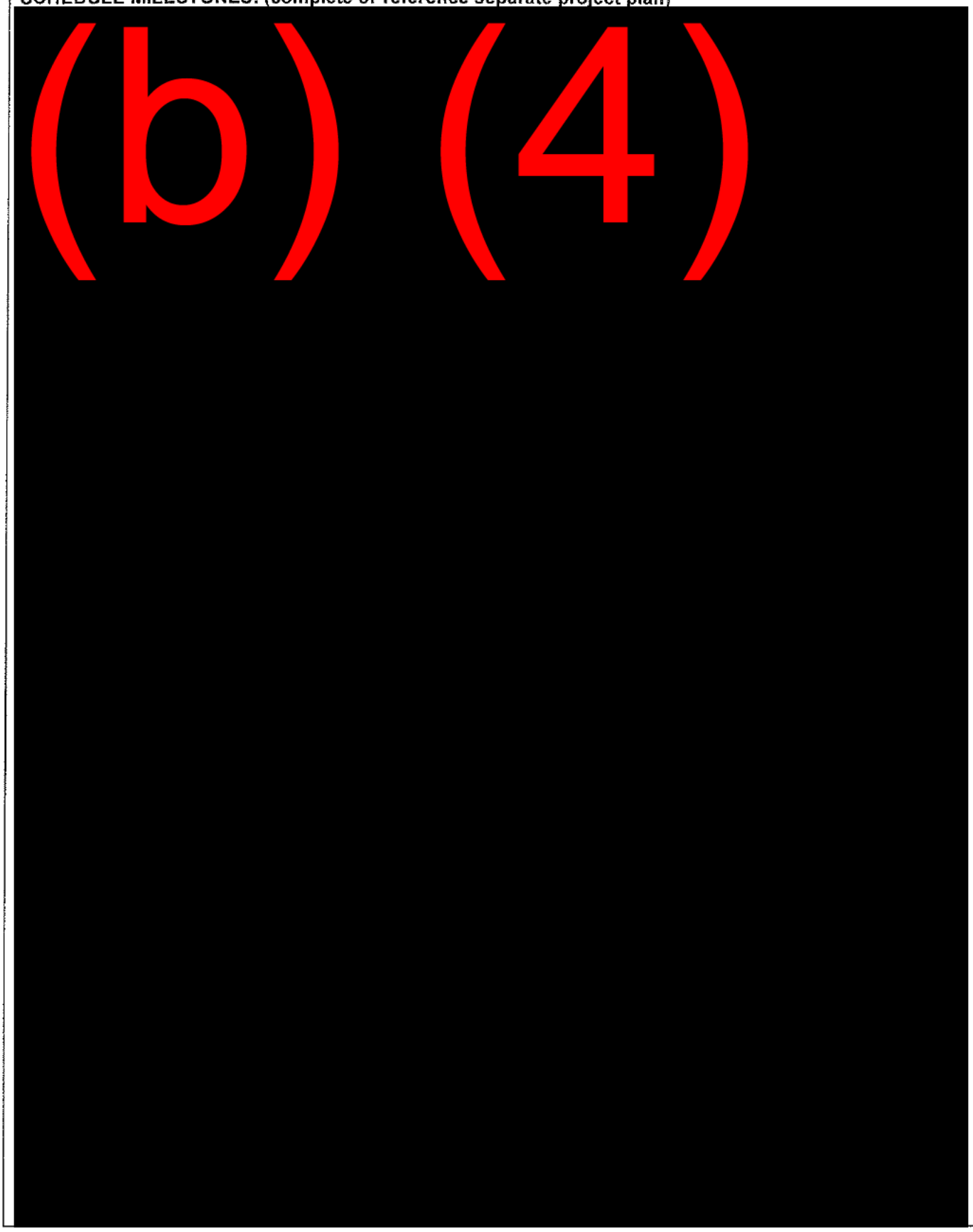
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

This CR provides labor and material to support modification and outfitting the volumetric mock-up interior of the Orion Mockup as directed by the Cockpit Working Group via the DX14 Mockup Manager. Signed completed Work Orders and email acknowledgment of work performed will verify work performed; no formal requirement verification required.

CR NO.: 2663A	DX CHANGE REQUEST

CR TITLE: FY14 Orion Mockup Installation and Operations

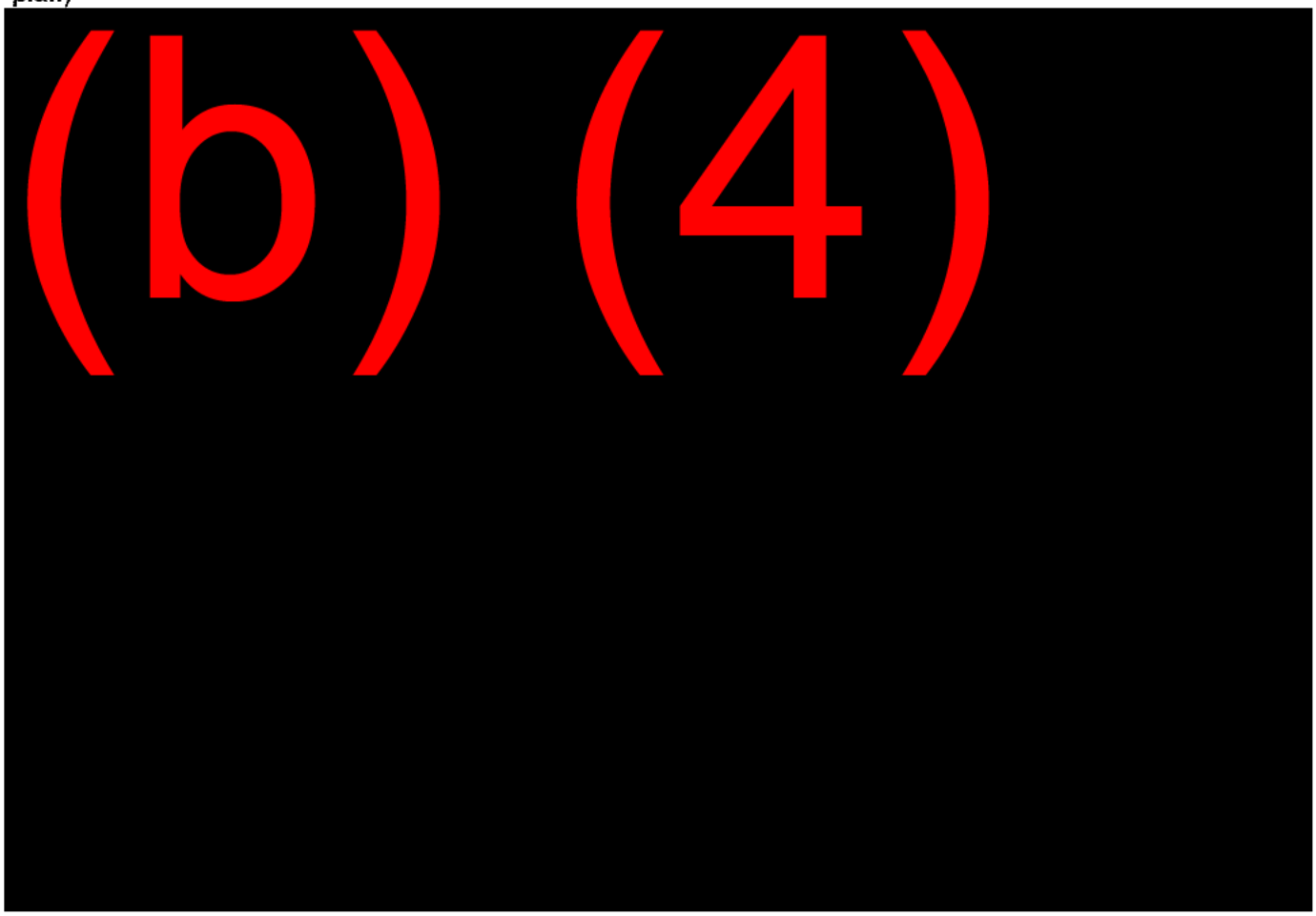
SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2663A	DX CHANGE REQUEST

CR TITLE: FY14 Orion Mockup Installation and Operations

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



CR NO.: 2663A	DX CHANGE REQUEST

CR TITLE: FY14 Orion Mockup Installation and Operations

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering	Management and Support	Technicians	Material
~~FY14~~	(b) (4)				
Rev A FY14					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

CR NO.: 2663A	DX CHANGE REQUEST
CR TITLE: FY14 Orion Mockup Installation and Operations	
Office/Branch Chief : Date: _____	Contractor Manager Concurrence: Date: _____
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 987	11/04/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 987

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 987

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 987

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 11/4/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 987 is to incorporate tFY14 Orion Mockup Installation and Operations costs: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $38,745. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	38,745.00	38,745.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 38,745.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2663	DX CHANGE REQUEST

CR TITLE: FY14 Orion Mockup Installation and Operations

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: (b) (4)

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV 3.6.1
☐ OTHER ☒ FUND CODE:747797

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide Orion operations support and mockup additions in the Building 9 Mockups.

7. RATIONALE:
This is work that needs to be done to further outfit the Orion mockups in preparation for FY2014 evaluations and events.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Provide material procurement, engineering and fabrication resources required to support the Orion Cockpit Working Group for the following activities:

1. Provide scheduling and operations support for engineering assessments (4ea, plan for one per quarter). Plan for each assessment to last 5 days (include tech support, comm/video support as needed).
2. Provide support for safety reviews (4ea, plan for 1 per qtr), test readiness reviews (4ea, plan for 1 per qtr), acceptance reviews (1), and mockup readiness reviews (1).
3. Provide engineering, design and technician support for reconfiguration and installation of existing and externally provided hardware (assume an even split on skill mix and for both complex and simple tasks).
4. Provide processing of 1 CR revision.

All direction for support activities shall be provided by the DX mockup manager. As deemed necessary by the Mockup Manager, a ROM may be requested to scope the magnitude of the identified task prior to initiating the effort.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
9/26/14	9/17/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: _(ICE) Allison McIntyre_
Date:9/25/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
June Huhn	281-792-5837	Global
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** [redacted]

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$38,800	9/26/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2663	DX CHANGE REQUEST

CR TITLE: FY14 Orion Mockup Installation and Operations

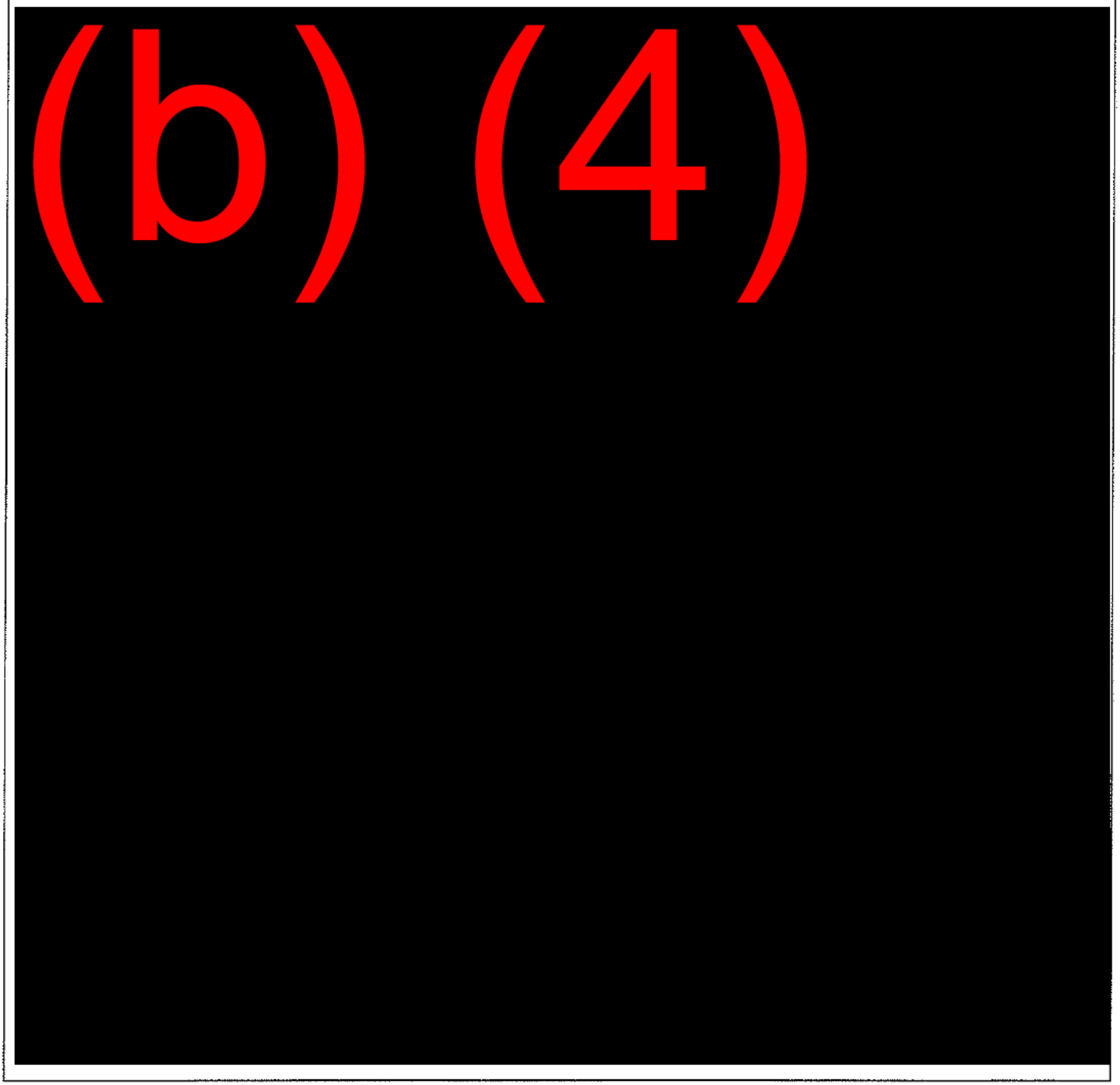
REQUIREMENTS/REFERENCES (cont.):

Note: Safety review SR 604 conducted on 10/15/13 states that a hazard analysis update might be required depending on the hardware installed. A determination will be made at the time of each test.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

This CR provides labor and material to support modification and outfitting the volumetric mock-up interior of the Orion Mockup as directed by the Cockpit Working Group via the DX14 Mockup Manager. Signed completed Work Orders and email acknowledgment of work performed will verify work performed; no formal requirement verification required.

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2663	DX CHANGE REQUEST

CR TITLE: FY14 Orion Mockup Installation and Operations

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

(b) (4)

Fiscal Year	Design	Engineering	Management and Support	Technicians	Material
FY14	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 988	12/03/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 988

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 31, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 988

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 988

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Jennifer J Krause
Contracting Officer
12/3/13
Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 988 is to incorporate CR2672, EVA Projects for the SVMF: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $38,315. Work is to be completed by March 31, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	38,315.00	38,315.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 38,315.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.
BY
Authorized U.S. Government Representative Date

CR NO.: 2672	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

1. REQUESTOR: J. Foss	2. PHONE: 3-4851	3. E-MAIL: global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV 3.6.1
☐ OTHER ☒ FUND CODE: 401769

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
1. To provide a permanent stand for the ATA/NTA in the High-fidelity EVA Training Area (HETA) for crew training
2. To provide a stand for the Battery and Receptacle for the HETA.
3. To update the current Airlock Hatch trainer
4. To Provide a Utility Outlet Panel (UOP) cable
5. To provide an Airlock Panel
6. To provide Easels for Airlock and HETA training areas.
7. Update SVMF EMU Donning Stand

7. RATIONALE:
To provide EVA training hardware in the SVMF for crew training, and update current training hardware

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
1. To provide a permanent stand for the ATA/NTA in the High-fidelity EVA Training Area (HETA) for crew training, Need date of 31 Dec 2013
   a) Provide COTS table(s) to support each tank.
   b) The tanks need to be 30 inches off the floor.
   c) Update the HETA drawings to show the locations of the NTA/ATA.
   Continued on pg 2

9. NEED DATE: (support date in block 7 rationale) 26 Sep 2014	10. CR SUBMISSION DATE25 Oct 2013

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: __(ICE) Allison McIntyre _
Date:10/27/13

12. NASA POC: J. Foss	13. PHONE: 3-4851	14. E-MAIL: Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: [redacted]	17. E-MAIL: Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $38,300	20. NEGOTIATED DELIVERY DATE: 3/31/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2672	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

REQUIREMENTS/REFERENCES (cont.):

2. To provide a stand for the Battery and Receptacle for the HETA. Need date of 31 Dec 2013
Modify HI FI Battery and IEA Mounting plate (Boeing provided) to interface with POGO for increment crew training.
   a) Add swivel lift fixture near the battery CG IIC fidelity
   b) Build a short table stand with rollers for Battery Mounting plate (Battery and transportation plate will be placed on one of the short rolling tables in the HETA) IIC fidelity
   c) Build a Battery swivel stand with locking castors (for long term stowage and relocation) IIC fidelity
   d) 2 warning/safety labels for the stand. Fidelity code IIID

3. To update the current Airlock Hatch trainer. Need date of 15 Jan 2014

   a) Add 'mockup specific 'red indicator to both sides of obsolete valve IIID
   b) Add Grounding wire on IV side (with tape) IIB
   c) Add Grounding wire between Support Struts(2 wires) IIB
   d) Update Label IV Valve (open / Closed only) (Black Label, white words as photos illustrates) IIID
   e) Update Label EV Valve (open / Closed only) (Black Label, white words as photos illustrates) IIID
   f) Add (Verify or Correct) Black Triangle on IV & EV side of the hatch. Black Triangle is missing on the EV side and appears to have an additional sticker on the IV IIID
   g) Correct EV Labels (2 Black Triangle and Open hatch label) IIID
   h) Move label to correct IIID
   i) Re-Install handrail to the EV side of the Hatch IIB
   j) Cover hatch windows with cream colored foam board (attach via Velcro or other adhesive easy to remove if needed) IIID
   k) Evaluate hatch hinge alignment
   l) Relocate the Airlock Thermal Cover to the SVMF from NBL and install

4. To Provide a Utility Outlet Panel (UOP) cable. Need date of 31 Dec 2013
   - The addition of a new UOP cable, outfitted with a generic UOP connector jack, would allow powering other ISS training equip. designed for 120 vdc, in locations without a UOP. IIB fidelity

5. To provide an Airlock Panel (data to be provided at a later date)

6. Provide 4 Easels for new training posters by the Airlock and HETA. Need date of 31 Dec 2013

7. Modify the blue EMU Donning Stand by adding spacers to the four mounting locations to bring forward the PLSS mockup (approximately 6 inches) to clear the donning stand side bars. Need date, NSOC best effort.

8. Safety Review completed 10/31/13
   a) TRR required
   b) Updated HA Review
   c) Tip-Over Analysis for Tank Stands

CR NO.: 2672	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

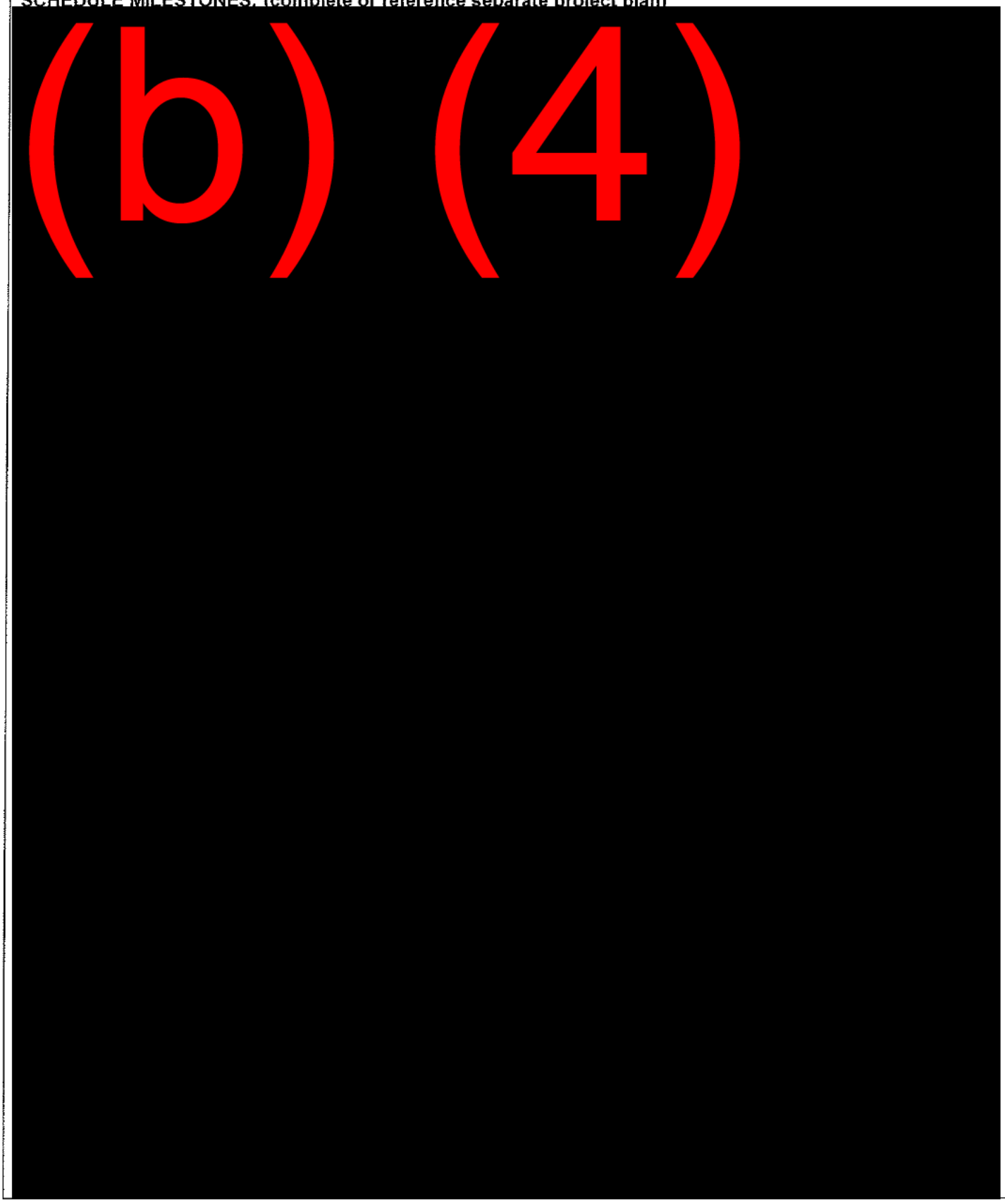
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Inspection	Finished product is safe for contact.		
	Verify there are no unidentified pinch points.	Inspection	Finished product is safe for use.		
	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Inspection	Label requirement satisfied.		
1ai	One stand for the ATA	Inspection	One stand for the ATA		
1aii	One stand for the NTA	Inspection	One stand for the NTA		
1b	Tanks are 30" off the floor	Inspection	Tanks are about 30 inches off floor (+/-2 inch tolerance)		
1c	Update SVMF Facility Drawings with HETA updated area	Inspection	Design Order completed		
2a	Installed Swivel Lift Fixture to POGO		Swivel Lift Fixture install on POGO		
2b	Provide table stand with rollers for Battery Mounting plate	Inspection	Table Stand with rollers for Battery Mounting Plate		
2c	Build a Battery swivel stand with locking castors	Inspection	Battery swivel stand with locking castors		
2d	Provide NASA Decals/Hazard Signs for Battery Stand	Inspection	Decals/Hazard Signs installed		
3a	Install mockup specific 'red indicator on both sides of obsolete valve	Inspection	Red indicator on both sides of obsolete valve		
3.b & c	Install 4 ground wires on Airlock Latch	Inspection	4 ground wires on External Latch		
3 d & e	Update IV & EV Valve Decals	Inspection	IV & EV Valve Decals		
3f,g,h	Add Black Triangle on IV & EV side of the hatch	Inspection	Black Triangle on IV & EV side of the hatch		
3i	Install handrail to the EV side of the Hatch	Inspection	Handrail installed to the EV side of the Hatch		
3j	Cover hatch windows with cream colored foam board	Inspection	Hatch covered		
3k	Evaluate Airlock Thermal Cover hatch hinge alignment	Demonstration			
4	Provide a Utility Outlet Panel (UOP) cable	Demonstration			
5	Provide an Airlock Panel - TBD	TBD	Requirements not provided – this task will be estimated on a future SCIF		
6.	Provide 4 Easels	Inspection	4 new Easels in the HETA area		
7	Modify the blue EMU Donning Stand by adding spacers to the four mounting locations to bring forward the PLSS mockup (approximately 6 inches)	Inspection	Modified EMU stand provides 6" forward offset for PLSS		
8a.	Mockup Training Readiness Review (TRR)	Inspection	TRR signed and completed		
8b.	Review of Hazard Analysis	Inspection	Design Order completed		
8c.	Review of Tip-Over Analysis for Tank Stands	Inspection	Design Order completed		

CR NO.: 2672	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 2672	DX CHANGE REQUEST

CR TITLE: EVA Projects for the SVMF

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
FY14	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 989	12/03/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 989

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
March 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 989

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 989

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Jennifer Krause
Jennifer O'Krause — Contracting Officer — 12/3/13 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 989 is to incorporate CR 506, Pool Structure and Hi-Bay Floor Loading Analysis Update costs: The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $16,002. Work is to be completed by March 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	16,002.00	16,002.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 16,002.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 506	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

1. REQUESTOR: (b) (4)	2. PHONE: (b) (4)	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Perform market research, develop requirements, prepare statement of work, and solicit proposals for a contract with a structural engineering firm with the purpose of determining the structural load capacity of the SCTF/NBL pool walls, floor and Hi-bay floors.

7. RATIONALE:
Obtaining a baseline of the facility's pool wall and floor loading capacity would allow us to minimize the cost of potential future repairs and preventing any structural damage.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
Phase I:

Safety Review not required (This is a study CR with no impact to current configuration).
1. Perform market research, Solicit proposals to perform the work.
2. Develop requirements and prepare statement of work to capture requirements for Phase II.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 9/3/2013
Phase I: 3/26/2014	

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: Ed Turcotte 9/9/2013
Date: 9/9/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	Global
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	**16. PHONE:**	**17. E-MAIL:** Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
Phase I: NTE $16,000 Phase II: ?$ Total: TBD	Phase 1: 3/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 506	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

REQUIREMENTS/REFERENCES (cont.):

Phase II:

Contract with the structural engineering firm selected in phase 1 to provide a report, sealed by a structural engineer licensed in the state of Texas that documents at a minimum the following:

1. Determine the maximum allowable moment and axial load for the pool wall based on the drawings provided by the NBL (See (b) (4) for copies of the structural drawings).

2. With the information generated above, provide the additional live and impact loads that can be safely applied to the pool wall.
   - Additional live loads should include point, line and area loading cases
   - Additional impact loads should be modeled as a point and small area load

3. Given that many operations can occur at various depths and the wall section changes half-way up the wall, if the acceptable additional load varies with depth, the report should identify this and provide a loading schedule to allow for maximum flexibility for future operations.

4. Provide an example in the report that shows how to determine if an ROV impacted the wall at X ft/sec (or other measurement) exceeds the allowable loading for the wall

5. Provide an inspection method and criteria, visual if possible, to determine if the pool wall is damaged following an ROV impact. (The intent of this is to find a way to determine if operations can continue or if we need to stop to discuss.)

6. Determine the additional live and impact loads that can be safely applied to the poo, high bay and LMF floor as well as all SCTF external paving.
   - Additional live loads should include point, line and area loading cases
   - Additional impact loads should be modeled as a point and small area load

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
Phase I						
1	Statement of work	EA	1	Inspection		(b) (4)
2	Proposals to perform work	EA	1	Inspection		
Phase II (TBD)						
3	TBD					
4	TBD					
5	TBD					

CR NO.: 506	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

No additional risks identified.

CR NO.: 506	DX CHANGE REQUEST

CR TITLE: Pool_Structure_and_Hi-bay_Floor_Loading_Analysis_Update

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order
NNJ10HD35C DO 991A	06/19/14

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.

Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 991A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 991A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 991A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 6/19/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 991A is to incorporate CR 2698A, FY14 EFT-1: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $182,850.00. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	182,850.00	182,850.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 182,850.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2698A	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

1. REQUESTOR: John Haas	2. PHONE: 281-792-5925	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV
☐ OTHER ☐ FUND CODE: 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☒ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program and specifically Exploration Flight Test 1 (EFT-1) Landing and Recovery efforts. This CR will fund labor for an NBL Flight Lead and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support for multiple mockup fabrication/modification requests and other ancillary equipment items associated with Navy Recovery Team efforts.
NOTE: This project is for non-MOD customers (EC), for which DX will be externally funded and NSOC should open a charge code under 2.7 for CR/IDIQ estimation so that charges can be tracked.

(Rev A) Consists of procurement, travel, engineering and technician work in support of URT1, URT2, and NBL JIT training (SCIF-1 for (b) (4) SCIF-2A fo(b) (4) SCIF-3 fo(b) (4) SCIF-4 for (b) (4) CIF-6 for(b) (4)

7. RATIONALE:
The NBL is to be used in multiple training evolutions for Navy swimmers supporting the MPCV Program. Preparatory in water evaluations are planned throughout the year and Flight Lead support both in-house and on-station are required for testing and procedural verification.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Provide products and support listed in the following table:

Safety Review Held 11/21/13, No actions, Non-Hazardous/No TRR Required per E. Turcotte.

9. NEED DATE: (support date in block 7 rationale) 9/26/14	10. CR SUBMISSION DATE: 11/5/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE) Date: 11/6/13

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: (b) (4)	17. E-MAIL: @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~FY14 $99,300~~ **(Rev A) FY14 $282,800**	20. NEGOTIATED DELIVERY DATE: 9/26/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

CR NO.: 2698A	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

Item#	Description	Need Date*	Technical Contact
1	Design & manufacture Line Riding Tensiometer Stand	1-Jan-14*	(b) (4)
2	FBC Weigh-out (positively buoyant in NBL & Sea water)	1-Jan-14*	
3	Design & manufacture Forward Bay Access Ladder	1-Jan-14 *	
4	Manufacture & Certify replacement (6) Kevlar Attachment Octopus Straps	1-Jan-14*	
5	CMUS Bag Attach Strap Modification	1-Jan-14*	
6	Modify (7) CMUS Bag Attach Systems	1-Jan-14*	
7	Add additional (6) Thruster Cutouts in PORT Capsule	1-Jun-14*	
8	Support Weekly Telecon Support	On-Going	
9	Support Procedure Development (Capsule Recovery, Parachute Recovery, FBC Recovery, Imagery (Diving/Small Boat), Sensor Setup/Checkout/Monitoring)	On-Going	
10	Support January (13-17 Jan14) NBL Run	17-Jan-14*	
11	Support URT onboard USS San Diego at San Diego CA (27-31 Jan 14*)	31-Jan-14*	
12	Support 1st Planning Session at the NBL	TBD	
13	Support 2nd Planning Session at the NBL	TBD	
14	Support 3rd Planning/In-water Session at the NBL (16-20 Jun 14*)	20-Jun-14*	
15	Support July EFT-1 Training at the NBL (14-18 Jul 14*)	18-Jul-14*	
16	Support Aug Pre EFT-1 Training at the NBL (11-15 Aug 14*)	15-Aug-14*	
17	Support EFT-1 at San Diego (Week of 15 Sep*)	19-Sep-14*	
18 (RevA)	PORT mockup pressure test (SCIF-01)	Prior to JIT	
19 (RevA)	Purchase items & Octopus straps in support of URT1 in San Diego (SCIF-02)	2/10/14	
20 (RevA)	Support KSC Kaizen event (SCIF-03)	4/10/14	
21 (RevA)	Time and Material support for URT2 (SCIF-04) Support tasks may include: travel, ops concept development, procurement items, JIT training, fabrication, sewing, design, etc. as requested.	9/27/14	
22 (RevA)	Estimation support for SCIFs -04 and -05 (withdrawn) (SCIF-06)	5/16/14	

*** Dates are for planning purposes and are subject to change**

CR NO.: 2698A	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item#	Description	Method	Verification
1	Design & manufacture Line Riding Tensiometer Stand	Inspection	
2	FBC Weigh-out (positively buoyant in NBL & Sea water)	Inspection	
3	Design & manufacture Forward Bay Access Ladder	Inspection	
4	Manufacture & Certify replacement (6) Kevlar Attachment Octopus Straps	Inspection	
5	CMUS Bag Attach Strap Modification	Inspection	
6	Modify (7) CMUS Bag Attach Systems	Inspection	
7	Add additional (6) Thruster Cutouts in PORT Capsule	Inspection	
8	Support Weekly Telecon Support	Inspection	
9	Support Procedure Development (Capsule Recovery, Parachute Recovery, FBC Recovery, Imagery (Diving/Small Boat), Sensor Setup/Checkout/Monitoring)	Inspection	
10	Support January (13-17 Jan14) NBL Run	Inspection	
11	Support URT onboard USS San Diego at San Diego CA (27-31 Jan 14*)	Inspection	
12	Support 1st Planning Session at the NBL	Inspection	
13	Support 2nd Planning Session at the NBL	Inspection	
14	Support 3rd Planning/In-water Session at the NBL (16-20 Jun 14*)	Inspection	
15	Support July EFT-1 Training at the NBL (14-18 Jul 14*)	Inspection	
16	Support Aug Pre EFT-1 Training at the NBL (11-15 Aug 14*)	Inspection	
17	Support EFT-1 at San Diego (Week of 15 Sep*)	Inspection	
18 (RevA)	Verify results of PORT mockup pressure test	Inspection	
19 (RevA)	Verify RFM records for purchased items and Work Order for Octopus straps in support of URT1 in San Diego	Inspection	
20 (RevA)	KSC Kaizen event outbrief presentation to NASA management	Inspection	
21 (RevA)	Time and Material support for URT2 Verify CCB presentations that detail monthly progress	Inspection	
22 (RevA)	Verify Estimation support for SCIFs -04 and -05 by inspection of ROM sheets	Inspection	

CR NO.: 2698A	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2698A	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

Assumptions:

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2698A	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGINEER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
~~FY14~~	[redacted]				
(RevA) FY14					

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature :	Date: _____

CR NO.: 2698B	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

1. REQUESTOR: John Haas	2. PHONE: 281-792-5925	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV
☐ OTHER ☐ FUND CODE: 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☒ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program and specifically Exploration Flight Test 1 (EFT-1) Landing and Recovery efforts. This CR will fund labor for an NBL Flight Lead and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support for multiple mockup fabrication/modification requests and other ancillary equipment items associated with Navy Recovery Team efforts.

(for original estimation) NOTE: This project is for non-MOD customers (EC), for which DX will be externally funded and NSOC should open a charge code under 2.7 for CR/IDIQ estimation so that charges can be tracked.

(Rev A) Consists of procurement, travel, engineering and technician work in support of URT1, URT2, and NBL JIT training (SCIF-1 for (b) (4) SCIF-2A for (b) (4) SCIF-3 for (b) (4), SCIF-4 for (b) (4) SCIF-6 for (b) (4)

(Rev B) Consists of procurement, travel, engineering and technician work in support of URT2, and NBL 2nd Planning Session (SCIF-7 for (b) (4) SCIF-8 for (b) (4)

7. RATIONALE:
The NBL is to be used in multiple training evolutions for Navy swimmers supporting the MPCV Program. Preparatory in water evaluations are planned throughout the year and Flight Lead support both in-house and on-station are required for testing and procedural verification.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Provide products and support listed in the following table:

Safety Review Held 11/21/13, No actions, Non-Hazardous/No TRR Required per E. Turcotte.

9. NEED DATE: (support date in block 7 rationale) 9/26/14	10. CR SUBMISSION DATE: 11/5/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE) Date: 11/6/13

12. NASA POC: John Haas	13. PHONE: 281-792-5925	14. E-MAIL: John.haas-1@nasa.gov
15. IMPLEMENTING CONTRACTOR: PROJECT ENGINEER: (b) (4)	16. PHONE: [redacted]	17. E-MAIL: (b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: ~~FY14 $99,300~~ (Rev A) FY14 $282,800 (Rev B) FY14 $422,500	20. NEGOTIATED DELIVERY DATE: 9/26/14

AUTHORIZATION TO PROCEED

CR NO.: 2698B	DX CHANGE REQUEST
CR TITLE: FY14 EFT-1	
OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____
Closed by:_____ **Date:** _____	

CR NO.: 2698B	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

REQUIREMENTS/REFERENCES (cont.):

Item#	Description	Need Date*	Technical Contact
1	Design & manufacture Line Riding Tensiometer Stand	1-Jan-14*	(b) (4)
2	FBC Weigh-out (positively buoyant in NBL & Sea water)	1-Jan-14*	
3	Design & manufacture Forward Bay Access Ladder	1-Jan-14 *	
4	Manufacture & Certify replacement (6) Kevlar Attachment Octopus Straps	1-Jan-14*	
5	CMUS Bag Attach Strap Modification	1-Jan-14*	
6	Modify (7) CMUS Bag Attach Systems	1-Jan-14*	
7	Add additional (6) Thruster Cutouts in PORT Capsule	1-Jun-14*	
8	Support Weekly Telecon Support	On-Going	
9	Support Procedure Development (Capsule Recovery, Parachute Recovery, FBC Recovery, Imagery (Diving/Small Boat), Sensor Setup/Checkout/Monitoring)	On-Going	
10	Support January (13-17 Jan14) NBL Run	17-Jan-14*	
11	Support URT onboard USS San Diego at San Diego CA (27-31 Jan 14*)	31-Jan-14*	
12	Support 1st Planning Session at the NBL	TBD	
13	Support 2nd Planning Session at the NBL	July 15-18	
14	Support 3rd Planning/In-water Session at the NBL (16-20 Jun 14*)	20-Jun-14*	
15	Support July EFT-1 Training at the NBL (14-18 Jul 14*)	18-Jul-14*	
16	Support Aug Pre EFT-1 Training at the NBL (11-15 Aug 14*)	15-Aug-14*	
17	Support EFT-1 at San Diego (Week of 15 Sep*)	19-Sep-14*	
18 (RevA)	PORT mockup pressure test (SCIF-01)	Prior to JIT	
19 (RevA)	Purchase items & Octopus straps in support of URT1 in San Diego (SCIF-02)	2/10/14	
20 (RevA)	Support KSC Kaizen event (SCIF-03)	4/10/14	
21 (RevA)	Time and Material support for URT2 (SCIF-04) Support tasks may include: travel, ops concept development, procurement items, JIT training, fabrication, sewing, design, etc. as requested.	9/27/14	
22 (RevA)	Estimation support for SCIFs -04 and -05 (withdrawn) (SCIF-06)	5/16/14	
23 (RevB)	Procurement of 'drop ship' items for GSDO (fenders, wave staff, deck fittings) (SCIF-07)	7/18/14	(b) (4)
24 (RevB)	Engineering and Procurement support for recovery equipment. To include: winch and lazy lines, RHIB lines, tending lines and extensions, snubbers and carabineers (SCIF-07)	7/18/14	
25 (RevB)	Travel to San Diego in support of GSDO for Ops Concept Development (SCIF-07)	June 15-21	
26 (RevB)	Engineering and Procurement support for recovery equipment. To include: NSN tending lines, load cells, additional lazy lines, helmets, gloves, kit bags) (SCIF-08)	7/18/14	
27 (RevB)	Provide documentation for: Analysis on Octopus straps, PORT lift plan, Orion Ops Overview pitch (SCIF-08)	7/18/14	
28 (RevB)	Provide additional diver support for 2nd Planning Session at the NBL (SCIF-08)	7/18/14	
29 (RevB)	TRAVEL: (SCIF-08) Extend URT2 travel by 9 days for T. Goddard to San Diego (7/20 – 7/28) Travel to San Diego to support GSDO for URT3 planning (approx. 9/8-9/12)	9/26/14	

*** Dates are for planning purposes and are subject to change**

CR NO.: 2698B	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item#	Description	Method	Verification
1	Design & manufacture Line Riding Tensiometer Stand	Inspection	
2	FBC Weigh-out (positively buoyant in NBL & Sea water)	Inspection	
3	Design & manufacture Forward Bay Access Ladder	Inspection	
4	Manufacture & Certify replacement (6) Kevlar Attachment Octopus Straps	Inspection	
5	CMUS Bag Attach Strap Modification	Inspection	
6	Modify (7) CMUS Bag Attach Systems	Inspection	
7	Add additional (6) Thruster Cutouts in PORT Capsule	Inspection	
8	Support Weekly Telecon Support	Inspection	
9	Support Procedure Development (Capsule Recovery, Parachute Recovery, FBC Recovery, Imagery (Diving/Small Boat), Sensor Setup/Checkout/Monitoring)	Inspection	
10	Support January (13-17 Jan14) NBL Run	Inspection	
11	Support URT onboard USS San Diego at San Diego CA (27-31 Jan 14*)	Inspection	
12	Support 1st Planning Session at the NBL	Inspection	
13	Support 2nd Planning Session at the NBL	Inspection	
14	Support 3rd Planning/In-water Session at the NBL (16-20 Jun 14*)	Inspection	
15	Support July EFT-1 Training at the NBL (14-18 Jul 14*)	Inspection	
16	Support Aug Pre EFT-1 Training at the NBL (11-15 Aug 14*)	Inspection	
17	Support EFT-1 at San Diego (Week of 15 Sep*)	Inspection	
18 (RevA)	Verify results of PORT mockup pressure test	Inspection	
19 (RevA)	Verify RFM records for purchased items and Work Order for Octopus straps in support of URT1 in San Diego	Inspection	
20 (RevA)	KSC Kaizen event outbrief presentation to NASA management	Inspection	
21 (RevA)	Time and Material support for URT2 Verify CCB presentations that detail monthly progress	Inspection	
22 (RevA)	Verify Estimation support for SCIFs -04 and -05 by inspection of ROM sheets	Inspection	
23 (RevB)	Verify receiving records of 'drop ship' items for GSDO (fenders, wave staff, deck fittings) (SCIF-07)	Inspection	
24 (RevB)	Verify receiving records for recovery equipment. To include: winch and lazy lines, RHIB lines, tending lines and extensions, snubbers and carabineers (SCIF-07)	Inspection	
25 (RevB)	Verify CCB presentations that detail travel for June 15-21 (SCIF-07)	Inspection	
26 (RevB)	Verify receiving records for recovery equipment. To include: NSN tending lines, load cells, additional lazy lines, helmets, gloves, kit bags) (SCIF-08)	Inspection	
27 (RevB)	Verify documentation for: Analysis on Octopus straps, PORT lift plan, Orion Ops Overview pitch (SCIF-08)	Inspection	
28 (RevB)	Verify occurrence for 2nd Planning Session (via monthly CCB presentation) (SCIF-08)	Inspection	
29 (RevB)	TRAVEL: (SCIF-08) Verify CCB presentations that detail travel URT2 (7/20 – 7/28) and Travel to San Diego to support GSDO for URT3 planning (approx 9/8-9/12)	Inspection	

CR NO.: 2698B	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2698B	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

Assumptions:

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 2698B	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGINEER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
~~FY14~~		(b) (4)			
~~(RevA) FY14~~					
(RevB) FY14					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 991C	08/18/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 991C

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 991C

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 991C

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

Cynthia W. Maclean — Contracting Officer — 08/18/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 991C is to incorporate CR 2698C, FY14 EFT-1: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $83,011. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	83,011.00	83,011.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 83,011.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

Order No.
NNJ10HD35C DO 991C

ORDER FOR SUPPLIES OR SERVICES
(Continuation Sheet)

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 991	12/12/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 991

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 991

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 991

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 12/17/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 991 is to incorporate CR 2698, FY14 EFT-1: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $99,261. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	99,261.00	99,261.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 99,261.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2698	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

1. REQUESTOR: John Haas	2. PHONE: 281-792-5925	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☐ STATION ☒ MPCV
☐ OTHER ☐ FUND CODE: 2.6.3 (699123)

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☒ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Provide support to the MPCV Program and specifically Exploration Flight Test 1 (EFT-1) Landing and Recovery efforts. This CR will fund labor for an NBL Flight Lead and test team supporting end of mission Operations Concepts development and training event logistics efforts while also providing material support for multiple mockup fabrication/modification requests and other ancillary equipment items associated with Navy Recovery Team efforts.
NOTE: This project is for non-MOD customers (EC), for which DX will be externally funded and NSOC should open a charge code under 2.7 for CR/IDIQ estimation so that charges can be tracked.

7. RATIONALE:
The NBL is to be used in multiple training evolutions for Navy swimmers supporting the MPCV Program. Preparatory in water evaluations are planned throughout the year and Flight Lead support both in-house and on-station are required for testing and procedural verification.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

Provide products and support listed in the following table:

Safety Review Held 11/21/13, No actions, Non-Hazardous/No TRR Required per E. Turcott.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
9/26/14	**11/5/13**

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE) Date: 11/6/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
John Haas	281-792-5925	John.haas-1@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
PROJECT ENGINEER: (b) (4)	[redacted]	(b) (4) @nasa.gov

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: FY14 $99,300	20. NEGOTIATED DELIVERY DATE:
	9/26/14

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2698	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

REQUIREMENTS/REFERENCES (cont.):

Item#	Description	Need Date*	Technical Contact
1	Design & manufacture Line Riding Tensiometer Stand	1-Jan-14*	(b) (4)
2	FBC Weigh-out (positively buoyant in NBL & Sea water)	1-Jan-14*	
3	Design & manufacture Forward Bay Access Ladder	1-Jan-14 *	
4	Manufacture & Certify replacement (6) Kevlar Attachment Octopus Straps	1-Jan-14*	
5	CMUS Bag Attach Strap Modification	1-Jan-14*	
6	Modify (7) CMUS Bag Attach Systems	1-Jan-14*	
7	Add additional (6) Thruster Cutouts in PORT Capsule	1-Jun-14*	
8	Support Weekly Telecon Support	On-Going	
9	Support Procedure Development (Capsule Recovery, Parachute Recovery, FBC Recovery, Imagery (Diving/Small Boat), Sensor Setup/Checkout/Monitoring)	On-Going	
10	Support January (13-17 Jan14) NBL Run	17-Jan-14*	
11	Support URT onboard USS San Diego at San Diego CA (27-31 Jan 14*)	31-Jan-14*	
12	Support 1st Planning Session at the NBL	TBD	
13	Support 2nd Planning Session at the NBL	TBD	
14	Support 3rd Planning/In-water Session at the NBL (16-20 Jun 14*)	20-Jun-14*	
15	Support July EFT-1 Training at the NBL (14-18 Jul 14*)	18-Jul-14*	
16	Support Aug Pre EFT-1 Training at the NBL (11-15 Aug 14*)	15-Aug-14*	
17	Support EFT-1 at San Diego (Week of 15 Sep*)	19-Sep-14*	

*** Dates are for planning purposes and are subject to change**

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Item#	Description	Method	Verification
1	Design & manufacture Line Riding Tensiometer Stand	Inspection	
2	FBC Weigh-out (positively buoyant in NBL & Sea water)	Inspection	
3	Design & manufacture Forward Bay Access Ladder	Inspection	
4	Manufacture & Certify replacement (6) Kevlar Attachment Octopus Straps	Inspection	
5	CMUS Bag Attach Strap Modification	Inspection	
6	Modify (7) CMUS Bag Attach Systems	Inspection	
7	Add additional (6) Thruster Cutouts in PORT Capsule	Inspection	
8	Support Weekly Telecon Support	Inspection	
9	Support Procedure Development (Capsule Recovery, Parachute Recovery, FBC Recovery, Imagery (Diving/Small Boat), Sensor Setup/Checkout/Monitoring)	Inspection	
10	Support January (13-17 Jan14) NBL Run	Inspection	
11	Support URT onboard USS San Diego at San Diego CA (27-31 Jan 14*)	Inspection	
12	Support 1st Planning Session at the NBL	Inspection	
13	Support 2nd Planning Session at the NBL	Inspection	
14	Support 3rd Planning/In-water Session at the NBL (16-20 Jun 14*)	Inspection	
15	Support July EFT-1 Training at the NBL (14-18 Jul 14*)	Inspection	
16	Support Aug Pre EFT-1 Training at the NBL (11-15 Aug 14*)	Inspection	
17	Support EFT-1 at San Diego (Week of 15 Sep*)	Inspection	

CR NO.: 2698	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 2698	DX CHANGE REQUEST

CR TITLE: FY14 EFT-1

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGINEER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
FY14	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 992	12/16/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 992

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
August 15, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 992

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 992

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 12/17/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 990 is to incorporate CR 2697, NBL ARCM (Asteroid Retrieval Crewed Mission) Testing: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $24,997. Work is to be completed by August 15, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	24,997.00	24,997.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 24,997.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2697	DX CHANGE REQUEST

CR TITLE: NBL ARCM (Asteroid Retrieval Crewed Mission) Testing

1. REQUESTOR: (Anthony) Drew Hood	2. PHONE: 281-244-8351	3. E-MAIL: anthony.d.hood@nasa.gov

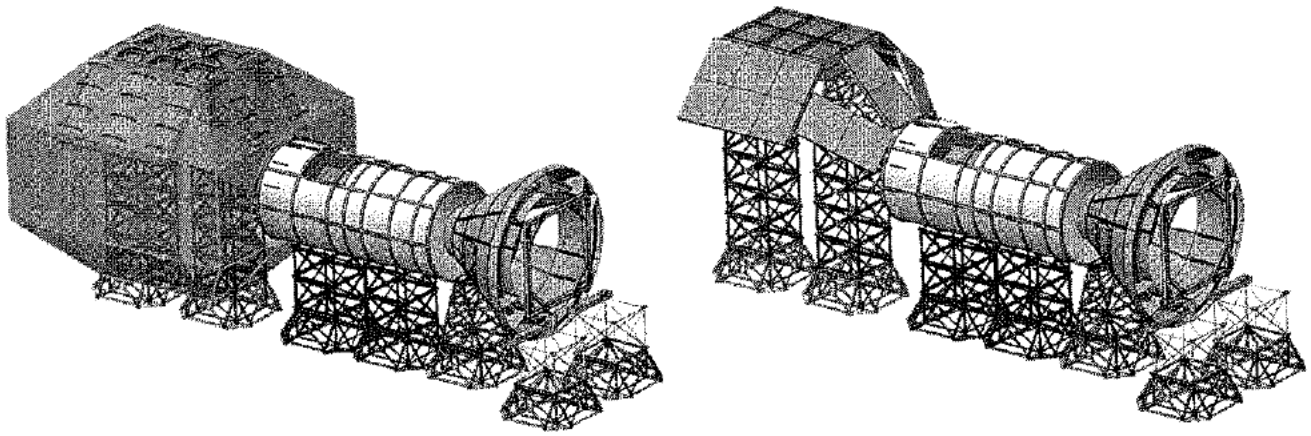
4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☒ OTHER(EC) ☒ FUND CODE: 2.6.3

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Support EC Division with constructing a water compatible ARCM stack mockup which includes Orion and ARRV (Asteroid Robotic Retrieval Vehicle). Support consists of procurement, engineering and technician work to fabricate and assemble components. The mockup will be created using two existing NBL components (JENOM and FGB cylinder) with minor modifications. Modifications to the two mockups will be made by NBL technicians through collaboration with engineering resources.

7. RATIONALE:
Provide suit development teams the capability to evaluate capsule based EVAs and asteroid exploration as purposed in the ARCM mission.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)



ARCM Stack concept (left to right: Asteroid Mockup, FGB mid-section, and JENOM)

(b) (4)

9. NEED DATE: (support date in block 7 rationale) JENOM & FGB (Feb 1st) ~~/ [Asteroid (March 1st) through SCIF per available funding]~~	10. CR SUBMISSION DATE: 12/5/2013

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED Signature: _John Hass_____
Date:10/24/2013

12. NASA POC: Prince, Angela	13. PHONE: X41086	14. E-MAIL: Angela.r.prince@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	16. PHONE:	17. E-MAIL:

CR NO.: 2697	DX CHANGE REQUEST

CR TITLE: NBL ARCM (Asteroid Retrieval Crewed Mission) Testing

18. Formal Project Plan Required:

☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
NTE $25,000 – all costs and fees included; Since this is an engineering development effort – work will be performed in collaboration with the requesting organization, EC.	1/31/2014 for mockup 8/15/2014 for FGB return to original configuration

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

CR NO.: 2697	DX CHANGE REQUEST

CR TITLE: NBL ARCM (Asteroid Retrieval Crewed Mission) Testing

REQUIREMENTS/REFERENCES (cont.):

Provide material procurement and fabrication support required for returning the FGB and the JENOM to safe configurations for in-water utilization as directed by EC. Additionally, perform NBL specific structural analysis and safety reviews as required. All direction for manufacturing activities will come through the EC project engineering. EC will require access to the mockups during the process to assess the configurations as they are developed. Access will be coordinated through the flight lead to ensure the mockups are available in a usable state

The below requirements will refer to the hardware, operations, and support requested for this test.

Item #	Deliverable Description	PRIMARY DATA REFERENCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Mockup construction to be prioritized: 1. JENOM 2. FGB Test Set 1 requires JENOM and FGB components to be completed and installed into the pool (Feb 1st)	Attached ARCM Stack.pptx	As Req.	N/A	(b) (4)
2	Prepare JENOM for testing	Attached ARCM Stack.pptx	1	N/A	(b) (4)
2a	**Requirements for JENOM:** -Verify JENOM is safe to return to operations in NBL and make necessary modification where required -Maintain hatch ingress and egress capability for suited crew -If not present, and if directed by EC, install internal handrails around hatch for ingress and egress by suited crew member		As Req.	N/A	(b) (4)
3	Prepare FGB midsection for testing	Attached ARCM Stack.pptx	1	N/A	(b) (4)
3a	**Requirements for FGB:** -Verify FGB is safe to return to operations in NBL and make necessary modification where required -Install handrails and boom attachment interface points as requested by EC onto existing FGB structure for suited crew translation between the JENOM and asteroid in location provided by EC rep -Verify/create test stand to support FGB midsection to be centerline aligned with the JENOM mockup -As directed by EC, create inset tool storage location in the side of the FGB that can be accessed by suited crew. General dimensions are 3 ft x 5 ft x 18 in with single panel hinged door (no requirement for flight like access) in location provided by EC rep (Possible location page 8 of ARCM Stack.pptx) [redacted]		As Req.	N/A	(b) (4)

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Verification for operations shall be accepted through NBLTRR approval.

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Mockup construction to be prioritized: 1. JENOM 2. FGB Test Set 1 requires JENOM and FGB components to be completed and installed into the pool (Feb 1st)		Inspection	Mockup construction to be prioritized: 1. JENOM 2. FGB Test Set 1 requires JENOM and FGB components to be completed and installed into the pool (Feb 1st)		
2	**Requirements for JENOM:** -Verify JENOM is safe to return to operations in NBL and make necessary modification where required -Maintain hatch ingress and egress capability for suited crew - If not present, and if directed by EC, install internal handrails around hatch for ingress and egress by suited crew member		Inspection	-Verified that JENOM is safe to return to operations in NBL -Maintain hatch ingress and egress capability for suited crew - If not present, and if directed by EC, install internal handrails around hatch for ingress and egress by suited crew member		
3	**Requirements for FGB:** -Verify FGB is safe to return to operations in NBL and make necessary modification where required -Install handrails and boom attachment interface points as requested by EC onto existing FGB structure for suited crew translation between the JENOM and asteroid in location provided by EC rep - -Verify/create test stand to support FGB midsection to be centerline aligned with the JENOM mockup -As directed by EC, create inset tool storage location in the side of the FGB that can be accessed by suited crew. General dimensions are 3 ft x 5 ft x 18 in with single panel hinged door (no requirement for flight like access) in location provided by EC rep (Possible location page 8 of ARCM Stack.pptx) -Return FGB to original configuration after completion		Inspection	-Verified that FGB is safe to return to operations in NBL and make necessary modification where required -Install handrails and boom attachment interface points as requested by EC onto existing FGB structure for suited crew translation between the JENOM and asteroid in location provided by EC rep - -Verify/create test stand to support FGB midsection to be centerline aligned with the JENOM mockup -As directed by EC, create inset tool storage location in the side of the FGB that can be accessed by suited crew. General dimensions are 3 ft x 5 ft x 18 in with single panel hinged door (no requirement for flight like access) in location provided by EC rep (Possible location page 8 of ARCM Stack.pptx) -Return FGB to original configuration after completion		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
FY14	(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.: NNJ10HD35C DO 992A
2. Date of Order: 05/15/14

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 992A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x
Fax (b) (4)
TIN:
Cage Code: 1VNE3

6. Deliver On or Before:
August 15, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 992A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 992A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 5/15/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 992A is to incorporate CR 2697 Rev A, NBL ARCM (Asteroid Retrieval Crewed Mission) Testing: The estimated cost (b) (4) The estimated awar The estimated ince The total value of this Delivery Order is $17,732. Work is to be completed by August 15, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	17,732.00	17,732.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total: 17,732.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2697A	DX CHANGE REQUEST

CR TITLE: NBL ARCM (Asteroid Retrieval Crewed Mission) Testing

1. REQUESTOR: (Anthony) Drew Hood	2. PHONE: 281-244-8351	3. E-MAIL: anthony.d.hood@nasa.gov

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☒ OTHER(EC) ☒ FUND CODE: 2.6.3

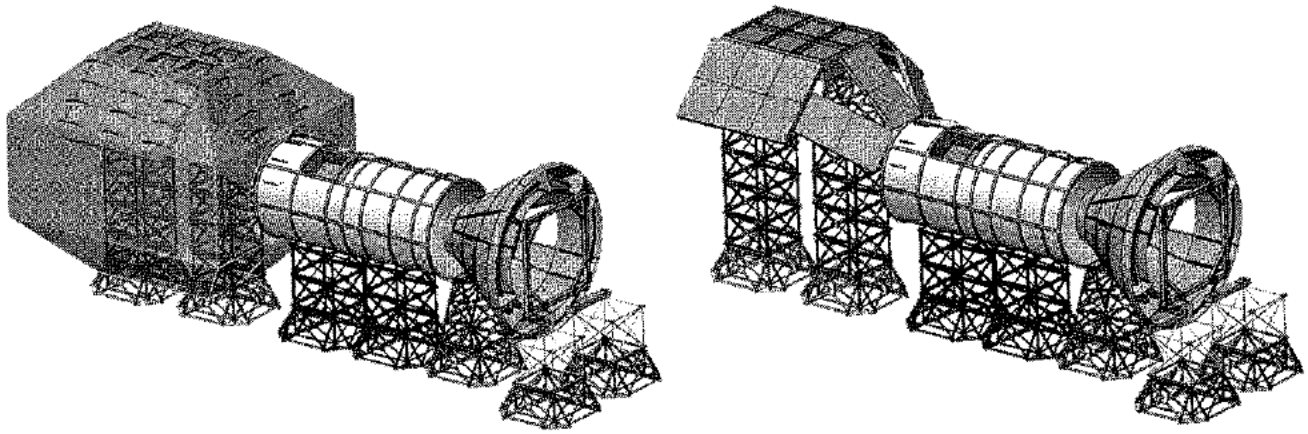
5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Support EC Division with constructing a water compatible ARCM stack mockup which includes Orion and ARRV (Asteroid Robotic Retrieval Vehicle). Support consists of procurement, engineering and technician work to fabricate and assemble components. The mockup will be created using two existing NBL components (JENOM and FGB cylinder) with minor modifications. Modifications to the two mockups will be made by NBL technicians through collaboration with engineering resources.

(Rev A) Support consists of procurement, engineering and technician work to fabricate and assemble an Asteroid Mockup (SCIF-1 for (b) (4) and SCIF-2 fo(b) (4)

7. RATIONALE:
Provide suit development teams the capability to evaluate capsule based EVAs and asteroid exploration as purposed in the ARCM mission.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)



ARCM Stack concept (left to right: Asteroid Mockup, FGB mid-section, and JENOM)

(b) (4)

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE: 12/5/2013
JENOM & FGB (Feb 1st) (**Rev A**) Asteroid April 7th (SCIF1&2)	

11. NASA REVIEWER/SPONSOR: ☐ ACCEPTED ☐ REJECTED Signature: _John Hass_____
Date:10/24/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Prince, Angela	X41086	Angela.r.prince@nasa.gov

CR NO.: 2697A	DX CHANGE REQUEST

CR TITLE: NBL ARCM (Asteroid Retrieval Crewed Mission) Testing

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
PROJECT ENGINEER: [redacted] (b) (4)	[redacted] (b) (4)	[redacted]@nasa.gov [redacted]nasa.gov

18. Formal Project Plan Required:

☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~NTE $25,000 – all costs and fees included; Since this is an engineering development effort – work will be performed in collaboration with the requesting organization, EC.~~ **(Rev A)** $42,800	1/31/2014 for mockup **(Rev A)** 4/7/2014 for asteroid 8/15/2014 for FGB return to original configuration

AUTHORIZATION TO PROCEED

	COTR for CRs with Cost Impact Only
OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	COTR: _____ Date: _____

Closed by: _____ **Date:** _____

CR NO.: 2697A	DX CHANGE REQUEST

CR TITLE: NBL ARCM (Asteroid Retrieval Crewed Mission) Testing

REQUIREMENTS/REFERENCES (cont.):

Provide material procurement and fabrication support required for returning the FGB and the JENOM to safe configurations for in-water utilization as directed by EC. Additionally, perform NBL specific structural analysis and safety reviews as required. All direction for manufacturing activities will come through the EC project engineering. EC will require access to the mockups during the process to assess the configurations as they are developed. Access will be coordinated through the flight lead to ensure the mockups are available in a usable state

The below requirements will refer to the hardware, operations, and support requested for this test.

Item #	Deliverable Description	PRIMARY DATA REFERENCE	QTY	FID. CODE	TECHNICAL CONTACT
1	Mockup construction to be prioritized: 1. JENOM 2. FGB Test Set 1 requires JENOM and FGB components to be completed and installed into the pool (Feb 1st)	Attached ARCM Stack.pptx	As Req.	N/A	(b) (4)
2	Prepare JENOM for testing	Attached ARCM Stack.pptx	1	N/A	(b) (4)
2a	**Requirements for JENOM:** -Verify JENOM is safe to return to operations in NBL and make necessary modification where required -Maintain hatch ingress and egress capability for suited crew -If not present, and if directed by EC, install internal handrails around hatch for ingress and egress by suited crew member		As Req.	N/A	(b) (4)
3	Prepare FGB midsection for testing	Attached ARCM Stack.pptx	1	N/A	(b) (4)
3a	**Requirements for FGB:** -Verify FGB is safe to return to operations in NBL and make necessary modification where required -Install handrails and boom attachment interface points as requested by EC onto existing FGB structure for suited crew translation between the JENOM and asteroid in location provided by EC rep -Verify/create test stand to support FGB midsection to be centerline aligned with the JENOM mockup -As directed by EC, create inset tool storage location in the side of the FGB that can be accessed by suited crew. General dimensions are 3 ft x 5 ft x 18 in with single panel hinged door (no requirement for flight like access) in location provided by EC rep (Possible location page 8 of ARCM Stack.pptx) [redacted]		As Req.	N/A	(b) (4)
4 (RevA)	Construct and Install an Asteroid mockup in the NBL by April 7 o EC7 will provide design oversight o NBL to provide mockup HA for 'asteroid' mockup o NBL to provide stress analysis o NBL to provide tip over analysis o NBL to provide installation and lift package		1	n/a	(b) (4)
5 (RevA)	NBL to provide additional (1 day) diver support on top of Asteroid mockup installation o for FGB WIF reconfig for customer provided stabilization boom o for customer provided stabilization boom installation o for customer provided tool weigh-out (in water) and diver evaluation		1	n/a	(b) (4)

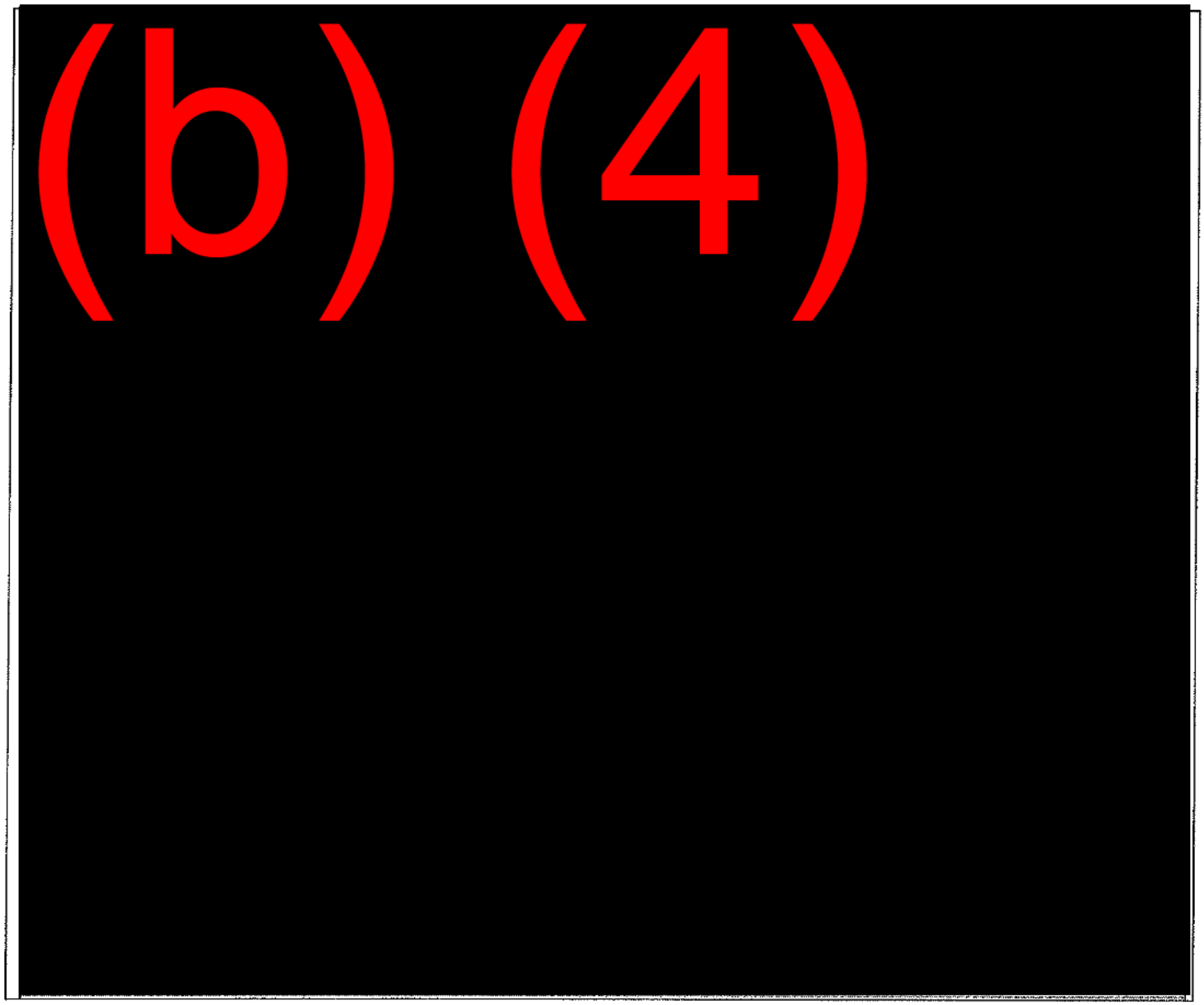
ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Verification for operations shall be accepted through NBLTRR approval.

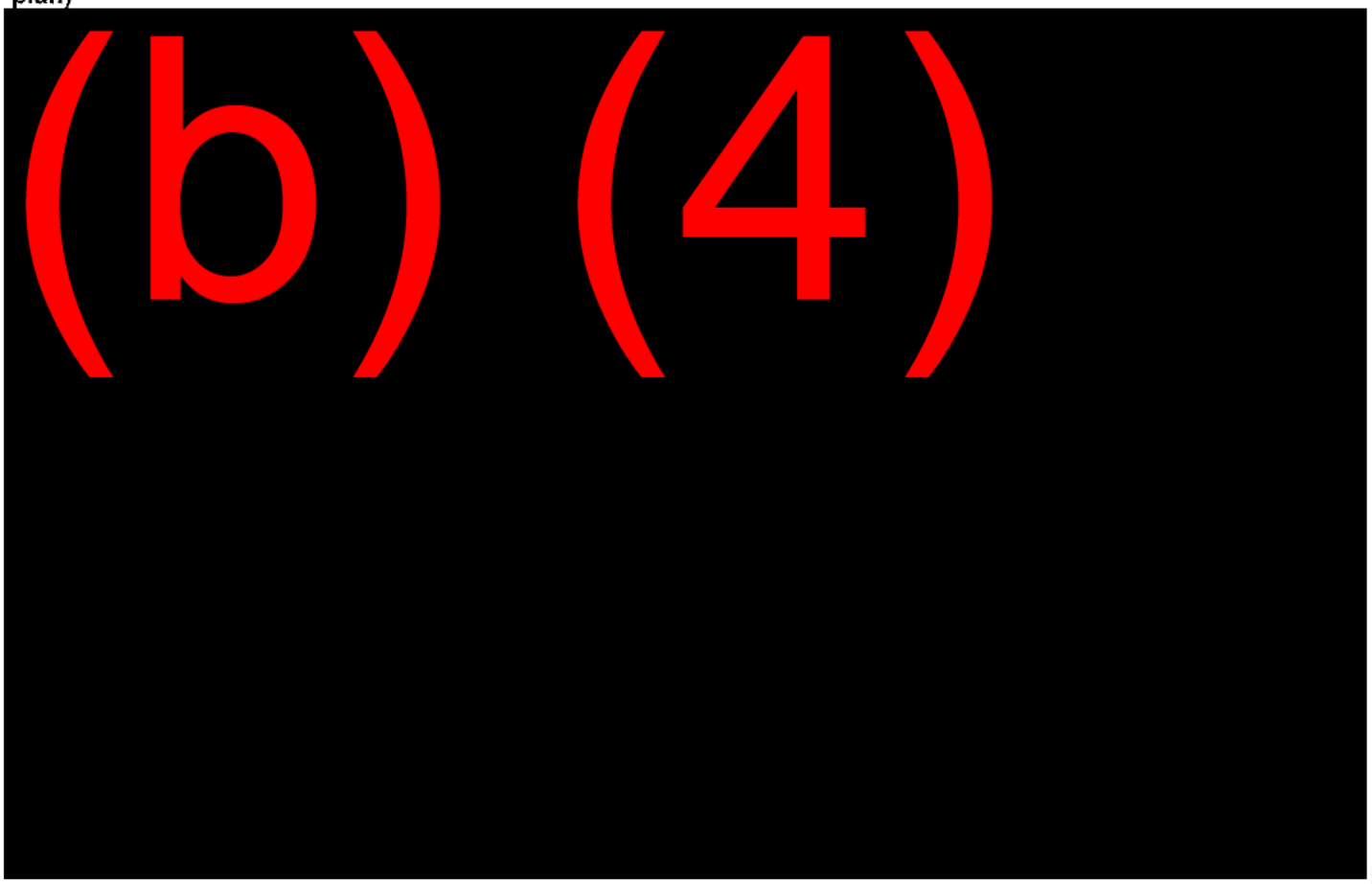
Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Mockup construction to be prioritized: 1. JENOM 2. FGB Test Set 1 requires JENOM and FGB components to be completed and installed into the pool (Feb 1st)		Inspection	Mockup construction to be prioritized: 1. JENOM 2. FGB Test Set 1 requires JENOM and FGB components to be completed and installed into the pool (Feb 1st)		
2	**Requirements for JENOM:** -Verify JENOM is safe to return to operations in NBL and make necessary modification where required -Maintain hatch ingress and egress capability for suited crew - If not present, and if directed by EC, install internal handrails around hatch for ingress and egress by suited crew member		Inspection	-Verified that JENOM is safe to return to operations in NBL -Maintain hatch ingress and egress capability for suited crew - If not present, and if directed by EC, install internal handrails around hatch for ingress and egress by suited crew member		
3	**Requirements for FGB:** -Verify FGB is safe to return to operations in NBL and make necessary modification where required -Install handrails and boom attachment interface points as requested by EC onto existing FGB structure for suited crew translation between the JENOM and asteroid in location provided by EC rep – -Verify/create test stand to support FGB midsection to be centerline aligned with the JENOM mockup -As directed by EC, create inset tool storage location in the side of the FGB that can be accessed by suited crew. General dimensions are 3 ft x 5 ft x 18 in with single panel hinged door (no requirement for flight like access) in location provided by EC rep (Possible location page 8 of ARCM Stack.pptx) -Return FGB to original configuration after completion		Inspection	-Verified that FGB is safe to return to operations in NBL and make necessary modification where required -Install handrails and boom attachment interface points as requested by EC onto existing FGB structure for suited crew translation between the JENOM and asteroid in location provided by EC rep – -Verify/create test stand to support FGB midsection to be centerline aligned with the JENOM mockup -As directed by EC, create inset tool storage location in the side of the FGB that can be accessed by suited crew. General dimensions are 3 ft x 5 ft x 18 in with single panel hinged door (no requirement for flight like access) in location provided by EC rep (Possible location page 8 of ARCM Stack.pptx) -Return FGB to original configuration after completion		
4 (RevA)	Asteroid mockup constructed and installed		Inspection	Asteroid mockup TRR acceptance		
5 (RevA)	Diver support for mockup installation and tools		Inspection	Mockup installation and successful MACES run (April 15)		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)


(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Program Support	Management	Technicians	Material
~~FY14~~		(b) (4)			
(Rev A) FY14					

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 993	12/18/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 993

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 993

8. Type of Order:
☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 993

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Mac 12/19/13
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 993 is to incorporate CR 516, ITAMS Pull Back Project: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $18,694. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	18,694.00	18,694.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 18,694.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 516	DX CHANGE REQUEST

CR TITLE: ITAMs Pull Back Project

1. REQUESTOR: [redacted]	2. PHONE: [redacted]	3. E-MAIL: [redacted]

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (401769)

5. FUNCTIONAL AREA:
☒ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Move data for (b) (4) and (b) (4) servers from ITAMs to virtual NSOC servers.

7. RATIONALE:
Improve platform stability
Realize a cost benefit by utilizing hardware already owned by the contract
Improve administration ability for NSOC IT staff
Save on ITAMs service costs

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
No Safety Review required

- NSOC IT shall install and configure NSOC VM to host (b) (4) and (b) (4) Server data
- NSOC IT shall perform the data transfer from ITAMs to the NSOC VM
- NSOC IT shall make the appropriate requests and support ACES and IRD as necessary to complete the data transfer, change the DNS IP, and take the IRD VM off-line
- NSOC IT shall reconfigure the backups to capture data stored on the newly configured NSOC servers
- NSOC IT shall update any documentation that refers to ITAMs with respect to (b) (4) and (b) (4) Servers

9. NEED DATE: (support date in block 7 rationale) 9/26/2014	10. CR SUBMISSION DATE: 11/15/2013

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date:11/18/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Edgar J Turcotte	281-483-5730	edgar.j.turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** [redacted]

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: $18,800	20. NEGOTIATED DELIVERY DATE: 9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

CR NO.: 516	DX CHANGE REQUEST

CR TITLE: ITAMs Pull Back Project

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Rqmt #	Requirement Description	Verification Criteria (Spec / Drawing)	Verification Method	Expected results	Verification Results (pass/fail)	Assumptions / Comments
1	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.		Inspection	Label requirement satisfied.		
2	NSOC IT shall install and configure NSOC VM to host (b) (4) and (b) (4) Server data		Inspection	New VMs on NSOC server with existing DX server names		
3	NSOC IT shall perform the data transfer from ITAMs to the NSOC VM		Inspection	All data previously hosted on ITAMs is now hosted on NSOCs VM		
4	NSOC IT shall make the appropriate requests and support ACES and IRD as necessary to complete the data transfer, change the DNS IP, and take the IRD VM off-line		Inspection	ACES and IRD SRs written and completed, DNS IP changed, IRD VM off-line		
5	NSOC IT shall reconfigure the backups to capture data stored on the newly configured NSOC servers		Inspection	Data on newly configured VMs is captured by backups		
6	NSOC IT shall update any documentation that refers to ITAMs with respect to (b) (4) (b) (4) and (b) (4) (b) (4) servers		Inspection	Server Configuration documents are updated		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 516	DX CHANGE REQUEST

CR TITLE: ITAMs Pull Back Project

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 994	12/31/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 994

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
January 12, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 994

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 993

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean — Contracting Officer — 12/31/13 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 994 is to provide First Robotics Support. The estimated cost is $ (b) (4) The estimated award f The estimated incentiv The total value of this Delivery Order is $1,550.47. Work is to be completed by January 12, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	1,550.47	1,550.47	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 1,550.47

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 994 R1	01/10/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 994 R1

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
June 10, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 994 R1

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 994 R1

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia MacLean

Cynthia MacLean — Contracting Officer — 1/12/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 994 R1 is to incorporate CR 522, First Robotics Support FY14 The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $32,089 Work is to be completed by June 10, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	32,089.00	32,089.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 32,089.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative — Date

CR NO.: 522	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY14

1. REQUESTOR: Angela Prince	2. PHONE: 281-244-1086	3. E-MAIL: Global

4. PROGRAM/PROJECT:
☐ STATION ☐ MPCV
☒ OTHER ☒ FUND CODE: 2.6.3 (EC)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Establish NSOC technical support associated with the annual First Robotics Competition.

7. RATIONALE:
Annual NASA-sponsored support - confirmed externally funded.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

No Safety review required – Annual event with safety processes in place from previous CR's (CR-454)

Annual NASA-sponsored support - confirmed externally funded.
- Safety oversight and facility oversight
- Manufacturing resources
- Travel in support of local competition

Such support is scheduled outside of NBL standard working hours; and therefore, will be charged at an overtime rate (x1.5) for non-exempt personnel.

This CR will be funded through an RFF with the JSC/Engineering Directorate (Mail Code EA). The NBL and LMF have supported this activity in previous years under CR-107, 166, 220, 267, 334, 407, 454 and 491.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
6/10/2014	12/13/2012

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE)
Date: 12/12/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Paul Williamson	281.244.7814	Global
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** Global

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$32,100	6/10/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

CR NO.: 522	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY14

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Safety oversight and facility oversight	Job	1	Inspection		(b) (4)
2.	Manufacturing resources	Job	1	Inspection		

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

CR NO.: 522	DX CHANGE REQUEST

CR TITLE: First Robotics Support FY14

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 995	11/23/13	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 995

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 995

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 995

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 11/23/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 995 is to incorporate CR 2692, Build NBL Fluid Connector Mockups: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $83,732. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	83,732.00	83,732.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 83,732.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2692	DX CHANGE REQUEST

CR TITLE: Build NBL Fluid Connector Mockups

REQUESTOR: [redacted]	2. PHONE: [redacted]	3. E-MAIL: [redacted]

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.1 609524

5. FUNCTIONAL AREA:
☐ SVMF ☒ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Manufacture NBL Mockup Fluid Connectors to replace stock.

7. RATIONALE:
Items will be consumed for new mockup and hardware outfitting. These additional units are required to replenish stock.

*** Because these items are build-to-print critical spares, a Safety Review and TRR are not required.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2) (See Table for more details)

Item #	Deliverable Description	PRIMARY DATA REFERENCE	DATA SOURCE	QTY	FID. CODE	TECHNICAL CONTACT
01	Coupling, Female Fluid, 1.0 Inch	(b) (4)	NBL	20	Per Dwg	[redacted]
02	Coupling, Female Fluid, 1.5 Inch		NBL	20	Per Dwg	[redacted]

A. All items to conform to (b) (4) [redacted]

No Safety Review or TRR required.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
9/26/14	10/29/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: J. Haas (ICE) Date: 11/4/13

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	Edgar.J.Turcotte@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	16. PHONE: [redacted]	17. E-MAIL: [redacted]

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$83,800	**9/26/14**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____ Date: _____ CCB CHAIR: _____ Date: _____	COTR for CRs with Cost Impact Only COTR: _____ Date: _____

CR NO.: 2692	DX CHANGE REQUEST

CR TITLE: Build NBL Fluid Connector Mockups

Closed by:_____ Date: _____

REQUIREMENTS/REFERENCES (cont.):

1. Address any current corrosion concerns (i.e. off-the-shelf components) and obtain approval from Chief Engineer on any changes.
2. Passivation of all metallic items required.
3. Update drawings to reflect any changes necessary from the above requirement items 1 and 2.
4. First article acceptance required if a new vendor is selected.

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

A. All items to conform to (b) (4)
B. Quantity delivered as per requested.
C. Deliverables interface with existing NBL fluid connectors.

CR NO.: 2692	DX CHANGE REQUEST

CR TITLE: Build NBL Fluid Connector Mockups

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 2692	DX CHANGE REQUEST

CR TITLE: Build NBL Fluid Connector Mockups

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

	DESIGN	PROJECT ENGINEER & SUPPORT	MANAGEMENT	TECHNICIAN SUPPORT	MATERIAL
FY14	(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 996	02/07/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 996

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 996

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 996

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 2/11/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 996 is to incorporate CR 509, WTS ACS I/O Hardware Software Refresh Cost : The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $141,769. Work is to be completed by September 26, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	141,769.00	141,769.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 141,769.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 509	DX CHANGE REQUEST

CR TITLE: WTS_ACS_IO_Hardware-Software_Refresh

1. REQUESTOR: (b) (4)	2. PHONE (b) (4)	3. E-MAIL (b) (4)

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (609524)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☒ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:
Refresh ACS I/O Data Acquisition Hardware and Revise RCK Software with latest release revision.

7. RATIONALE:
Hardware discontinued and no longer in stock. Software upgrade is to refresh to the latest released revision.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)
SR No.: SR-2013-315 performed on 12/19/2013, TRR required.

RCK Controls to remove current WTS OPTO 22 hardware and install new data acquisition hardware in conjunction with release software revision.

9. NEED DATE: (support date in block 7 rationale)	10. CR SUBMISSION DATE:
9/26/2014	10/21/2013

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature:
Date:10/21/2013

12. NASA POC:	13. PHONE:	14. E-MAIL:
Ed Turcotte	281-483-5730	Global

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted]	[redacted]	[redacted]

18. Formal Project Plan Required:
☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$141,800	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: _____

Date: _____

CCB CHAIR: _____

Date: _____

COTR for CRs with Cost Impact Only

COTR: _____

Date: _____

Closed by: _____ **Date:** _____

CR NO.: 509	DX CHANGE REQUEST

CR TITLE: WTS_ACS_IO_Hardware-Software_Refresh

REQUIREMENTS/REFERENCES (cont.):

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

#	Deliverable Items Description	U/M	Qty	Method of Verificaion	Verified	Technical Contact
1.	RCK Software Revision 2.2.0.20	EA	1	Inspection		(b) (4)
2.	RCK I/O & GUI Hardware Refresh	EA	1	Inspection		

CR NO.: 509	DX CHANGE REQUEST

CR TITLE: WTS_ACS_IO_Hardware-Software_Refresh

SCHEDULE MILESTONES: (complete or reference separate project plan)

(b) (4)

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

CR NO.: 509	DX CHANGE REQUEST

CR TITLE: WTS_ACS_IO_Hardware-Software_Refresh

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Design	Engineering and Program Support	Management	Technicians	Material
(b) (4)				

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 997	02/18/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 997

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
February 28, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 997

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 997

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 2/19/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 997 is to incorporate CR 508A, which provides for preparation and research of NBL crane design: The estimated cost i (b) (4) The estimated award The estimated incen The total value of this Delivery Order is $6,823 Work is to be completed by February 28, 2014. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	6,823.00	6,823.00	

12. For JSC Internal Use Only:
Requistion No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 6,823.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 508A	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design

1. REQUESTOR: Edgar Turcotte	2. PHONE: 3-5730	3. E-MAIL: global

4. PROGRAM/PROJECT:
☒ STATION ☐ MPCV
☐ OTHER ☒ FUND CODE: 2.6.2 (609524)

5. FUNCTIONAL AREA:
☐ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☒ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Procure 9" monitors, crane safety line connectors, gym equipment and Design Hours for Jib Crane modification.

7. RATIONALE:

These items are required to maintain and enhance NBL capabilities to support its mission.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

1) 11ea sets - Marshall Dual 9" panel number V-R102DP-2C - ROV control racks or equivalent (10.4" Dual-Rack Mount 2.4 Megapixel Anti-Glare LCDs, NTSC/PAL Auto-Switch, with HD/SD-SDI, Component, Composite, S-Video, VGA, and DVI-I Inputs)
2) 2ea - Latchways Mansafe Horizontal lifeline or equivalent
3) 1ea - Body Solid Pro-Dual Leg Extension/Leg Curl machine or equivalent
4) 1ea - Body Solid Leg Press / Hack Squat machine or equivalent
5) Build upon the work performed on CR-NBL-494 and CR-NBL-497 by performing the following tasks:
   a) Review, interpret and apply ANSI/SIA A92.5 and ANSI/SIA A92.2 to the alteration of the NBL Jib Crane design to accommodate a 5000 pound capacity using new hydraulic and structural components.
   b) Adjust the inputs used in the MathCAD model developed in CR-NBL-497 to validate requirement 1 above.
   c) Collaborate with Petrofac stakeholders to agree upon and document vertical rates
   d) Consider modification to the Jib Crane design to replace the pneumatic rotation components and controls to accommodate hydraulic actuation for smoother operation and to avoid a hydraulic/pneumatic hybrid system; all in compliance with the standards cited above in requirement 1.
   e) Develop a draft FY14 CR to progress the design and implementation of the design state produced by the above listed requirements to the point that it is ready for Block 11 approval
   f) Initiate the crane design modification required to meet the above requirements.

   Note: It is understood that the requirements in (5) above may not yield a detailed drawing package

NOTE: Safety Review not required for procurement items per NBL Deputy Office Chief, no TRR required. SR for Jib Crane completed under prior CR. Jib Crane Design work is design only - no implementation.

9. NEED DATE: (support date in block 7 rationale) 09/26/13	10. CR SUBMISSION DATE: 08/27/13

11. NASA REVIEWER/SPONSOR: ☒ ACCEPTED ☐ REJECTED Signature: John Haas (ICE) Date:9/3/13

12. NASA POC: Ed Turcotte	13. PHONE: global	14. E-MAIL: global
15. IMPLEMENTING CONTRACTOR: [redacted]	16. PHONE: [redacted]	17. E-MAIL: Global

CR NO.: 508A	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design

18. Formal Project Plan Required:

☐ Yes – prepare per contractor's procedures and attach ☒ No – completion of this form is adequate for planning

19. COST IMPACT: Total - $78,900 (FY13 - $72,000 **Rev A: FY14 - $6,900**)	**20. NEGOTIATED DELIVERY DATE:** ~~9/27/13~~ **Rev A: 2/28/14**

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:_____ Date: _____ CCB CHAIR: _____ Date: _____	**COTR for CRs with Cost Impact Only** COTR: _____ Date: _____

Closed by:_____ **Date:** _____

REQUIREMENTS/REFERENCES (cont.):

REV A: Incorporates SCIF-1 and removes requirement 5f (crane design). This revision also reduces the NTE of the SCIF from (b) (4) The work supported for FY-14 was for preparation and research that was incorporated into CR-520.

CR NO.: 508A	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

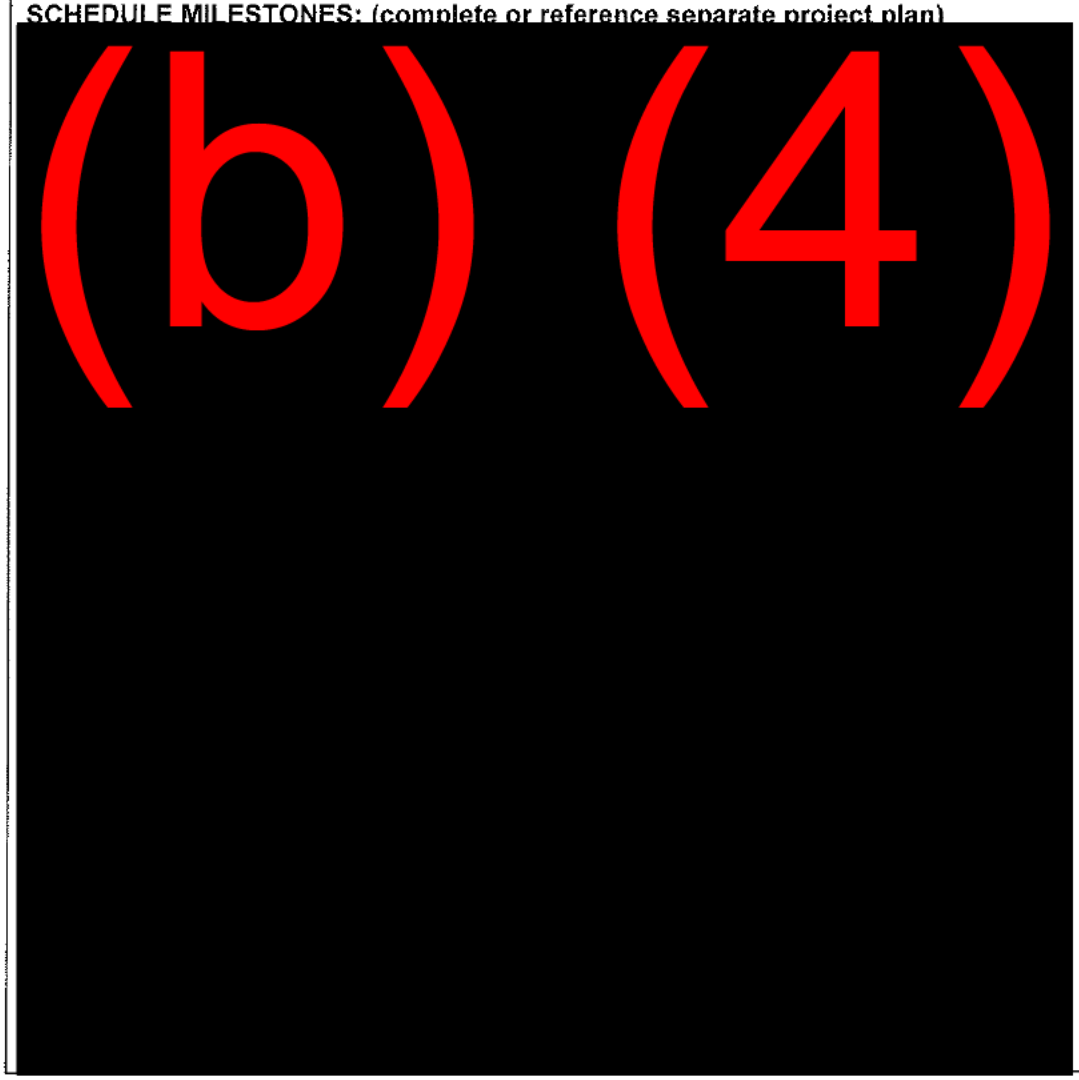
#	Deliverable Items Description	U/M	Qty	Method of Verification	Verified	Technical Contact
1.	Marshall 9" panel number V-R102DP-2C - ROV control racks or equivalent (10.4" Dual-Rack Mount 2.4 Megapixel Anti-Glare LCDs, NTSC/PAL Auto-Switch, with HD/SD-SDI, Component, Composite, S-Video, VGA, and DVI-I Inputs)	EA	22	Inspection		
2.	Latchways Mansafe Horizontal lifeline or equivalent	EA	2	Inspection		
3.	Body Solid Pro-Dual Leg Extension/Leg Curl machine or equivalent	EA	1	Inspection		
4.	Body Solid Leg Press / Hack Squat machine or equivalent	EA	1	Inspection		
5.	a) thru b) Engineering Summary	EA	1	Review		
	c) document vertical rates requirements	EA	1	Review		
	d) Consider modification to the Jib Crane design	EA	1	Review		
	e) Draft CR ready for Block 11 Approval	EA	1	Review		
	~~f) Initiate the crane design modification~~	~~EA~~	~~1~~	~~Review~~		

Rev A: deleted 5f requirement and move to CR-520.

CR NO.: 508A	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design

SCHEDULE MILESTONES: (complete or reference separate project plan)



CR NO.: 508A	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

CR NO.: 508A	DX CHANGE REQUEST

CR TITLE: Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

FY13

Design	Engineering and Project Support	Management	Technicians	Material
(b) (4)				

Rev A: FY14

Design	Engineering and Project Support	Management	Technicians	Material
(b) (4)				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date: _____	Date: _____

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date: _____	Date: _____

Reasons/Recommendations/Resolution Plan:

CR NO.: 508A	DX CHANGE REQUEST
CR TITLE: Procure Monitors, Crane Safety Lines, Gym Equipment, Jib Crane Design	
COTR for CRs with Cost Impact Only Signature :	Date: _____

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 998	03/17/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To: Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 998

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
January 15, 2015

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 998

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 998

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean
Cynthia Maclean 3/18/14
Contracting Officer Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 998 is to incorporate CR 2673, Build Carbon Dioxide Removal Assembly Standalone Trainer: The estimated cost i The estimated award The estimated incent (b) (4) The total value of this Delivery Order is $451,122. Work is to be completed by January 15, 2015. Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	451,122.00	451,122.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 451,122.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY
Authorized U.S. Government Representative Date

CR NO.: 2673	DX CHANGE REQUEST

CR TITLE: Build CDRA Standalone Trainer

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
(b) (4)	(b) (4)	(b) (4) nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 871056

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

To develop and construct a Medium/High Fidelity CDRA mockup. Rack trainer to be used to provide Crew/Flight Controller training as well as procedure development/verification, engineering assessments, and real-time operations support. This change will also consolidate the current Hi-Fi TCCS, and Med-Fi MCA with the proposed Med/Hi-Fi CDRA giving 360 degree access to all the crew access panel openings on the ARS rack.

7. RATIONALE:

The current CDRA mockup is inadequate to conduct any crew training, procedure development, Flight Controller training or engineering assessments. High fidelity CDRA is best showcased to conduct these events in a rack with other high-fidelity hardware. Putting the ARS Rack with this high-fidelity hardware on the floor, as opposed to in a module, gives the trainers and students better access to see and actuate hardware as required from all sides.

8. REQUIREMENTS AND REFERENCES: **(continue on Page 2)**

This project will be done in three(3) phases, estimation will be completed for each phase with a separate pricing for each phase. Estimation for all three phases will be completed and delivered at one time.

Phase 1 Design and manufacturing
Design the CDRA mockup and components using flight drawings and solid models(Boeing provided)
Manufacture and assemble the CDRA and its components
This will provide a CDRA table top trainer if no additional funds become available in FY 14
Purchase all materials
Duration approximately 20 weeks

Phase 2 RSR Rack conversion to an ARS Rack
Design and manufacture center posts
Mount Rack on Stand and manufacture interfaces
Remove all RSR components
Cut access holes in shell
Duration: Approximately 15 weeks

Phase 3 Outfitting, integration and delivery
Remove ARS components fro Node 3 ARS rack, replace with photo facades
Integrate ARS components in new ARS rack
Design and install Air system for ASVs to Sorbent bed
Hazard analysis, Mockup TRR, and ATP
Duration Approximately 15 weeks

Detailed requirements matrix is attached
Provide CDRA/ARS rack mockup per MDRD requirements.

Safety Review was conducted, and a TRR will be required.

Additionally a new directive was given to combine all three phases into a single estimate.

(b) (4)

9. NEED DATE: (support date in block 7 rationale): 9/30/2014 **Rev**	**10. CR SUBMISSION DATE:** **1/13/2014**
11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED Signature: Mcintyre, Allison L. (JSC-DX141)	WBS: 3.6.1 Date: 1/16/2014

12. NASA POC:	**13. PHONE:**	**14. E-MAIL:**
Foss, John W. (JSC-DX141)	34851	john.w.foss@nasa.gov
15. IMPLEMENTING CONTRACTOR: [redacted]	**16. PHONE:** [redacted]	**17. E-MAIL:** [redacted]

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning ☑ No – completion of this form is adequate for

19. COST IMPACT:	**20. NEGOTIATED DELIVERY DATE:**
$451,200; ($296,500 FY14/ $154,700 FY15)	1/15/2015

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF: Date: CCB CHAIR: Date:	**COTR for CRs with Cost Impact Only** COTR: Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

File Attachment

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

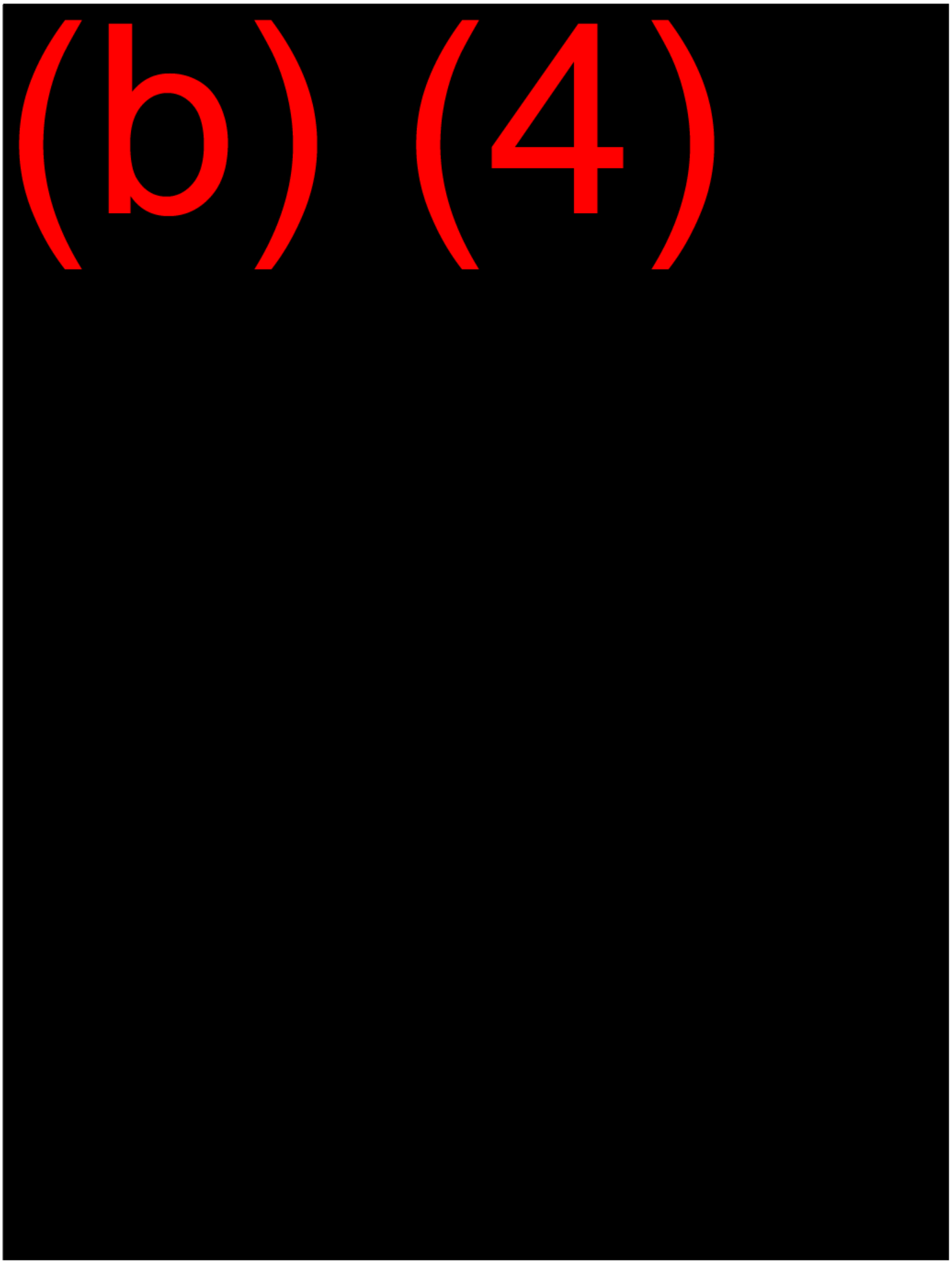
Requirements Verification Matrix will be delivered one week after project approval.

File Attachment

File Attachment

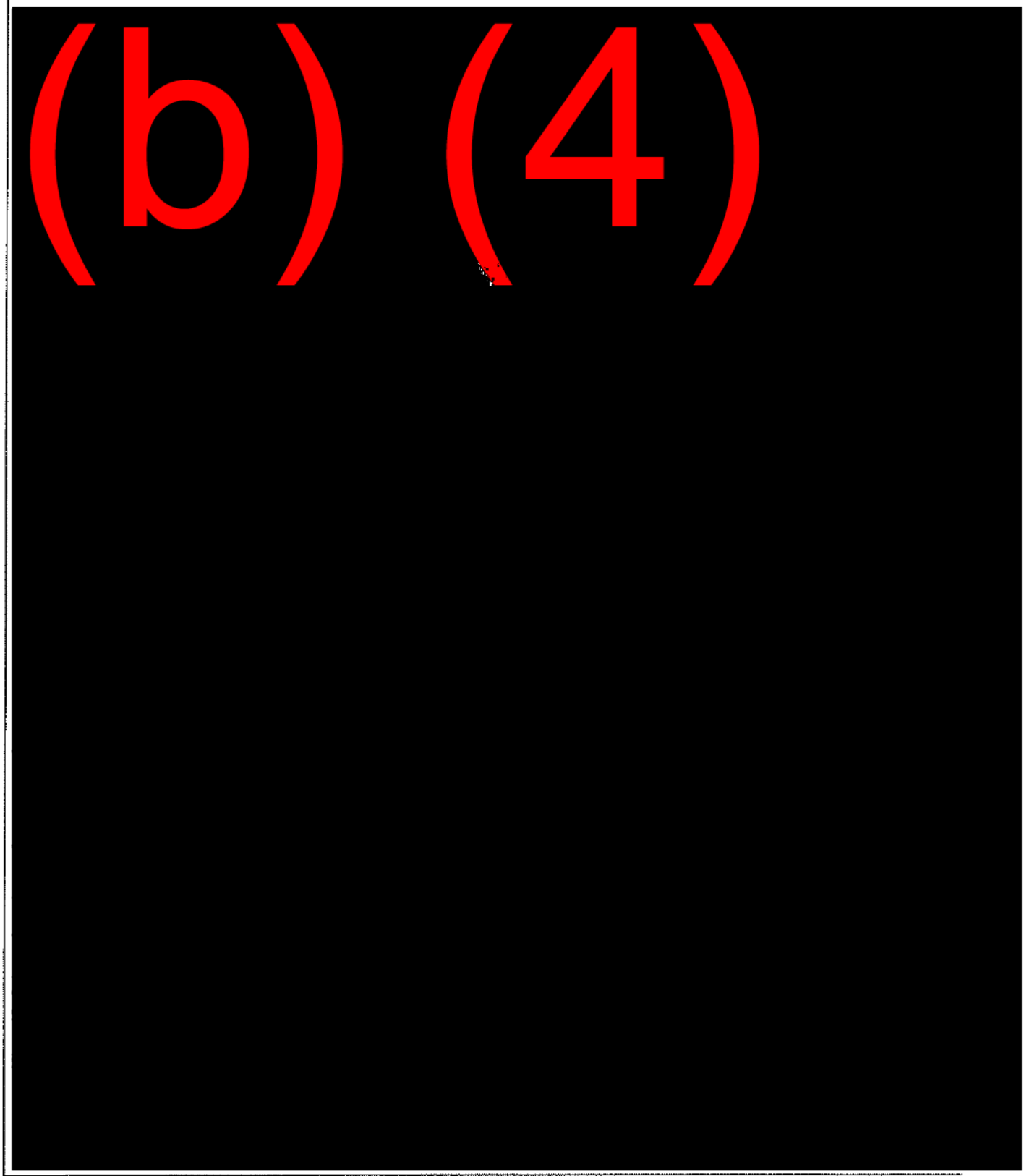
File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

Fiscal Year	Design	Engineering and Project Support	Management	Technicians	Material
FY14	(b) (4)				

Fiscal Year	Design	Engineering and Project Support	Management	Technicians	Material
FY15	(b) (4)				

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief: Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 999	05/06/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 999

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone: (b) (4) x Fax: (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 999

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 999

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 05/14/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 999 is to incorporate CR 2710, SVMF PAC Transition Phase 1: The estimated cost is (b) (4) The estimated award The estimated incent The total value of this Delivery Order is $142,707. Work is to be completed by September 26, 2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	142,707.00	142,707.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 142,707.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT.
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED.

BY _____ Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 999	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)					Page 2 of
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2710	DX CHANGE REQUEST

CR TITLE: SVMF PAC Transition Phase 1 - FY14

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Macgregor, Jill A. (JSC-DX141)	x30839	jill.a.macgregor@nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Complete Phase 1 of transition from PLC-5 (programmable logic controller) to the PAC (programmable automation controller).

7. RATIONALE:

The TS21 Crew Part-task Trainer (CPT) can only communicate with the PAC. TS21 development in the SVMF is scheduled to begin at the start of FY15. Transition from PLC to PAC is necessary at some point anyway due to PLC obsolescence.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See page 2

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	4/3/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Mcintyre, Allison L. (JSC-DX141) Date: 4/3/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Macgregor, Jill A. (JSC-DX141)	x30839	jill.a.macgregor@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
[redacted] (b) (4)	[redacted]	[redacted]@nasa.gov

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for planning

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
$142,800	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:

COTR for CRs with Cost Impact Only
COTR:

Date:

Date:

CCB CHAIR:

Date:

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

8.1 Conduct custom PLC to PAC transition training for up to 6 individuals.

8.2 Perform PAC initial programming and interface to PLC for dual ops (PLC for legacy PTT ops and PAC for TS21 development/testing):

8.2.a. Convert the existing PLC-5 (PWR) processor code to Logix Code (RS 5000)

8.2.b. Tag FT (factory talk) databases with the Logix SQL from 32 Bit Words addressing to 64 Bit Words addressing

8.2.c. Migrate the PAC Logix of the PTT interface to the 32 bit Logix addressing

8.2.d. Transfer SVMF Remote I/O network from PLC-5 to PAC

8.3 Develop TS21 PLCIO Interface Control Document (ICD).

8.4 Support (as necessary) FDOC network drops for TS21, including two fiber connections (for TS21 and Russian laptop), media converter installation, Russian laptop network drop, and B9 Firewall handover from FDOC to NSOC.

8.5 If resources allow, modify Comm Supervisor, Video PC, and PCS Server interfaces to PAC.

8.6 Develop CR project plan for Phase 2 to include testing and integration of TS21 in 1st Qtr FY15 to reach Ready for Training state.

8.7 Per SR-624 conducted 4/8/14, a TRR shall be held to ensure PAC operational readiness

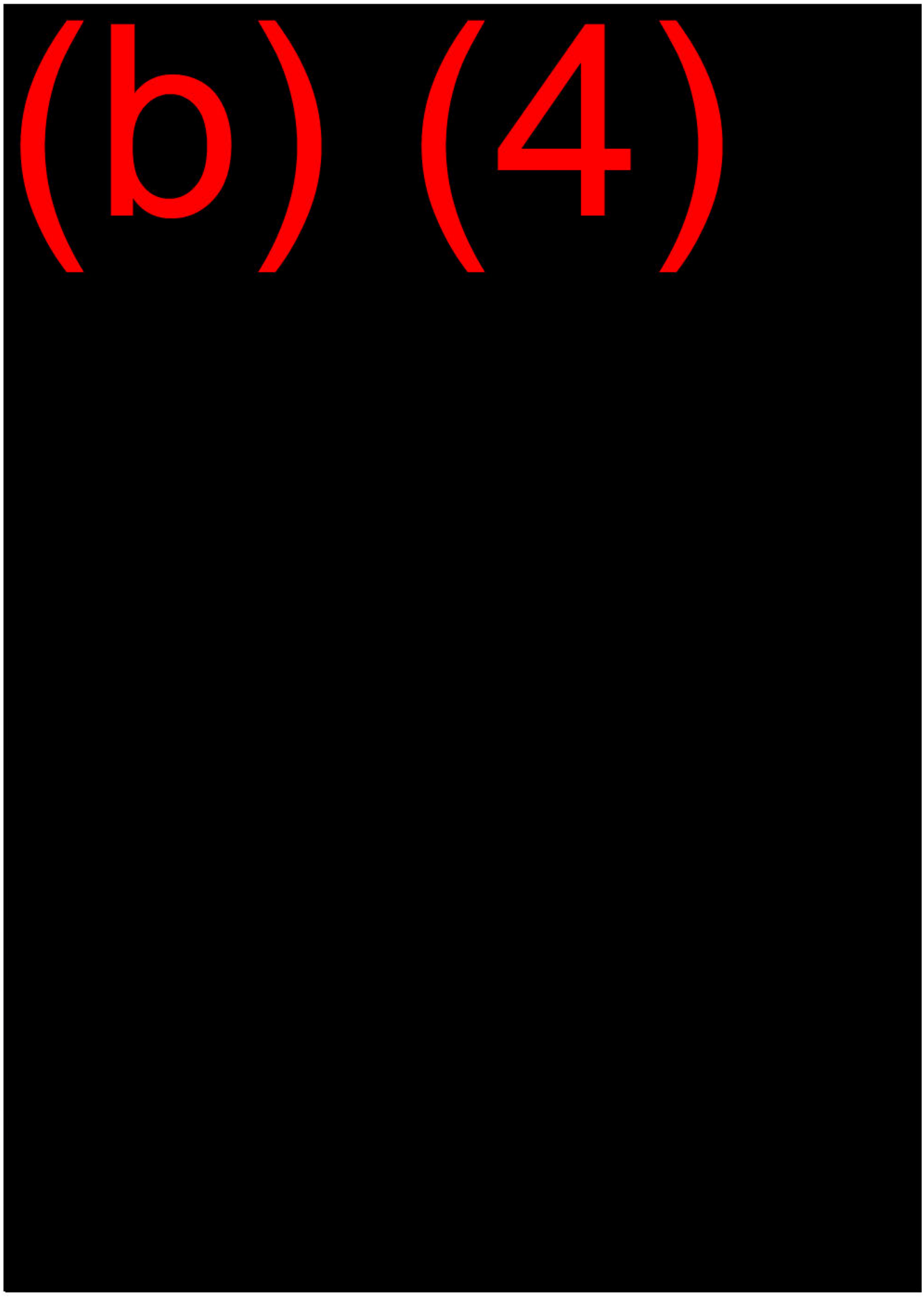
File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Action	Expected Results	Observed results	Rqmt #
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.		
4	Inspect Training course attendance record and course materials	Course was conducted, and TMS record shows attendees		8.1
5	Demonstrate PAC control of mockup controls and displays using Factory talk malfunction screens for C&W and Power buses	Caution warning fire button pressed in Lab lights fire light, and shows up on malf screen. DDCU malfunctions turn off appropriate lights in the mockups		8.2
6	Inspect revised SVMF PTT ICD	Both PAC and PLC ICD information is listed		8.3
7	Have IT log into firewall, and ping SSTF firewall.	Firewall is under SVMF control and fiber connection to SSTF is working. (dependent on FDOC)		8.4
8	Inspect new RST laptop cable in SM	New cable provide RST laptop separate network (dependent on FDOC)		8.4
9	Verify Comm supervisor communicates with PAC in normal Ops check			8.5
10	Demonstrate PCS server communicates with PAC in normal Ops check			8.5
11	Demonstrate Video PC communicates with PAC in normal Ops check			8.5
12	Inspect CR for FY15 TS21 support	CR is filled out with cost and schedule in a ready to submit format		8.6
13	Inspect TRR record	TRR was conducted (this step to be performed after TRR, unlike steps above)		8.7

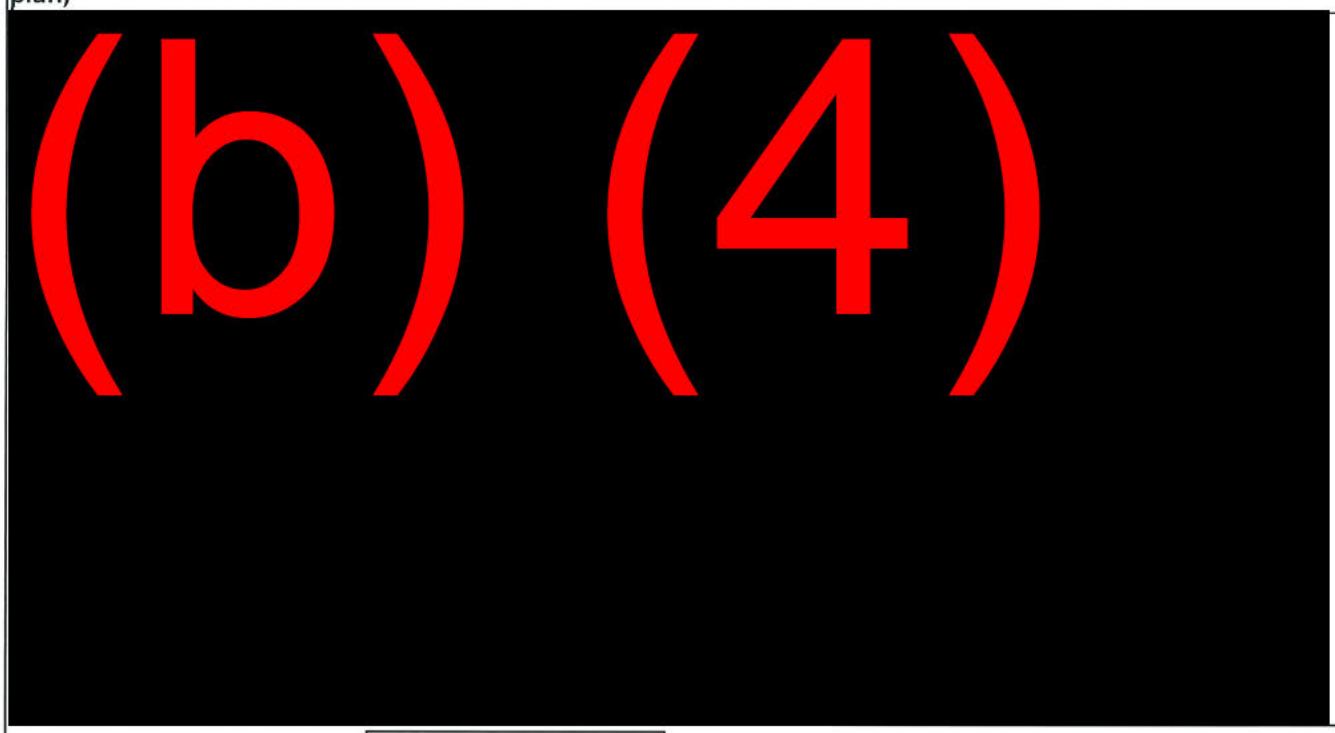
File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)


(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)



File Attachment

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

[redacted]

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material
[redacted]				

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification: Date:	NASA POC Acceptance: Date:
Deliverable Does Not Meet Requirement ☐	
Office/Branch Chief : Date:	Contractor Manager Concurrence: Date:
Reasons/Recommendations/Resolution Plan:	
COTR for CRs with Cost Impact Only Signature:	Date:
Additional Attachments: File Attachment	

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, TX 77058

ORDER FOR SUPPLIES OR SERVICES

1. Order No.	2. Date of Order	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER NO.
NNJ10HD35C DO 999A	08/19/14	Certified for National Defense under DPAS (15 CFR 700) DO C9

3. Issuing Office:
NASA Johnson Space Center, 2101 NASA Parkway
Houston, TX 77058-3696
Org./Buyer: BR/ Irene Oakley Johnson
Tel. No.: (281) 792-7927 Fax:
E-mail: irene.l.oakleyjohnson@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058-3696
Mark For: Accountable Property
Order No.: NNJ10HD35C DO 999A

5. Contractor:
Raytheon Technical Services Company
Attn: Lee Anne Ward
17225 El Camino Real
Suite 410
Houston, TX 77058

Phone (b) (4) x Fax (b) (4)
TIN: Cage Code: 1VNE3

6. Deliver On or Before:
September 26, 2014

F.O.B. Point: Destination
Discount Terms: Net 30 days.

7. Billing Address:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Order No.: NNJ10HD35C DO 999A

8. Type of Order:

☐ PURCHASE: Please furnish the following in accordance with the conditions specified on this order. Reference:

☒ DELIVERY: Except for the Terms and Conditions of Purchase Order listed on the following page, this delivery order is subject to instructions contained on this form and is issued subject to the terms and conditions of contract number: NNJ10HD35C DO 999A

9. Written acceptance of this order by contractor
☐ is, ☒ is not required.
Sign below if required and return to contracting officer.
Name: (Person authorized to sign)
Signature: Date:

10. Name: Cynthia Maclean

/s/ CYNTHIA MACLEAN — Contracting Officer — 08/19/14 — Date

11. Schedule

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
1	The purpose of this Delivery Order 999A is to incorporate CR 2710A revisions, SVMF PAC Transition Phase 1: The estimated cost is (b) (4) The estimated award The estimated incenti The total value of this Delivery Order is $22,179. Work is to be completed by September 26, 2014 Funding for this delivery order is at the contract level. The contractor is not authorized to exceed the estimated cost of this delivery order without written authorization from the Government.	1	JOB	22,179.00	22,179.00	

12. For JSC Internal Use Only:
Requisition No.:
Reissue To:
☒ COMP. ☐ PART. PPC

13. Total 22,179.00

14. Quantities in "Quantity Accepted" Column Have Been:
☐ INSPECTED ☐ ACCEPTED ☐ RECEIVED
TO CONFORM TO THE CONTRACT, ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED

BY
Authorized U.S. Government Representative — Date

Order No. NNJ10HD35C DO 999A	ORDER FOR SUPPLIES OR SERVICES (Continuation Sheet)	Page 2 of

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

CR NO.: 2710A	DX CHANGE REQUEST

CR TITLE: SVMF PAC Transition Phase 1 - FY14

1. REQUESTOR:	2. PHONE:	3. E-MAIL:
Macgregor, Jill A. (JSC-DX141)	x30839	jill.a.macgregor@nasa.gov

4. PROGRAM/PROJECT:
☑ STATION ☐ MPCV
☐ OTHER ☑ FUND CODE: 609524

5. FUNCTIONAL AREA:
☑ SVMF ☐ NBL MOCKUP ☐ NBL OPERATIONS
☐ NBL SYSTEMS ☐ NBL FACILITIES ☐ OTHER

6. DESCRIPTION OF CHANGE:

Complete Phase 1 of transition from PLC-5 (programmable logic controller) to the PAC (programmable automation controller).

Rev A incorporates SCIF-01 impacts of (b) (4) and deletes Firewall handover support and media converter installation from requirement 8.4 due to Risk 4 occurrence

7. RATIONALE:

The TS21 Crew Part-task Trainer (CPT) can only communicate with the PAC. TS21 development in the SVMF is scheduled to begin at the start of FY15. Transition from PLC to PAC is necessary at some point anyway due to PLC obsolescence.

8. REQUIREMENTS AND REFERENCES: (continue on Page 2)

See page 2

File Attachment

9. NEED DATE: (support date in block 7 rationale):	10. CR SUBMISSION DATE:
9/26/2014	4/3/2014
Rev	

11. NASA REVIEWER/SPONSOR: ☑ ACCEPTED ☐ REJECTED WBS: 3.6.1
Signature: Mcintyre, Allison L. (JSC-DX141) Date: 4/3/2014

12. NASA POC:	13. PHONE:	14. E-MAIL:
Macgregor, Jill A. (JSC-DX141)	x30839	jill.a.macgregor@nasa.gov

15. IMPLEMENTING CONTRACTOR:	16. PHONE:	17. E-MAIL:
(b) (4)		

18. FORMAL PROJECT PLAN REQUIRED:
☐ Yes – prepare per contractor's procedures and attach planning
☑ No – completion of this form is adequate for

19. COST IMPACT:	20. NEGOTIATED DELIVERY DATE:
~~$142,800~~ Rev A $164,900	9/26/2014

AUTHORIZATION TO PROCEED

OFFICE/BRANCH CHIEF:
Mcintyre, Allison L. (JSC-DX141)

COTR for CRs with Cost Impact Only
COTR:
Mcdaniel, Randall S. (JSC-DX111)
Date: 5/7/2014

Date: 5/7/2014

CCB CHAIR:
Rainwater, Susan B. (JSC-DX111)
Date: 5/7/2014

Closed by: **Date:**

REQUIREMENTS/REFERENCES (cont.):

8.1 Conduct custom PLC to PAC transition training for up to 6 individuals.

8.2 Perform PAC initial programming and interface to PLC for dual ops (PLC for legacy PTT ops and PAC for TS21 development/testing):

8.2.a. Convert the existing PLC-5 (PWR) processor code to Logix Code (RS 5000)

8.2.b. Tag FT (factory talk) databases with the Logix SQL from 32 Bit Words addressing to 64 Bit Words addressing

8.2.c. Migrate the PAC Logix of the PTT interface to the 32 bit Logix addressing

8.2.d. Transfer SVMF Remote I/O network from PLC-5 to PAC

8.3 Develop TS21 PLCIO Interface Control Document (ICD).

Rev A 8.4 Support (as necessary) FDOC network drops for TS21, including ~~two~~ **three** fiber connections (for TS21 and Russian laptop), ~~media converter installation,~~ Russian laptop network drop~~, and B9 Firewall handover from FDOC to NSOC.~~**, and six PCS ethernet drops.**

8.5 If resources allow, modify Comm Supervisor, Video PC, and PCS Server interfaces to PAC.

8.6 Develop CR project plan for Phase 2 to include testing and integration of TS21 in 1st Qtr FY15 to reach Ready for Training state.

8.7 Per SR-624 conducted 4/8/14, a TRR shall be held to ensure PAC operational readiness

Rev A 8.8 For each mockup UOP with software controlled power, create a GUI button to control power feed to that UOP

File Attachment

ACCEPTANCE CRITERIA/DELIVERABLES DEFINITION: (complete or reference separate project plan)

Step	Action	Expected Results	Observed results	Rqmt #
1	Verify there are no exposed sharp edges, all machined surfaces are deburred, corners and edges have safe radii or are filed smooth, and sharp exposed fastener ends are addressed.	Finished product is safe for contact.		
2	Verify there are no unidentified pinch points.	Finished product is safe for use.		
3	Verify all safety items such as slips, trips, fall hazards or head bumps have been labeled properly.	Label requirement satisfied.		
4	Inspect Training course attendance record and course materials	Course was conducted, and TMS record shows attendees		8.1
5	Demonstrate PAC control of mockup controls and displays using Factory talk malfunction screens for C&W and Power buses	Caution warning fire button pressed in Lab lights fire light, and shows up on malf screen. DDCU malfunctions turn off appropriate lights in the mockups		8.2
6	Inspect revised SVMF PTT ICD	Both PAC and PLC ICD information is listed		8.3
7	Rev A ~~Have IT log into firewall, and ping SSTF firewall.~~ Inspect the three fiber lines in the computer room PTT cabinet	Rev A ~~Firewall is under SVMF control and fiber connection to SSTF is working. (dependent on FDOC)~~ Three fiber lines are run and ready for TS21 to activate in the fall		8.4
8	Inspect ~~new RST laptop cable in SM~~ Rev A Ethernet cable drops in the following locations: SM (2), Airlock, Lab, Node 2, Node 3, Suit room A, Suit room B	Rev A New cables provide RST & PCS laptop separate networks (dependent on FDOC)		8.4
9	Verify Comm supervisor communicates with PAC in normal Ops check			8.5
10	Demonstrate PCS server communicates with PAC in normal Ops check			8.5
11	Demonstrate Video PC communicates with PAC in normal Ops check			8.5
12	Inspect CR for FY15 TS21 support	CR is filled out with cost and schedule in a ready to submit format		8.6
13	Inspect TRR record	TRR was conducted (this step to be performed after TRR, unlike steps above)		8.7
14	Rev A Demonstrate UOP malfunction capability with a GUI button to disable UOPs	Each UOP listed powers off when selected by the GUI, and on when deselected		8.8

File Attachment

SCHEDULE MILESTONES: (complete or reference separate project plan)

Rev A schedule below:

(b) (4)

File Attachment

BASIS OF ESTIMATE (include and identify significant assumptions): (complete or reference separate project plan)

(b) (4)

RISK ASSESSMENT (include risk associated with facility cost for maintenance in out years): (complete or reference separate project plan)

(b) (4)

File Attachment

MAJOR COST AND SCHEDULE DRIVERS: (complete or reference separate project plan)

File Attachment

Design	Engineering and Program Support	Management	Technicians	Material

(b) (4)

ACCEPTANCE

Deliverable: ☐ Met Requirement ☐ Exceeded Requirement

If Deliverable Exceeded Requirements Provide Explanation:

Implementing Contractor Verification:	NASA POC Acceptance:
Date:	Date:

Deliverable Does Not Meet Requirement ☐

Office/Branch Chief :	Contractor Manager Concurrence:
Date:	Date:

Reasons/Recommendations/Resolution Plan:

COTR for CRs with Cost Impact Only Signature:	Date:

Additional Attachments:

File Attachment