

ORDER FOR SUPPLIES OR SERVICES

1. Order No.

22-09 Rev 1

2. Date Of Order

See Block 10

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER

Certified for National Defense under DPAS (15 CFR 700) DO-C9

3. Issuing Office

NASA Johnson Space Center
 Attn: BJ4\Learn Comeaux
 Houston, TX 77058-3696

Tel. No.: (281) 483-6525

E-Mail learn.j.comeaux@nasa.gov

4. Ship To:

Transportation Officer, Building 421
 NASA Johnson Space Center
 Houston, TX 77058
 Mark For: Accountable Property

5. Contractor

Science Application International Corporation
 Attn: Will Blumentritt
 2450 NASA Parkway
 Houston, TX 77058

Phone: (281) 335-2006

CAGE CODE:

6. Deliver On Or Before:

April 30, 2009

7. BILLING ADDRESS:

NASA Johnson Space Center
 Attn: LF231/Accounts Payable Group
 Houston, TX 77058-3696

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor is, is not required. Sign below if required and return to contracting officer.

Name:

Signature:

Date:

10. Name: Alice Jean Pursell

Signature:

Alice Jean Pursell
 CONTRACTING OFFICER

Date: 12/23/08

11. SCHEDULE

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

2. For Jsc Internal Use Only:

Requisition No.:

COMP.

PART.

PPC:

Reissue To:

13. Total

\$150,078

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

Task Order 22-09 Rev 1

1.0 Title of Effort: SSP Risk Management

2.0 Task Description:

Support the development, maintenance, and execution of the SSP Risk Management processes. The Space Shuttle SMA Office Point of Contact for this subtask is the Shuttle SMA Risk Manager.

2.1 SOW Reference: Section C, Subsections 5.0

2.2 Requirements

- a. Maintain the SSP Risk Management (RM) Plan
- b. Provide facilitation to SSP Personnel for the Top Risk Reporting and Board Risk Assessment processes
- c. Facilitate the planning and execution of the SSP RM Working Group (WG) Meetings
- d. Plan, implement, and facilitate the Space Shuttle Safety Risk Reporting System initiatives
- e. Support SSP directed activities related to JSC RM WG and integration of NASA RM processes.
- f. Coordinate SSP RM activity with Center, ISS, and other NASA programs to gain consistency across NASA
- g. Manage and monitor the Shuttle Safety Hotline
- h. Coordinate updates for risk management information on the SSPWeb intranet site
- i. Provide risk management training to SSP support personnel
- j. Maintain the risk tracking database SIRMA (Shuttle Integrated Risk Management Application)
- k. Provide account administration and user assistance for SIRMA
- l. Provide assistance for the SSP S&MA Panel Risk Reviews
- m. Maintain SSP Risk Management Webpage

3.0 Deliverables

Top Risk Reports
SSP Risk Management Plan Updates as required
SIRMA User Guide
SIRMA Administrator Guide
SSP Risk Management Webpage

4.0 Period of Performance: October 1, 2008 – April 30, 2009

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3. Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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11. SCHEDULE

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2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$150,038
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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: _____

Task Order 22-09

1.0 Title of Effort: SSP Risk Management

2.0 Task Description:

Support the development, maintenance, and execution of the SSP Risk Management processes. The Space Shuttle SMA Office Point of Contact for this subtask is the Shuttle SMA Risk Manager.

2.1 SOW Reference: Section C, Subsections 5.0

2.2 Requirements

- a. Develop/maintain the SSP Risk Management (RM) Plan
- b. Provide facilitation to SSP Personnel for the Top Risk Reporting and Board Risk Assessment processes
- c. Facilitate the planning and execution of the SSP RM Working Group (WG) Meetings
- d. Plan, implement, and facilitate the Space Shuttle Safety Risk Reporting System initiatives
- e. Support SSP directed activities related to JSC RM WG and integration of NASA RM processes.
- f. Coordinate SSP RM activity with Center, ISS, and other NASA programs to gain consistency across NASA

3.0 Deliverables

Top Risk Reports
SSP Risk Management Plan Updates as required

4.0 Period of Performance: October 1, 2008 – April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

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11. SCHEDULE

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2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align:center">\$162,494</p>
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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 _____

Task Order 21-09 Rev. 1 Payloads

1.0 TITLE OF EFFORT: NT Payloads Support (WBS 1.6.3)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&R, SQA, QA & QE activities related to the following payloads: ISS Medical Projects (ISSMP) and Human Research Facility (HRF); Alpha Magnetic Spectrometer (AMS) -02; and ISS freezers and cold stowage hardware.

3.0 STATEMENT OF WORK REFERENCE: Section 6.0 - JSC Project Support

4.0 ISS Medical Projects (ISSMP) and Human Research Facility (HRF) (WBS 1.6.3)

Provide S&R, SQA, QA & QE functions and support to the Metabolic Laboratory Operations, New Experiment Engineering, Launch Package Test and Integration, HRF facility hardware sustaining engineering, and ISS stowage lockers.

5.0 Alpha Magnetic Spectrometer (AMS) - 02 (WBS 1.6.3)

Provide limited S&R, SQA, QA & QE support.

- 5.1 Provide oversight of quality efforts for the components built on-site and certification assurance for the components built on-site at JSC and off-site at JSC contractors to ensure items meet requirements.
- 5.2 Participate in acceptance/certification reviews to assure verifications for all items that can be closed.
- 5.3 Track open items on a certification tracking log to ensure items are closed prior to shipment for flight and CoFR.

6.0 ISS Freezer and Cold Stowage (WBS 1.6.3)

Provide limited S&R, SQA, QA & QE support for ISS freezers and cold storage items. Tasks include support to design reviews and review of ADP's and certification packages.

7.0 DELIVERABLES

Requirements Verifications / Certification Status
SQA, QA & QE Assessments and Presentations

8.0 Period of Performance: October 01, 2008 through April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p> 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align:center">\$2,612,196</p>
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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: _____

Task Order 18-09 Rev. 1

1. Title of Effort: Crew Exploration Vehicle (CEV) Support

2. Task Description:

The contractor shall provide engineering and analytical expertise to the CEV Project.

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

2.2.1 Management, Administrative, and Program Assurance

- a. Assist in management of cost, schedule, product delivery, and tasks in areas of CEV requiring safety & mission assurance consideration.
- b. Support coordination of CEV SR&QA activities with the Cx SR&QA Office as appropriate.
- c. Provide administrative support to the CEV SR&QA Office.
- d. Support coordination of CEV SR&QA participation in the CEV change process.
- e. Support SR&QA Panel activities including coordination of agendas and action tracking.

2.2.2 System Safety

Provide engineering expertise in the areas of systems safety, through the subsystem level. Evaluate systems engineering solutions to technical issues, provide inputs to hazard analyses, and evaluate and assess risk associated with the Project's approach to designing and operating the CEV architecture.

- a. Identify risks from CEV safety data package/hazard analysis requiring review, assessment, or further analysis by Project technical forums.
- b. Evaluate SR&QA deliverables for compliance with Program/Project requirements.
- c. Identify impacts to program and element hazards or potential new hazards resulting from project activities.
- d. Provide recommendations to Project Boards/Panels regarding safety implications of hardware/software design and operations.
- e. Develop SR&QA requirements for the technical performance of the CEV system with respect to safety and mission assurance.
- f. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- g. Provide coordination and resolution of changes or issues dealing with Program/Project SR&QA requirements.
- h. Evaluate risks to project success posed by pending Program/Project decisions during DDT&E and report results to the CEV SR&QA Manager.

2.2.2.1 CEV Boards, Panels, Working Groups

- a. Provide technical support to the CEV SR&QA Panel.
- b. Provide technical support to the Cx Safety Engineering Review Panel (CSERP).
- c. Perform/provide qualitative and/or quantitative risk assessments of the baselining of, or changes to, program/project requirements and element interface requirements or specifications.
- d. Identify impacts to documented Hazard and CIL risk mitigation controls posed by changes, waivers, issues, or decisions pending at Program/Project boards, panels, and working groups.
- e. Evaluate qualitative and/or quantitative risk assessments provided by CEV elements/project offices for items that represent an increase in risk to CEV safety and mission success.

2.2.2.2 Hardware Design Evaluation & Review

- a. Evaluate deliverables and assess overall technical risk as part of major Program and project design and flight readiness review milestones. Verify compliance to Program/Project SR&QA technical and programmatic requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.

- b. Assure that parts selection and derating criteria are compliant with Program/Project requirements.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls. Approve CEV Hazard Reports.
- d. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.

2.2.2.3 CEV Operations Activity

- a. Perform quantitative operational risk assessments for operations associated with ISS and lunar sortie missions.
- b. Work with the operations managers to identify, track and resolve safety issues and concerns associated with CEV flight hardware/software and operations.
- c. Perform/provide qualitative and/or quantitative risk assessments in support of operations boards and panels. Change requests (CR) evaluations are provided to the SR&QA Panel Representatives for each respective board.
- d. Assess hazards associated with joint operations.

2.2.2.4 Problem Assessment

- a. Assess system problem reports to determine risk to CEV safety and mission success.
- b. Assess problems involving the CEV elements to determine impact to flight and provide SR&QA position to program acceptance rationale.
- c. Assure that problems identified by the Program/Project through program and industry problem databases are assessed for CEV impacts and identified to the CEV SR&QA Manager.
- d. Participate in problem resolution teams and approve problem dispositions.

2.2.2.5 Verification Assessment

- a. Assure that verification / validation plans are compliant with Program/Project requirements.
- b. Assure that hazard controls are verified as recorded in the approved Hazard documentation.

2.2.3 Reliability, Maintainability, and Supportability

Provide engineering expertise in the areas of reliability, maintainability and supportability, through the subsystem level, in representing CEV SR&QA at technical forums. In this regard, JSC evaluates systems engineering solutions to technical issues, provides inputs to hazard analyses, Failure Modes and Effects Analysis (FMEA)/Critical Items List (CIL), and evaluates and assesses risk associated with the Project's approach to designing and operating the CEV architecture.

- a. Identify risks from CEV FMEA/CIL effort requiring review, assessment, or further analysis by Project technical forums.
- b. Evaluate SR&QA deliverables for compliance with Program/Project requirements.
- c. Identify impacts to program and element FMEA/CILs or potential failure modes resulting from project activities.
- d. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- e. Provide recommendations to Project Boards/Panels regarding reliability implications of hardware design and operations.
- f. Assist in development of SR&QA requirements for the technical performance of the CEV system with respect to safety and mission assurance.
- g. Provide coordination and resolution of changes or issues dealing with Program/Project SR&QA requirements.
- h. Evaluate risks to project success posed by pending Program/Project decisions during DDT&E and report results to the CEV SR&QA Manager.

2.2.3.1 CEV Boards, Panels, and Working Groups

- a. Provide technical support to the CEV SR&QA Panel.
- b. Provide technical support to the Cx Safety Engineering Review Panel (CSERP).
- c. Perform/provide qualitative and/or quantitative risk assessments of the baselining of, or changes to, program/project requirements and element interface requirements or specifications.

- d. Identify impacts to documented Hazard and CIL risk mitigation controls posed by changes, waivers, issues, or decisions pending at Program/Project boards, panels, and working groups.
- e. Evaluate qualitative and/or quantitative risk assessments provided by CEV elements/project offices for items that represent an increase in risk to CEV safety and mission success.

2.2.3.2 Hardware Design, Evaluation and Review

- a. Evaluate deliverables and assess overall technical risk as part of major Program and project design and flight readiness review milestones. Verify compliance to Program/Project SR&QA technical and programmatic requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.
- b. Assure that parts selection and derating criteria are compliant with Program/Project requirements.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls. Approve CEV Hazard Reports.
- d. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.

2.2.3.3 Human Rating

- a. Evaluate system compliance to NASA human rating and crew survival requirements. Identify issues and recommend solutions.
- b. Participate in human rating certification activities and provide recommendations to the SR&QA Manager regarding readiness of the system for certification.

2.2.3.4 Problem Assessment

- a. Assess system problem reports to determine risk to CEV safety and mission success.
- b. Assess problems involving the CEV elements to determine impact to flight and provide SR&QA position to program acceptance rationale.
- c. Assure that problems identified by the Program/Project through program and industry problem databases are assessed for CEV impacts and identified to the CEV SR&QA Manager.
- d. Participate in problem resolution teams and approve problem dispositions.

2.2.3.5 Verification Assessment

- a. Assure that verification / validation plans are compliant with Program/Project requirements.
- b. Assure that hazard controls are verified as recorded in the approved Hazard documentation.

2.2.3.6 Analysis

- a. Work as part of the Probabilistic Risk Assessment (PRA) team to develop assigned portions of the CEV PRA to be integrated into the system- and architecture-level models.
- b. Interface with the appropriate project and prime contractor work force to ensure the collection of failure and operation related data for relevant failure modes and corresponding subsystem success criteria.
- c. Provide system modeling and data analysis expertise to the development of the model and reduction and application of probability data.
- d. Oversee and review all PRA system modeling and analysis performed by the prime contractor.

2.2.4 Software Safety & Assurance

2.2.4.1 Software Design Evaluation & Review

- a. Evaluate software deliverables and assess overall technical risk as part of major Program and element design and flight readiness review milestones. Verify compliance to Program/Project SR&QA technical and programmatic requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.
- b. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.
- c. Identify system certification requirements, evaluate qualification/certification analysis, test plans and procedures and/or test results, and approve software certification.

2.2.4.2 Software Problem Assessment

- a. Assess software problem reports to determine risk to CEV safety and mission success.
- b. Assess software problems involving the CEV elements to determine impact to flight and provide SR&QA position to program acceptance rationale.
- c. Participate in software problem resolution teams and approve problem dispositions.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

ORDER FOR SUPPLIES OR SERVICES

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Authorized U.S. Government Representative _____ Date _____

Task Order 18-09

1. Title of Effort: Crew Exploration Vehicle (CEV) Support

2. Task Description:

The contractor shall provide engineering and analytical expertise to the CEV Project.

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

2.2.1 Management, Administrative, and Program Assurance

- a. Assist in management of cost, schedule, product delivery, and tasks in areas of CEV requiring safety & mission assurance consideration.
- b. Support coordination of CEV SR&QA activities with the Cx SR&QA Office as appropriate.
- c. Provide administrative support to the CEV SR&QA Office.
- d. Support coordination of CEV SR&QA participation in the CEV change process.
- e. Support SR&QA Panel activities including coordination of agendas and action tracking.

2.2.2 System Safety

Provide engineering expertise in the areas of systems safety, through the subsystem level. Evaluate systems engineering solutions to technical issues, provide inputs to hazard analyses, and evaluate and assess risk associated with the Project's approach to designing and operating the CEV architecture.

- a. Identify risks from CEV safety data package/hazard analysis requiring review, assessment, or further analysis by Project technical forums.
- b. Evaluate SR&QA deliverables for compliance with Program/Project requirements.
- c. Identify impacts to program and element hazards or potential new hazards resulting from project activities.
- d. Provide recommendations to Project Boards/Panels regarding safety implications of hardware/software design and operations.
- e. Develop SR&QA requirements for the technical performance of the CEV system with respect to safety and mission assurance.
- f. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- g. Provide coordination and resolution of changes or issues dealing with Program/Project SR&QA requirements.
- h. Evaluate risks to project success posed by pending Program/Project decisions during DDT&E and report results to the CEV SR&QA Manager.

2.2.2.1 CEV Boards, Panels, Working Groups

- a. Provide technical support to the CEV SR&QA Panel.
- b. Provide technical support to the Cx Safety Engineering Review Panel (CSERP).
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- e. Evaluate qualitative and/or quantitative risk assessments provided by CEV elements/project offices for items that represent an increase in risk to CEV safety and mission success.

2.2.2.2 Hardware Design Evaluation & Review

- a. Evaluate deliverables and assess overall technical risk as part of major Program and project design and flight readiness review milestones. Verify compliance to Program/Project SR&QA technical and programmatic requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.
- b. Assure that parts selection and derating criteria are compliant with Program/Project requirements.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls. Approve CEV Hazard Reports.
- d. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.

2.2.2.3 CEV Operations Activity

- a. Perform quantitative operational risk assessments for operations associated with ISS and lunar sortie missions.
- b. Work with the operations managers to identify, track and resolve safety issues and concerns associated with CEV flight hardware/software and operations.
- c. Perform/provide qualitative and/or quantitative risk assessments in support of operations boards and panels. Change requests (CR) evaluations are provided to the SR&QA Panel Representatives for each respective board.
- d. Assess hazards associated with joint operations.

2.2.2.4 Problem Assessment

- a. Assess system problem reports to determine risk to CEV safety and mission success.
- b. Assess problems involving the CEV elements to determine impact to flight and provide SR&QA position to program acceptance rationale.
- c. Assure that problems identified by the Program/Project through program and industry problem databases are assessed for CEV impacts and identified to the CEV SR&QA Manager.
- d. Participate in problem resolution teams and approve problem dispositions.

2.2.2.5 Verification Assessment

- a. Assure that verification / validation plans are compliant with Program/Project requirements.
- b. Assure that hazard controls are verified as recorded in the approved Hazard documentation.

2.2.3 Reliability, Maintainability, and Supportability

Provide engineering expertise in the areas of reliability, maintainability and supportability, through the subsystem level, in representing CEV SR&QA at technical forums. In this regard, JSC evaluates systems engineering solutions to technical issues, provides inputs to hazard analyses, Failure Modes and Effects Analysis (FMEA)/Critical Items List (CIL), and evaluates and assesses risk associated with the Project's approach to designing and operating the CEV architecture.

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- c. Identify impacts to program and element FMEA/CILs or potential failure modes resulting from project activities.
- d. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- e. Provide recommendations to Project Boards/Panels regarding reliability implications of hardware design and operations.
- f. Assist in development of SR&QA requirements for the technical performance of the CEV system with respect to safety and mission assurance.
- g. Provide coordination and resolution of changes or issues dealing with Program/Project SR&QA requirements

- h. Evaluate risks to project success posed by pending Program/Project decisions during DDT&E and report results to the CEV SR&QA Manager

2.2.3.1 CEV Boards, Panels, and Working Groups

- a. Provide technical support to the CEV SR&QA Panel.
- b. Provide technical support to the Cx Safety Engineering Review Panel (CSERP).
- c. Perform/provide qualitative and/or quantitative risk assessments of the baselining of, or changes to, program/project requirements and element interface requirements or specifications.
- d. Identify impacts to documented Hazard and CIL risk mitigation controls posed by changes, waivers, issues, or decisions pending at Program/Project boards, panels, and working groups.
- e. Evaluate qualitative and/or quantitative risk assessments provided by CEV elements/project offices for items that represent an increase in risk to CEV safety and mission success.

2.2.3.2 Hardware Design, Evaluation and Review

- a. Evaluate deliverables and assess overall technical risk as part of major Program and project design and flight readiness review milestones. Verify compliance to Program/Project SR&QA technical and programmatic requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.
- b. Assure that parts selection and derating criteria are compliant with Program/Project requirements.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls. Approve CEV Hazard Reports.
- d. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.

2.2.3.3 Human Rating

- a. Evaluate system compliance to NASA human rating and crew survival requirements. Identify issues and recommend solutions.
- b. Participate in human rating certification activities and provide recommendations to the SR&QA Manager regarding readiness of the system for certification.

2.2.3.4 Problem Assessment

- a. Assess system problem reports to determine risk to CEV safety and mission success.
- b. Assess problems involving the CEV elements to determine impact to flight and provide SR&QA position to program acceptance rationale.
- c. Assure that problems identified by the Program/Project through program and industry problem databases are assessed for CEV impacts and identified to the CEV SR&QA Manager.
- d. Participate in problem resolution teams and approve problem dispositions.

2.2.3.5 Verification Assessment

- a. Assure that verification / validation plans are compliant with Program/Project requirements.
- b. Assure that hazard controls are verified as recorded in the approved Hazard documentation.

2.2.3.6 Analysis

- a. Work as part of the Probabilistic Risk Assessment (PRA) team to develop assigned portions of the CEV PRA to be integrated into the system- and architecture-level models.
- b. Interface with the appropriate project and prime contractor work force to ensure the collection of failure and operation related data for relevant failure modes and corresponding subsystem success criteria.
- c. Provide system modeling and data analysis expertise to the development of the model and reduction and application of probability data.
- d. Oversee and review all PRA system modeling and analysis performed by the prime contractor.

2.2.4 Software Safety & Assurance

2.2.4.1 Software Design Evaluation & Review

- a. Evaluate software deliverables and assess overall technical risk as part of major Program and element design and flight readiness review milestones. Verify compliance to Program/Project SR&QA technical and programmatic requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.
- b. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.
- c. Identify system certification requirements, evaluate qualification/certification analysis, test plans and procedures and/or test results, and approve software certification.

2.2.4.2 Software Problem Assessment

- a. Assess software problem reports to determine risk to CEV safety and mission success.
- b. Assess software problems involving the CEV elements to determine impact to flight and provide SR&QA position to program acceptance rationale.
- c. Participate in software problem resolution teams and approve problem dispositions.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 17-09 Rev 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
------------------------------------	----------------------------------	---

Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
--	---

5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p>
---	---

7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
--

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: _____ Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <i>Alice Jean Pursell</i> Date: <u>10/10/08</u> CONTRACTING OFFICER
--	---

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align: center;">\$204,683</p>
---	---

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 _____

Task Order 17-09, Rev. 1

1.0 TITLE OF EFFORT: NT Special Projects

2.0 TASK DESCRIPTION:

Coordinate and conduct activities related to Software Engineering Process Group (SEPG) and Integrated Supplier Assurance Management Program (ISAMP) authorized tasks.

2.1 STATEMENT OF WORK REFERENCE: Section 6.0 – JSC Project Support, 7.2 – Integrated Supplier Assurance Management Program (ISAMP), Section 8.2 – Assurance Methodologies and Technologies

2.2 REQUIREMENTS:

2.2.1. Software Engineering Process Group (SEPG)

Provide software assurance engineering support for the implementation of NASA's software improvement strategies. Support the SEPG and other forums, as required. Develop and implement an assessment program to support CMMI implementation for S&MA, including GP 2.9 for capability level 2+ process areas. Implement an assessment program to support NPR 7150.2, Software Engineering Requirements. Support NASA and Center software training activities.

2.2.2. Integrated Supplier Assurance Management Program (ISAMP)

Participate in the implementation of NASA quality assurance of Government suppliers as a part of the Integrated Supplier Assurance Management Program (ISAMP). Participation includes studies, working groups and support to NASA Headquarters.

- a. Assist in the development of Agency quality related procedures.
- b. Prepare minutes documenting presentations and discussions during or other meetings supporting ISAMP activities.
- c. Provide project administration of the ISAMP including cost tracking and cost and project reporting.
- d. Coordinate activities among members of the Program (includes NASA, Naval Sea Systems Command, Missile Defense Agency, and Army Material Command.
- e. Maintain and enhance Supplier Assessment System (SAS) tool.
- f. Support the Program through familiarization and training of non-JSC S&MA personnel, as well as non-S&MA personnel (e.g. KCS, HQ & JSC Engineering), in the use of the SAS tool.
- g. Perform quality assurance related studies as directed by NASA Headquarters.

- h. Procure one time vendor modification and annual subscription, develop, maintain, and sustain within the SAS (Supplier Assessment System) a link to the ERAI (Electronic Resellers Association International) database to facilitate notification and mitigation actions on counterfeit parts for Agency-wide use.

2.2.3 Travel in support of the Tasking

Travel for efforts in support of this Task Order is authorized. The travel must be approved by NASA/ NT prior to being accomplished.

2.2.4 Material in support of the Tasking

Obtain materials as required to accomplish described tasks.

2.3 DELIVERABLES

Software Training Budget Inputs
CMMI Assessment Report

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No.

17-09

2. Date Of Order

See Block 10

NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER

Certified for National Defense under DPAS (15 CFR 700) DO-C9

3. Issuing Office

NASA Johnson Space Center
Attn: BJ4\Learn Comeaux
Houston, TX 77058-3696

Tel. No.: (281) 483-6525

E-Mail learn.j.comeaux@nasa.gov

4. Ship To:

Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058
Mark For: Accountable Property

5. Contractor

Science Application International Corporation
Attn: Will Blumentritt
2450 NASA Parkway
Houston, TX 77058

Phone: (281) 335-2006

CAGE CODE:

6. Deliver On Or Before:

April 30, 2009

7. BILLING ADDRESS:

NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor is, is not required. Sign below if required and return to contracting officer.

Name:

Signature:

Date:

10. Name: Alice Jean Pursell

Signature:

Alice Jean Pursell Date: 9/30/08
CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only:

Requisition No.:

COMP.

PART.

PPC:

Reissue To:

13. Total

\$339,307

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

Task Order 17-09

1.0 TITLE OF EFFORT: NT Special Projects

2.0 TASK DESCRIPTION:

Coordinate and conduct activities related to Software Engineering Process Group (SEPG) and Integrated Supplier Assurance Management Program (ISAMP) authorized tasks.

2.1 STATEMENT OF WORK REFERENCE: Section 6.0 – JSC Project Support, 7.2 – Integrated Supplier Assurance Management Program (ISAMP), Section 8.2 – Assurance Methodologies and Technologies

2.2 REQUIREMENTS:

2.2.1. Software Engineering Process Group (SEPG)

Provide software assurance engineering support for the implementation of NASA's software improvement strategies. Support the SEPG and other forums, as required. Develop and implement an assessment program to support CMMI implementation for S&MA, including GP 2.9 for capability level 2+ process areas. Implement an assessment program to support NPR 7150.2, Software Engineering Requirements. Support NASA and Center software training activities.

2.2.2. Integrated Supplier Assurance Management Program (ISAMP)

Participate in the implementation of NASA quality assurance of Government suppliers as a part of the Integrated Supplier Assurance Management Program (ISAMP). Participation includes studies, working groups and support to NASA Headquarters.

- a. Assist in the development of Agency quality related procedures.
- b. Prepare minutes documenting presentations and discussions during or other meetings supporting ISAMP activities.
- c. Provide project administration of the ISAMP including cost tracking and cost and project reporting.
- d. Coordinate activities among members of the Program (includes NASA, Naval Sea Systems Command, Missile Defense Agency, and Army Material Command.
- e. Maintain and enhance Supplier Assessment System (SAS) tool.
- f. Support the Program through familiarization and training of non-JSC S&MA personnel, as well as non-S&MA personnel (e.g. KCS, HQ & JSC Engineering), in the use of the SAS tool.
- g. Perform quality assurance related studies as directed by NASA Headquarters.

- h. Procure one time vendor modification and annual subscription, develop, maintain, and sustain within the SAS (Supplier Assessment System) a link to the ERAI (Electronic Resellers Association International) database to facilitate notification and mitigation actions on counterfeit parts for Agency-wide use.

2.2.3 Travel in support of the Tasking

Travel for efforts in support of this Task Order is authorized. The travel must be approved by NASA/ NT prior to being accomplished.

2.2.4 Material in support of the Tasking

Obtain materials as required to accomplish described tasks.

2.3 DELIVERABLES

Software Training Budget Inputs
CMMI Assessment Report

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 15-09 Rev. 1	2. Date Of Order 11/5/09 September 28, 2006	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux, Contracting Officer Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property	
5. Contractor Science Application International Corporation Attn: Jeff Johnson 2200 Space Park Drive, Suite 200 Houston, TX 77058 Phone: (281) 336-3911 FAX (281) 336-3933 CAGE CODE:	6. Deliver On Or Before: April 30, 2009	
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696		

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 terms and conditions of contract number: NNJ06JE86C

Written acceptance of this order by contractor [] is, [] is not required. Sign below if required and return to contracting officer.

10. Name: Alice Jean Pursell

Name: _____

Signature: _____ Date: 11/5/09

Signature: *Alice Jean Pursell* Date: ~~09-28-06~~
CONTRACTING OFFICER

11. SCHEDULE						
ITEM NO	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCE

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: _____ Reissue To: _____	13. Total \$1,035,360
--	-------------------------------------

Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 15-09 Rev. 1

1. TITLE OF EFFORT: JSC Pressure Systems & WSTF Safety & Mission Assurance Requirements

2. TASK DESCRIPTION:

The contractor shall provide the JSC and White Sands Test Facility (WSTF) SR&QA offices with support in the establishing and implementing policies and program requirements, engineering and technical support in materials and process engineering, engineering and technical support for the JSC pressure systems certification program, inspection support to flight and flight-related systems to assure that quality assurance requirements are satisfied, and performance of activities related to institutional safety and health.

2.1 SOW Reference: Section 9.0 Institutional Safety and Quality

2.2 REQUIREMENTS

2.2.1 Ground-Based Pressure Systems

Manage and implement the JSC ground-based pressure systems certification / re-certification program in accordance with JPR 1710.13 (current version) in the following areas:

- a. Review of design documents (drawings, calculations, manufacturers' data, etc.) from JSC user organizations for new or modified ground-based pressure vessels/systems (PV/S's) for compliance with NASA requirements.
- b. Verify welding/brazing procedures and personnel qualifications and prepare Weld/Braze Inspection Records (WIR's) as a prerequisite for commencing welding/brazing operations involving JSC ground-based PV/S's.
- c. Perform internal, external, wall thickness, and welding/brazing inspections and witness proof pressure tests/relief valve set tests as a basis for initial certification/periodic re-certification of ground-based PV/S's as safe to operate.
- d. Manage the PV/S inventory/recall process and generate Status Reports, Inspection Due Notifications, and Delinquency Reports for action by responsible JSC PV/S user organizations.
- e. Review PV/S waiver requests and recommend approval/disapproval by the JSC Pressure Systems Manager (PSM).
- f. Assist the PSM when auditing Palmdale and WSTF pressure systems certification programs and document findings and observations for resolution of problem conditions identified.
- g. Support the processes required to perform re-certification and modification of existing ground-based pressure systems and certification of new ground-based pressure systems in accordance with facility policies/procedures, applicable industry codes and specifications, and governing NASA standards. Perform Pressure System Specialists activities in addition to providing technical consultation on applicable code requirements.

2.2.2 Ground-Based Pressure Systems – Special Projects

- a. In accordance with the tasks identified in section 2.2.1, manage and support the processes required to perform re-certification and modification of existing ground-based pressure systems and certification of new ground-based JSC pressure systems for S&MA supported projects.

2.2.3 WSTF Safety and Mission Assurance

Perform Quality Engineering, Quality Assurance, Pressure Systems/Welding Engineering and Administrative tasks in support of the WSTF S&MA in the following areas in accordance with the associated WSTF Management System Documents:

- a. Process submitted Corrective/Preventive Action Requests (CPAR's), including tracking CPAR resolution.

- b. Work with WSTF design groups, technical offices, and S&MA to make and implement quality improvements and changes.
- c. Provide a field quality assurance surveillance of WSTF test activities.
- d. Provide acceptance test verification.
- e. Perform cross-functional management system and system safety audits.
- f. Perform conformance audits/surveillances in areas of responsibility.
- g. Issue discrepancy records for observed non-conformances.
- h. Implement a discrepancy trend analysis system.
- i. Support the processes required for the qualification of welding/brazing personnel and review/authorize welding/brazing processes and documentation in accordance with facility policies and procedures, applicable industry codes and specifications, and governing NASA standards.
- j. Review operational documentation for conformance to requirements.
- k. Review WSTF management system documents for sufficiency in addressing and conformity to meeting requirements.
- l. Perform vendor surveys and maintain Survey Vendor List (SVL)
- m. Coordinate WSTF management system documentation review and maintain associated management system documentation.
- n. Implement and maintain WSTF Hazard Management System. Support applicable agency requirements implementation. Coordinate NASA customer inputs and communicate system needs to NASA.
- o. Facilitate contribution to and application of the Lessons Learned Information System (LLIS) for WSTF personnel. Provide monthly assessment of WSTF information for candidate LLIS contributions. Coordinate application of lessons learned with WSTF Management Representatives and assist with associated process improvements, where identified.
- p. Analyze GIDEP/ALERTS and coordinate applicable information with affected WSTF representatives.
- q. Support the processes required to perform re-certification and modification of existing ground-based pressure systems and certification of new ground-based pressure systems in accordance with facility policies/procedures, applicable industry codes and specifications, and governing NASA standards. Perform Pressure System Inspection activities in accordance with NASA and adopted industry consensus standards. Also provide technical consultation on applicable code requirements and their associated applications.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COST

JSC PRESSURE SYSTEMS AND WSFT S&MA

Labor and Non-Labor Resources:

Labor	Hours	Rate	Cost
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Total Estimated Cost

\$1,307,878

TO 15-09R1 JSC PRESSURE SYSTEMS AND WSTF

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
No																
Total Estimated Cost		\$199,576		\$122,075		\$122,075		\$154,367		\$134,992		\$134,992		\$167,284		\$1,035,360

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">15-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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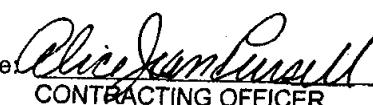
3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 244-8260 FAX: (281) 244-0995 E-Mail stacy.m.holden@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
---	---

5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature:  Date: 9/30/08 CONTRACTING OFFICER
--	--

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align:center">\$1,034,960</p>
--	---

14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Task Order 15-09

1. TITLE OF EFFORT: JSC Pressure Systems & WSTF Safety & Mission Assurance Requirements

2. TASK DESCRIPTION:

The contractor shall provide the JSC and White Sands Test Facility (WSTF) SR&QA offices with support in the establishing and implementing policies and program requirements, engineering and technical support in materials and process engineering, engineering and technical support for the JSC pressure systems certification program, inspection support to flight and flight-related systems to assure that quality assurance requirements are satisfied, and performance of activities related to institutional safety and health.

2.1 SOW Reference: Section 9.0 Institutional Safety and Quality

2.2 REQUIREMENTS

2.2.1 Ground-Based Pressure Systems

Manage and implement the JSC ground-based pressure systems certification / re-certification program in accordance with JPR 1710.13 (current version) in the following areas:

- a. Review of design documents (drawings, calculations, manufacturers' data, etc.) from JSC user organizations for new or modified ground-based pressure vessels/systems (PV/S's) for compliance with NASA requirements.
- b. Verify welding/brazing procedures and personnel qualifications and prepare Weld/Braze Inspection Records (WIR's) as a prerequisite for commencing welding/brazing operations involving JSC ground-based PV/S's.
- c. Perform internal, external, wall thickness, and welding/brazing inspections and witness proof pressure tests/relief valve set tests as a basis for initial certification/periodic re-certification of ground-based PV/S's as safe to operate.
- d. Manage the PV/S inventory/recall process and generate Status Reports, Inspection Due Notifications, and Delinquency Reports for action by responsible JSC PV/S user organizations.
- e. Review PV/S waiver requests and recommend approval/disapproval by the JSC Pressure Systems Manager (PSM).
- f. Assist the PSM when auditing Palmdale and WSTF pressure systems certification programs and document findings and observations for resolution of problem conditions identified.
- g. Support the processes required to perform re-certification and modification of existing ground-based pressure systems and certification of new ground-based pressure systems in accordance with facility policies/procedures, applicable industry codes and specifications, and governing NASA standards. Perform Pressure System Specialists activities in addition to providing technical consultation on applicable code requirements.

2.2.2 Ground-Based Pressure Systems – Special Projects

- a. In accordance with the tasks identified in section 2.2.1, manage and support the processes required to perform re-certification and modification of existing ground-based pressure systems and certification of new ground-based JSC pressure systems for S&MA supported projects.

2.2.3 WSTF Safety and Mission Assurance

Perform Quality Engineering, Quality Assurance, Pressure Systems/Welding Engineering and Administrative tasks in support of the WSTF S&MA in the following areas in accordance with the associated WSTF Management System Documents:

- a. Process submitted Corrective/Preventive Action Requests (CPAR's), including tracking CPAR resolution.
- b. Work with WSTF design groups, technical offices, and S&MA to make and implement quality improvements and changes.
- c. Provide a field quality assurance surveillance of WSTF test activities.
- d. Provide acceptance test verification.
- e. Perform cross-functional management system and system safety audits.
- f. Perform conformance audits/surveillances in areas of responsibility.
- g. Issue discrepancy records for observed non-conformances.
- h. Implement a discrepancy trend analysis system.
- i. Support the processes required for the qualification of welding/brazing personnel and review/authorize welding/brazing processes and documentation in accordance with facility policies and procedures, applicable industry codes and specifications, and governing NASA standards.
- j. Review operational documentation for conformance to requirements.
- k. Review WSTF management system documents for sufficiency in addressing and conformity to meeting requirements.
- l. Perform vendor surveys and maintain Survey Vendor List (SVL)
- m. Coordinate WSTF management system documentation review and maintain associated management system documentation.
- n. Implement and maintain WSTF Hazard Management System. Support applicable agency requirements implementation. Coordinate NASA customer inputs and communicate system needs to NASA.
- o. Facilitate contribution to and application of the Lessons Learned Information System (LLIS) for WSTF personnel. Provide monthly assessment of WSTF information for candidate LLIS contributions. Coordinate application of lessons learned with WSTF Management Representatives and assist with associated process improvements, where identified.
- p. Analyze GIDEP/ALERTS and coordinate applicable information with affected WSTF representatives.
- q. Support the processes required to perform re-certification and modification of existing ground-based pressure systems and certification of new ground-based pressure systems in accordance with facility policies/procedures, applicable industry codes and specifications, and governing NASA standards. Perform Pressure System Inspection activities in accordance with NASA and adopted industry consensus standards. Also provide technical consultation on applicable code requirements and their associated applications.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COST

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 14-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
----------------------------------	--------------------------------------	---

3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p>
---	---

7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
--

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>4/15/09</u> CONTRACTING OFFICER
---	---

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align: center;">\$4,056,590</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authroized U.S. Government Representative _____ Date _____

Task Order 14-09 Rev. 1

1.0 TITLE OF EFFORT: International Space Station Safety and Mission Assurance

2.0 TASK DESCRIPTION:

The contractor provides S&MA support, and management for, the coordination and integration of International Space Station (ISS) Safety and Mission Assurance (S&MA) tasks. These tasks assure definition and implementation of appropriate safety, reliability, maintainability, and quality programs. At a minimum, these tasks include: performing analyses, assessments, audits, reviews, and evaluations; preparing and presenting reports and briefings; monitoring and evaluating ISS on-orbit operations in near-real-time as a part of the Mission Evaluation Room (MER) team; and participating in Program meetings.

2.1 SOW REFERENCE: Section C, Subsections 5.0

2.2 REQUIREMENTS

The contractor provides S&MA support, and management for, the coordination and integration of International Space Station (ISS) Safety and Mission Assurance (S&MA) tasks. These tasks assure definition and implementation of appropriate safety, reliability, maintainability, and quality programs. At a minimum, these tasks include: performing analyses, assessments, audits, reviews, and evaluations; preparing and presenting reports and briefings; monitoring and evaluating ISS on-orbit operations in near-real-time as a part of the Mission Evaluation Room (MER) team; and participating in Program meetings.

2.2.1. Safety

2.2.1.1. Integration

- a. Support the S&MA flight readiness review process by: identifying and raising all concerns or known or potential constraints or exceptions to endorsement; providing technical evaluation of selected topics; presenting such evaluations to senior S&MA management as required; collecting, preserving, and providing, as requested, evidence of S&MA endorsement completion; and participating in S&MA readiness review processes to identify potential topics of discussion.
- b. In support of annual Program Operating Plan (POP) development, provide a Budget Requirements and Basis of Estimate document which includes current Government fiscal year budgeted Equivalent Person (EP) levels for each task in this task order and forecasted EP requirements for each task for next five Government fiscal years. Basis of estimates for the next fiscal year shall include the following data:
 - i. detailed description of the task or identification of applicable work instructions where the details are contained;
 - ii. inputs required with identification of external sources and expected volume;
 - iii. output products generated;
 - iv. schedule/timeliness expectations;
 - v. costing assumptions, including contractor-owned cost drivers such as processing time, review time, and skill mix;
 - vi. EP requirements for each task, including calculations;
 - vii. conversion of EP requirements to dollar requirements for each fiscal year;
 - viii. comparison of current year budget and forecasted requirements with identification and explanation of changes;
 - ix. qualitative description of technical risk associated with not performing the task;
 - x. explanation of Certification of Flight Readiness (COFR) applicability and impact;
 - xi. Contractor recommended changes to the SOW or this task order;

Basis of Estimate for out year projections shall include qualitative rationale for EP estimates for each task. Multiple iterations of BOE's may be required as a part of budget negotiation process.

- c. In support of NASA requirements for management and quality metrics, the contractor shall propose, develop, provide, and maintain selected metrics for administration of NE resources, assessment of ISS

S&MA processes, assessment of the ISS program, and other objectives as required by the Chief of the ISS Division and directed within the scope of this Task Order by the COTR.

- d. Support the JSC S&MA and ISS risk management processes by: identifying and assessing technical and programmatic risks; documenting risks in the applicable risk system; developing recommended and alternative risk mitigation strategies; presenting risk summaries and mitigation plans to the Program; and conducting and reporting on technical risk trade studies involving S&MA risk factors.
- e. Provide administrative support services which include reproduction and electronic presentation of materials for ISS Assembly and Logistics missions and Soyuz flights to International Space Station (ISS) Safety and Mission Assurance (S&MA) / Program Risk Office (OE) for Certification of Flight Readiness review meetings. Provide for the meeting logistics which will include the reserving, setup and cleanup of the room, setting up the conference table, distributing copies of the presentation packages, dialing into the teleconference, voice recording the meeting and running the presentations on the computer/projector. Additionally, the contractor will coordinate and provide a voice recording to OE/ISS S&MA Program Office for archiving.

Deliverables

- a. Flight Readiness Reports will be provided in accordance with established Directorate processes for ISS S&MA Panel, Safety and Mission Success Reviews (SMSRs) and JSC Center Director Readiness Reviews.
- b. Program Operating Plan (POP) Requirements report containing the described Basis of Estimate. Updated as changes occur.
- c. Other management products including, but not limited to, metric reports, risk reports and trade studies
- d. OE CoFR Presentation package copies (Utilizing JSC print shop)
- e. Electronic display of presentation packages for OE CoFR reviews
- f. Voice recording of OE CoFR review meetings.

Schedule Requirements

Schedule for delivery of management products are indicated below:

- a. Flight Readiness Reports will be provided in accordance with established Directorate processes for ISS S&MA Panel, Safety and Mission Success Reviews (SMSRs) and JSC Center Director Readiness Reviews.
- b. Final POP requirements report shall be provided not later than 30 calendar days before the end of the performance period.
- c. Schedules for OE CoFR reviews and review products will be determined based on Program direction and ISS launch dates.

2.2.1.2. Vehicle

- a. Provide ISS subsystems expertise to include the following knowledge and skills: knowledge of system and component design and architecture; knowledge of system and component test and verification methods and results; knowledge of system and component interfaces and interdependencies; knowledge of system and component operational procedures and limits; and the ability to apply such knowledge of systems and components to the evaluation of S&MA analyses and other products as described elsewhere in this section.
- b. Provide Systems Requirement Review, Preliminary Design Review, Critical Design Review, Technical Interchange Meeting, and Acceptance Review support in the following areas: S&MA assessment of hardware/system designs and data packages, including non-JSC Government Furnished Equipment; Review Item Discrepancy (RID) submissions; representation at the review and disposition of S&MA-related RID's; RID tracking and resolution; and reporting of review activities and decisions. As required, review component and system test plans and support selected test events.
- c. Perform S&MA evaluations of program changes for impact to requirements and performance. Provide evaluation, copies of formal change evaluations, and disposition recommendation to NASA. Represent issues and S&MA impacts at Program Technical Coordination Meetings.
- d. As a member of the System Problem Resolution Teams (SPRT) representing S&MA, Subsystem engineers will perform assessments of Problem Report and corrective Action (PRACA) Analysis to primarily identify potential impacts to on orbit safety, reliability and mission success. Subsystem

engineers will also ensure level of significance, recurrence controls, and corrective actions are adequately documented in the PRACA.

- e. Contractor S&MA engineers shall: (1) Represent S&MA at selected Program reviews and meetings, and provide meeting notes to selected S&MA community members summarizing the results of the meeting. (2) Provide playbooks for ISS Program meetings which contain the expected meeting agenda, S&MA contact and assessment of each agenda item, copies of formal change evaluations, and an S&MA disposition recommendation for each agenda item. (3) Provide S&MA engineering support to selected ISS S&MA meetings, including coordination pre-meetings to brief the S&MA representative on the content of the playbook.
- f. Perform S&MA Subsystem assessments of ISS Hazard Analysis to ensure that all the hazards have been identified, causes listed, and controls are in place and verified, and provide results to the Safety Review Panel (SRP). Perform an S&MA Evaluation for all Safety Noncompliance Reports (NCR's) which provide an assessment of the acceptability of the risk which will be incurred if the NCR is accepted, and a recommendation as to whether S&MA should concur on the acceptance of the NCR.

Deliverables

- a. Review Item Discrepancies (RIDs) or similar milestone review documents
- b. Program Change Request evaluations and recommendations on designated evaluation forms
- c. S&MA evaluations of each PRACA report including a completed S&MA checklist. When necessary, root cause analysis and/or fault tree analysis.
- d. Playbooks for ISS Program meetings.

Schedule Requirements

Schedule for delivery of management products are indicated below:

- a. Due dates or deadlines for RID submission will be defined for each milestone review.
- b. Due dates or deadlines for Program Change Evaluation submission will be established by ISS Configuration Management Office for each CR released.
- c. Due dates and deadlines for PRACA evaluations will be identified separately and incorporated into this task order.
- d. Deadlines for initial Playbook submittal will be defined by the assigned S&MA Control Board representative. Final playbooks shall be delivered not later than 1 hour prior to the start of the meeting.

2.2.1.3. Software

- a. Perform a safety assessment of software milestone reviews. Verify that the requirements matrix for each Computer Software Configuration Item (CSCI) traces SSP 50038 requirements to the PIDS, the Software Requirements Specification and to the Test Cases. Research open SCRs/SPNs to verify incorporation of Severity 1 problems in the planned build content and test cases. Review CSCI submittals to assure that the packages are complete, open work has been completed and any safety concerns have been addressed. Assess Data Assessment Report (DAR) submittals to verify that all SSP 50038 requirements have been satisfied and that any non-compliances have been accurately documented and accepted by the Program. Maintain a schedule of software milestone activities as derived from an assessment of Schedule Issue Forms. Assess SIF for impact to milestone review schedule, impact of changes and/or deletion of required software milestone reviews. Provide vehicle engineering software support to the Software Product Delivery Review (SPDR) and at Software Acceptance Review including CSCI submittal reviews to assure that package is complete and that all open work has been completed. Communicate software milestone review assessment results, issues and recommendations to CSWG, ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead. Coordinate and consolidate results with SQA.
- b. Perform a safety assessment of contractor/IP provided Computer Based Control System (CBCS) compliance matrices. Review CBCS matrix to assess plans for showing that software complies with SSP 50038 requirements. Assess Verification Compliance Notice (VCN) submittals to verify that all SSP 50038 requirements have been satisfied and that any non-compliances have been accurately documented and accepted by the Program. Communicate CBCS/VCN assessment results, issues and recommendations to the CSWG and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- c. Perform a safety audit of Boeing recommendations for Hazardous Command List (HCL), Restricted Command List (RCL) and Critical Command List (CCL) in accordance with the NASA approved process.

Ensure that all commands are correctly classified. Coordinate discrepancies with MOD/Boeing Safety. Perform assessment of Scratch generated commands to verify that commands conform to SSP 50038 safety requirements. Communicate command assessment results, issues and recommendations to the CSWG and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.

- d. Perform a safety assessment of Uplink Configuration Requirements Document (UCRD). Ensure inclusion and implementation of all elements required by Safety. Communicate UCRD assessment results, issues and recommendations to the ASCB S&MA Rep, SQP and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- e. Perform safety assessment of Station Program Notice (SPN). Assess the recommended user response to the problem to verify that situation presented by the problem has been adequately addressed, that the correct steps for its resolution are specified, ensuring the workaround does not compromise safety, and that all safety aspects have been considered. Represent S&MA at SPN Team meetings. Bring final Severity 1 SPN before the CSWG. Communicate SPN assessment results, issues and recommendations to the CSWG and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- f. Perform a safety assessment of software-related Space Station Change Requests (SSCN). Review Changes for new capability and its impact to hazard reports and SSP 50038 safety requirements. Review Changes for impact to S&MA review schedule. Assess changes in required reviews (PDR, etc.) and review data submittals for compliance with software safety assessment needs. Communicate SSCN assessment results, issues and recommendations concerning SSCN and schedule impacts to the ISS SW Safety Lead, the Avionics & Software Control Board (ASCB) safety representative and the ISS S&MA Avionics & Software Lead.
- g. Provide assurance that the developer is reviewing Software Change Requests (SCRs) for safety impacts. Provide assurance that these impacts are documented in PVCS and that sufficient rationale is provided for the recommendation. Provide an evaluation of the recommended severity and rationale including concurrence or non-concurrence and counter-proposal if needed. Provide the assurance evaluations to the NASA S&MA Representative to the JSRP and the NASA SW Safety Lead. Develop and provide metrics indicating the quality of the reviews provided by the developer.
- h. Provide a safety assessment of MOD Safety Related Core Timeliner Scripts. Review Timeliner scripts to ensure that the scripts correctly implement SSP 50038 safety requirements and conform to Safety/MOD agreements on the use and implementation of Hazardous Commands as documented in SSP 50645, Appendix F. Communicate Core Timeliner Script assessment results, issues and recommendations to the CSWG, the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- i. Provide S&MA support to Caution Warning Safety Integration Team (CWSIT) and assessment of C&W issues for safety impacts. Identify C&W issues involving safety or Failure Detection, Isolation and Recovery (FDIR). Communicate CWSIT assessment results, issues and recommendations to the ISS SW Safety Lead, and the ISS S&MA Avionics & Software Lead.
- j. Provide Avionics Software Control Board (ASCB) Playbook for the ASCB Agenda review and evaluation for safety impacts. Provide Change Review (CR), Software Change Request (SCR), Schedule Impact Forms (SIFs) and other Safety topic evaluations to the ISS S&MA Software Assurance representative to the ASCB. Provides triage of non-assessed SCRs and assessment of Open Paper in support of CoFR (STRR and SORR). Maintain records of ASCB results and of Changes approved at the ASCB. Maintain quality records of Open Paper assessments for STRR, SORR and CoFR. Communicate Open paper assessment results, issues and recommendations concerning Open paper to the ISS SW Safety Lead, and the ISS S&MA Avionics & Software Lead.

Deliverables

- a. Requirements tracking matrix
- b. Review Item Discrepancies
- c. Milestone schedule
- d. Content assessment
- e. Technical Design assessment
- f. Test Readiness assessment
- g. Software Product Delivery Review recommendation
- h. Software Acceptance Review Board recommendation
- i. Acceptance Data Package recommendation
- j. Data Delivery Review assessment/recommendation
- k. Presentation material for CSWG
- l. SCR safety assurance assessment and metrics

- m. Station Program Note (SPN) assessment
- n. Severity 1/1N SPN coordination
- o. Assessments of HCL, CCL, RCL, and Command from Scratch
- p. Computer Based Control System Compliance Matrix assessment & recommendation
- q. Verification Compliance Notice (VCN) assessment & recommendation
- r. Space Station Change Notice assessment/recommendation
- s. Schedule Impact assessment
- t. ASCB Playbook
- u. Software Transition Readiness Review briefing
- v. Stage Operational Readiness Review briefing
- w. Quality records of Open Paper assessments for SORR, STRR and CoFR.
- x. Software assurance meeting agendas, minutes, actions, and schedules
- y. Assessments of C&W changes.
- z. Timeliner Script assessment
- aa. RIDs on Timeliner documentation and process.

Schedule Requirements

- a. All software evaluations shall be completed prior to the applicable Software Transition Readiness Review (STRR) or Stage Operations Readiness Review (SORR).
- b. S&MA milestone review schedules shall be updated and distributed weekly as a minimum.

2.2.1.4. Operations

- a. Perform real-time safety and mission success assurance assessments in the Mission Evaluation Room in accordance with SSP 50437 and JSC 36431 to ensure hazard controls and safety requirements are properly implemented. Investigate hardware/software anomalies, CHITs, or changes in operations for potential new risks to crew or vehicle operations. Additional work required outside of shifts for Anomaly Resolution Teams (ART) and Flight Investigation Teams (FIT), preparation of safety and risk assessments, preparation of mission data books, and to document process improvements. Provide assessments, analysis results, and recommendations to MER Manager, ARTs, and the S&MA Mission Management Team Representative. Provide periodic reports to S&MA community and management.
- b. Perform integrated S&MA analyses of Contractor Furnished Equipment (CFE), Government Furnished Equipment (GFE), Payloads, Extravehicular Activity (EVA), Extravehicular Robotics (EVR), Visiting Vehicle and International Partner/Participant (IP/P) related operational concepts and anomalies.
- c. Prepare and present pre/post-flight reviews. Provide vehicle hardware and software status to S&MA Flight and Stage Reviews.
- d. Verify the incorporation of Operations controls by evaluating the Operations Control Agreement Document (OCAD), the CIL Ops Matrix, the Station Program Note (SPN) matrix, against the Flight Rules and Operations Procedures. Mitigate safety inconsistencies with appropriate organizations or POC's. Track and report verification work performed, and maintain CoFR compliance evidence. Provide a closed loop verification of category 1 SPNs implemented via Flight Rules and Ops Procedures.
- e. Evaluate operations documents to ensure hazard controls and CIL workarounds are properly incorporated and new hazards are not created, including: Flight Rules; Emergency, Malfunction, and Corrective Action Procedures; Safety of Flight (SoF) changes to baselined U.S. and IP procedures and Operations Data File (ODF) management documents; Maintain tracking of changes and evaluations. Represent S&MA at Systems Operation Data File Control Board (SODFCB) and alternate representative at the multi-lateral ODF Control Board.
- f. Perform evaluations and provide recommendations and Discrepancy Notices (DNs) to the Flight Operations Reviews (FOR) and Increment Operations Review (IOR) and Ops Boards. Perform assessments and provide recommendations at the Joint Operations Panels (JOP). Includes Contingency Shuttle Crew Support (CSCS) JOP activity.
- g. Establish, maintain and evaluate S&MA Operations requirements in Program documentation such as the Station Program Implementation Plans (SPIP) and Bilateral Agreements Documents for Program and Ips. Conduct S&MA Ops Technical Interchange Meetings (TIMs) with MSFC and IP organizations. Evaluate operations related program change request. Provide status and special briefings to the S&MA Panel.
- h. Generate Review Item Discrepancies as required of LSARs, Technical Data & Documentation (TD&D), which includes Illustrated Parts Breakdowns (IPB) and Source Data & Documentation (SD&D). Evaluate

core maintenance procedures, technical data, and source data for safety, incorporation of maintainability data, validity, and accuracy. This includes verifying that maintenance procedures call for the proper tools/parts and are written in a manner which prevents/minimizes any hazardous conditions. Resulting maintenance procedures are used by MOD for crew training. Provide input to the Integrated Logistics Support Management Team. Participate in weekly LE Technical Interchange Meetings (TIM), LE Boiler Room Meetings, and periodic LSAR reviews. Resolve specific action items.

- i. Support the Logistics Engineering Operations Working Group, and Maintenance and Resupply (M&R) Team, to ensure that safety is not compromised in the planning or implementation of maintenance activities. Resolve, coordinate, and track the resolution of assigned actions. Annex 1 to the Increment Definition and Requirements Document (IDRD), establishes the ISS detailed launch and return manifest for each flight. Annex 2 to the IDRD is a coordination medium for on-orbit maintenance and resupply processes. L&M evaluates all Annex 1 & 2 Change Requests for Safety concerns and reviews for technical content. Evaluation of CSRD in support of MER Ops. Provide Safety and technical assessments to ensure required spares, available tools, and support equipment to perform on-orbit required maintenance are in place, and requirements for CoFR Endorsement E are satisfied.
- j. Provide Safety Observations and Variances (SOVAR) report in accordance with the appropriate work instruction.

Deliverables

- a. MER Safety Console shift reports, status reports, engineering analyses and assessments, fault tree analyses, CHIT responses, and technical presentations.
- b. Pre-flight and Post-flight data packages.
- c. Operational Controls Verification Matrix, STRR Checklist Ops inputs, CoFR Checklist Ops inputs
- d. Evaluations, assessments, Discrepancy Notices (DNs), and analyses of flight products and other vehicle and operational documentation.
- e. Agendas, protocols, meeting minutes, and other documentation associated with Ops TIMs.
- f. Observations Log, safety analyses of observations, records of SOVAR disposition.

Schedule Requirements

Schedule for delivery of management products are indicated below:

- a. MER Console products are due as specified in SSP 50437.
- b. Pre-flight packages are due to the NE Operations Lead and IMMT Rep not later than 7 calendar days prior to launch. Post-flight review packages are due to the Operations Lead and IMMT Rep not later than 30 calendar days after landing.
- c. Due dates and deadlines for ops controls matrices, STRR checklists, and CoFR checklists will be established on a review-by-review basis.
- d. Due dates and deadlines for evaluations of operations products will be identified separately and incorporated into this task order.
- e. Due dates and deadlines for TIM products will be identified separately and incorporated into this task order.
- f. SOVAR's are dispositioned in accordance with the work instruction.

2.2.2 Reliability and Maintainability

- a. Perform assessments of the GFE Preventative Maintenance Analysis (PMA) to ensure findings from the hardware providers are accurate. Review manifest to identify GFE equipment requiring preventive maintenance actions, produce GFE PMA where required, and provide the results to the R&M Panel and L&M Control Panel.
- b. Perform analyses and assessments of the Boeing R&M Watch Item List data, calculations, ground rules, assumptions and failure inclusions;. Monitor maintenance times for the on-orbit maintenance tasks to determine if initial predictions are obsolete and determine if greater efficiencies can be realized through revised procedures. Determine if updates can be realized to Preventive Maintenance (PM) tasks that will reduce inspection frequency or minimize level of PM for specific tasks.
- c. Provide an Assessment of Compliance to the reliability requirements for all major element FMEA deliveries to the R&M Panel. Perform a Critical Item Assessment in accordance with the NASA approved review checklist and assess CIL retention rationale to ensure that the recommended risk

mitigation precludes the failure and or the effect from occurring. Provide an assessment of IP related FMEAs deliveries to Boeing.

Deliverables

- a. Assessments of GFE preventive maintenance analyses with recommendations for NASA disposition. Provide a GFE Preventive Maintenance Analysis for each ISS flight
- b. Assessments of CFE and IP AAA Reports, including assessments of Boeing revised MTBF's.
- c. FMEA/CIL assessments, comments, and disposition recommendations.

Schedule Requirements

- a. PMA must be approved by the Program not later than 30 calendar days prior to launch.
- b. Due dates and deadlines for R&M AAA and MTBF assessments will be established on an package-by-package basis by the ISS R&M Panel.
- c. Due dates and deadlines for FMEA/CIL assessments will be established on a package-by-package basis by the ISS R&M Panel.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

TO 14-09R1

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Estimated Cost		\$784,508		\$477,016		\$477,016		\$605,138		\$528,263		\$528,263		\$656,386		\$4,056,590

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">14-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: _____ Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <i>Alice Jean Pursell</i> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
001						

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: _____ Reissue To: _____	13. Total <p style="text-align:center">\$4,055,240</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authroized U.S. Government Representative _____ Date _____

Task Order 14-09

1.0 TITLE OF EFFORT: International Space Station Safety and Mission Assurance

2.0 TASK DESCRIPTION:

The contractor provides S&MA support, and management for, the coordination and integration of International Space Station (ISS) Safety and Mission Assurance (S&MA) tasks. These tasks assure definition and implementation of appropriate safety, reliability, maintainability, and quality programs. At a minimum, these tasks include: performing analyses, assessments, audits, reviews, and evaluations; preparing and presenting reports and briefings; monitoring and evaluating ISS on-orbit operations in near-real-time as a part of the Mission Evaluation Room (MER) team; and participating in Program meetings.

2.1 SOW REFERENCE: Section C, Subsections 5.0

2.2 REQUIREMENTS

The contractor provides S&MA support, and management for, the coordination and integration of International Space Station (ISS) Safety and Mission Assurance (S&MA) tasks. These tasks assure definition and implementation of appropriate safety, reliability, maintainability, and quality programs. At a minimum, these tasks include: performing analyses, assessments, audits, reviews, and evaluations; preparing and presenting reports and briefings; monitoring and evaluating ISS on-orbit operations in near-real-time as a part of the Mission Evaluation Room (MER) team; and participating in Program meetings.

2.2.1. Safety

2.2.1.1. Integration

- a. Support the S&MA flight readiness review process by: identifying and raising all concerns or known or potential constraints or exceptions to endorsement; providing technical evaluation of selected topics; presenting such evaluations to senior S&MA management as required; collecting, preserving, and providing, as requested, evidence of S&MA endorsement completion; and participating in S&MA readiness review processes to identify potential topics of discussion.
- b. In support of annual Program Operating Plan (POP) development, provide a Budget Requirements and Basis of Estimate document which includes current Government fiscal year budgeted Equivalent Person (EP) levels for each task in this task order and forecasted EP requirements for each task for next five Government fiscal years. Basis of estimates for the next fiscal year shall include the following data:
 - i. detailed description of the task or identification of applicable work instructions where the details are contained;
 - ii. inputs required with identification of external sources and expected volume;
 - iii. output products generated;
 - iv. schedule/timeliness expectations;
 - v. costing assumptions, including contractor-owned cost drivers such as processing time, review time, and skill mix;
 - vi. EP requirements for each task, including calculations;
 - vii. conversion of EP requirements to dollar requirements for each fiscal year;
 - viii. comparison of current year budget and forecasted requirements with identification and explanation of changes;
 - ix. qualitative description of technical risk associated with not performing the task;
 - x. explanation of Certification of Flight Readiness (COFR) applicability and impact;
 - xi. Contractor recommended changes to the SOW or this task order;

Basis of Estimate for out year projections shall include qualitative rationale for EP estimates for each task. Multiple iterations of BOE's may be required as a part of budget negotiation process.

- c. In support of NASA requirements for management and quality metrics, the contractor shall propose, develop, provide, and maintain selected metrics for administration of NE resources, assessment of ISS S&MA processes, assessment of the ISS program, and other objectives as required by the Chief of the ISS Division and directed within the scope of this Task Order by the COTR.
- d. Support the JSC S&MA and ISS risk management processes by: identifying and assessing technical and programmatic risks; documenting risks in the applicable risk system; developing recommended and alternative risk mitigation strategies; presenting risk summaries and mitigation plans to the Program; and conducting and reporting on technical risk trade studies involving S&MA risk factors.
- e. Provide administrative support services which include reproduction and electronic presentation of materials for ISS Assembly and Logistics missions and Soyuz flights to International Space Station (ISS) Safety and Mission Assurance (S&MA) / Program Risk Office (OE) for Certification of Flight Readiness review meetings. Provide for the meeting logistics which will include the reserving, setup and cleanup of the room, setting up the conference table, distributing copies of the presentation packages, dialing into the teleconference, voice recording the meeting and running the presentations on the computer/projector. Additionally, the contractor will coordinate and provide a voice recording to OE/ISS S&MA Program Office for archiving.

Deliverables

- a. Flight Readiness Reports will be provided in accordance with established Directorate processes for ISS S&MA Panel, Safety and Mission Success Reviews (SMSRs) and JSC Center Director Readiness Reviews.
- b. Program Operating Plan (POP) Requirements report containing the described Basis of Estimate. Updated as changes occur.
- c. Other management products including, but not limited to, metric reports, risk reports and trade studies
- d. OE CoFR Presentation package copies (Utilizing JSC print shop)
- e. Electronic display of presentation packages for OE CoFR reviews
- f. Voice recording of OE CoFR review meetings.

Schedule Requirements

Schedule for delivery of management products are indicated below:

- a. Flight Readiness Reports will be provided in accordance with established Directorate processes for ISS S&MA Panel, Safety and Mission Success Reviews (SMSRs) and JSC Center Director Readiness Reviews.
- b. Final POP requirements report shall be provided not later than 30 calendar days before the end of the performance period.
- c. Schedules for OE CoFR reviews and review products will be determined based on Program direction and ISS launch dates.

2.2.1.2. Vehicle

- a. Provide ISS subsystems expertise to include the following knowledge and skills: knowledge of system and component design and architecture; knowledge of system and component test and verification methods and results; knowledge of system and component interfaces and interdependencies; knowledge of system and component operational procedures and limits; and the ability to apply such knowledge of systems and components to the evaluation of S&MA analyses and other products as described elsewhere in this section.
- b. Provide Systems Requirement Review, Preliminary Design Review, Critical Design Review, Technical Interchange Meeting, and Acceptance Review support in the following areas: S&MA assessment of hardware/system designs and data packages, including non-JSC Government Furnished Equipment; Review Item Discrepancy (RID) submissions; representation at the review and disposition of S&MA-related RID's; RID tracking and resolution; and reporting of review activities and decisions. As required, review component and system test plans and support selected test events.

- c. Perform S&MA evaluations of program changes for impact to requirements and performance. Provide evaluation, copies of formal change evaluations, and disposition recommendation to NASA. Represent issues and S&MA impacts at Program Technical Coordination Meetings.
- d. As a member of the System Problem Resolution Teams (SPRT) representing S&MA, Subsystem engineers will perform assessments of Problem Report and corrective Action (PRACA) Analysis to primarily identify potential impacts to on orbit safety, reliability and mission success. Subsystem engineers will also ensure level of significance, recurrence controls, and corrective actions are adequately documented in the PRACA.
- e. Contractor S&MA engineers shall: (1) Represent S&MA at selected Program reviews and meetings, and provide meeting notes to selected S&MA community members summarizing the results of the meeting. (2) Provide playbooks for ISS Program meetings which contain the expected meeting agenda, S&MA contact and assessment of each agenda item, copies of formal change evaluations, and an S&MA disposition recommendation for each agenda item. (3) Provide S&MA engineering support to selected ISS S&MA meetings, including coordination pre-meetings to brief the S&MA representative on the content of the playbook.
- f. Perform S&MA Subsystem assessments of ISS Hazard Analysis to ensure that all the hazards have been identified, causes listed, and controls are in place and verified, and provide results to the Safety Review Panel (SRP). Perform an S&MA Evaluation for all Safety Noncompliance Reports (NCR's) which provide an assessment of the acceptability of the risk which will be incurred if the NCR is accepted, and a recommendation as to whether S&MA should concur on the acceptance of the NCR.

Deliverables

- a. Review Item Discrepancies (RIDs) or similar milestone review documents
- b. Program Change Request evaluations and recommendations on designated evaluation forms
- c. S&MA evaluations of each PRACA report including a completed S&MA checklist. When necessary, root cause analysis and/or fault tree analysis.
- d. Playbooks for ISS Program meetings.

Schedule Requirements

Schedule for delivery of management products are indicated below:

- a. Due dates or deadlines for RID submission will be defined for each milestone review.
- b. Due dates or deadlines for Program Change Evaluation submission will be established by ISS Configuration Management Office for each CR released.
- c. Due dates and deadlines for PRACA evaluations will be identified separately and incorporated into this task order.
- d. Deadlines for initial Playbook submittal will be defined by the assigned S&MA Control Board representative. Final playbooks shall be delivered not later than 1 hour prior to the start of the meeting.

2.2.1.3. Software

- a. Perform a safety assessment of software milestone reviews. Verify that the requirements matrix for each Computer Software Configuration Item (CSCI) traces SSP 50038 requirements to the PIDS, the Software Requirements Specification and to the Test Cases. Research open SCRs/SPNs to verify incorporation of Severity 1 problems in the planned build content and test cases. Review CSCI submittals to assure that the packages are complete, open work has been completed and any safety concerns have been addressed. Assess Data Assessment Report (DAR) submittals to verify that all SSP 50038 requirements have been satisfied and that any non-compliances have been accurately documented and accepted by the Program. Maintain a schedule of software milestone activities as derived from an assessment of Schedule Issue Forms. Assess SIF for impact to milestone review schedule, impact of changes and/or deletion of required software milestone reviews. Provide vehicle engineering software support to the Software Product Delivery Review (SPDR) and at Software Acceptance Review including CSCI submittal reviews to assure that package is complete and that all open work has been completed. Communicate software milestone review assessment results, issues and recommendations to CSWG, ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead. Coordinate and consolidate results with SQA.

- b. Perform a safety assessment of contractor/IP provided Computer Based Control System (CBCS) compliance matrices. Review CBCS matrix to assess plans for showing that software complies with SSP 50038 requirements. Assess Verification Compliance Notice (VCN) submittals to verify that all SSP 50038 requirements have been satisfied and that any non-compliances have been accurately documented and accepted by the Program. Communicate CBCS/VCN assessment results, issues and recommendations to the CSWG and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- c. Perform a safety audit of Boeing recommendations for Hazardous Command List (HCL), Restricted Command List (RCL) and Critical Command List (CCL) in accordance with the NASA approved process. Ensure that all commands are correctly classified. Coordinate discrepancies with MOD/Boeing Safety. Perform assessment of Scratch generated commands to verify that commands conform to SSP 50038 safety requirements. Communicate command assessment results, issues and recommendations to the CSWG and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- d. Perform a safety assessment of Uplink Configuration Requirements Document (UCRD). Ensure inclusion and implementation of all elements required by Safety. Communicate UCRD assessment results, issues and recommendations to the ASCB S&MA Rep, SQP and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- e. Perform safety assessment of Station Program Notice (SPN). Assess the recommended user response to the problem to verify that situation presented by the problem has been adequately addressed, that the correct steps for its resolution are specified, ensuring the workaround does not compromise safety, and that all safety aspects have been considered. Represent S&MA at SPN Team meetings. Bring final Severity 1 SPN before the CSWG. Communicate SPN assessment results, issues and recommendations to the CSWG and the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- f. Perform a safety assessment of software-related Space Station Change Requests (SSCN). Review Changes for new capability and its impact to hazard reports and SSP 50038 safety requirements. Review Changes for impact to S&MA review schedule. Assess changes in required reviews (PDR, etc.) and review data submittals for compliance with software safety assessment needs. Communicate SSCN assessment results, issues and recommendations concerning SSCN and schedule impacts to the ISS SW Safety Lead, the Avionics & Software Control Board (ASCB) safety representative and the ISS S&MA Avionics & Software Lead.
- g. Provide assurance that the developer is reviewing Software Change Requests (SCRs) for safety impacts. Provide assurance that these impacts are documented in PVCS and that sufficient rationale is provided for the recommendation. Provide an evaluation of the recommended severity and rationale including concurrence or non-concurrence and counter-proposal if needed. Provide the assurance evaluations to the NASA S&MA Representative to the JSRP and the NASA SW Safety Lead. Develop and provide metrics indicating the quality of the reviews provided by the developer.
- h. Provide a safety assessment of MOD Safety Related Core Timeliner Scripts. Review Timeliner scripts to ensure that the scripts correctly implement SSP 50038 safety requirements and conform to Safety/MOD agreements on the use and implementation of Hazardous Commands as documented in SSP 50645, Appendix F. Communicate Core Timeliner Script assessment results, issues and recommendations to the CSWG, the ISS SW Safety Lead and the ISS S&MA Avionics & Software Lead.
- i. Provide S&MA support to Caution Warning Safety Integration Team (CWSIT) and assessment of C&W issues for safety impacts. Identify C&W issues involving safety or Failure Detection, Isolation and Recovery (FDIR). Communicate CWSIT assessment results, issues and recommendations to the ISS SW Safety Lead, and the ISS S&MA Avionics & Software Lead.
- j. Provide Avionics Software Control Board (ASCB) Playbook for the ASCB Agenda review and evaluation for safety impacts. Provide Change Review (CR), Software Change Request (SCR), Schedule Impact Forms (SIFs) and other Safety topic evaluations to the ISS S&MA Software Assurance representative to the ASCB. Provides triage of non-assessed SCRs and assessment of Open Paper in support of CoFR (STRR and SORR). Maintain records of ASCB results and of Changes approved at the ASCB. Maintain quality records of Open Paper assessments for STRR, SORR and CoFR. Communicate Open paper assessment results, issues and recommendations concerning Open paper to the ISS SW Safety Lead, and the ISS S&MA Avionics & Software Lead.

Deliverables

- a. Requirements tracking matrix

- b. Review Item Discrepancies
- c. Milestone schedule
- d. Content assessment
- e. Technical Design assessment
- f. Test Readiness assessment
- g. Software Product Delivery Review recommendation
- h. Software Acceptance Review Board recommendation
- i. Acceptance Data Package recommendation
- j. Data Delivery Review assessment/recommendation
- k. Presentation material for CSWG
- l. SCR safety assurance assessment and metrics
- m. Station Program Note (SPN) assessment
- n. Severity 1/1N SPN coordination
- o. Assessments of HCL, CCL, RCL, and Command from Scratch
- p. Computer Based Control System Compliance Matrix assessment & recommendation
- q. Verification Compliance Notice (VCN) assessment & recommendation
- r. Space Station Change Notice assessment/recommendation
- s. Schedule Impact assessment
- t. ASCB Playbook
- u. Software Transition Readiness Review briefing
- v. Stage Operational Readiness Review briefing
- w. Quality records of Open Paper assessments for SORR, STRR and CoFR.
- x. Software assurance meeting agendas, minutes, actions, and schedules
- y. Assessments of C&W changes.
- z. Timeliner Script assessment
- aa. RIDs on Timeliner documentation and process.

Schedule Requirements

- a. All software evaluations shall be completed prior to the applicable Software Transition Readiness Review (STRR) or Stage Operations Readiness Review (SORR).
- b. S&MA milestone review schedules shall be updated and distributed weekly as a minimum.

2.2.1.4. Operations

- a. Perform real-time safety and mission success assurance assessments in the Mission Evaluation Room in accordance with SSP 50437 and JSC 36431 to ensure hazard controls and safety requirements are properly implemented. Investigate hardware/software anomalies, CHITs, or changes in operations for potential new risks to crew or vehicle operations. Additional work required outside of shifts for Anomaly Resolution Teams (ART) and Flight Investigation Teams (FIT), preparation of safety and risk assessments, preparation of mission data books, and to document process improvements. Provide assessments, analysis results, and recommendations to MER Manager, ARTs, and the S&MA Mission Management Team Representative. Provide periodic reports to S&MA community and management.
- b. Perform integrated S&MA analyses of Contractor Furnished Equipment (CFE), Government Furnished Equipment (GFE), Payloads, Extravehicular Activity (EVA), Extravehicular Robotics (EVR), Visiting Vehicle and International Partner/Participant (IP/P) related operational concepts and anomalies.
- c. Prepare and present pre/post-flight reviews. Provide vehicle hardware and software status to S&MA Flight and Stage Reviews.
- d. Verify the incorporation of Operations controls by evaluating the Operations Control Agreement Document (OCAD), the CIL Ops Matrix, the Station Program Note (SPN) matrix, against the Flight Rules and Operations Procedures. Mitigate safety inconsistencies with appropriate organizations or POC's. Track and report verification work performed, and maintain CoFR compliance evidence. Provide a closed loop verification of category 1 SPNs implemented via Flight Rules and Ops Procedures.
- e. Evaluate operations documents to ensure hazard controls and CIL workarounds are properly incorporated and new hazards are not created, including: Flight Rules; Emergency, Malfunction, and Corrective Action Procedures; Safety of Flight (SoF) changes to baselined U.S. and IP procedures and

Operations Data File (ODF) management documents; Maintain tracking of changes and evaluations. Represent S&MA at Systems Operation Data File Control Board (SODFCB) and alternate representative at the multi-lateral ODF Control Board.

- f. Perform evaluations and provide recommendations and Discrepancy Notices (DNs) to the Flight Operations Reviews (FOR) and Increment Operations Review (IOR) and Ops Boards. Perform assessments and provide recommendations at the Joint Operations Panels (JOP). Includes Contingency Shuttle Crew Support (CSCS) JOP activity.
- g. Establish, maintain and evaluate S&MA Operations requirements in Program documentation such as the Station Program Implementation Plans (SPIP) and Bilateral Agreements Documents for Program and Ips. Conduct S&MA Ops Technical Interchange Meetings (TIMs) with MSFC and IP organizations. Evaluate operations related program change request. Provide status and special briefings to the S&MA Panel.
- h. Generate Review Item Discrepancies as required of LSARs, Technical Data & Documentation (TD&D), which includes Illustrated Parts Breakdowns (IPB) and Source Data & Documentation (SD&D). Evaluate core maintenance procedures, technical data, and source data for safety, incorporation of maintainability data, validity, and accuracy. This includes verifying that maintenance procedures call for the proper tools/parts and are written in a manner which prevents/minimizes any hazardous conditions. Resulting maintenance procedures are used by MOD for crew training. Provide input to the Integrated Logistics Support Management Team. Participate in weekly LE Technical Interchange Meetings (TIM), LE Boiler Room Meetings, and periodic LSAR reviews. Resolve specific action items.
- i. Support the Logistics Engineering Operations Working Group, and Maintenance and Resupply (M&R) Team, to ensure that safety is not compromised in the planning or implementation of maintenance activities. Resolve, coordinate, and track the resolution of assigned actions. Annex 1 to the Increment Definition and Requirements Document (IDRD), establishes the ISS detailed launch and return manifest for each flight. Annex 2 to the IDRD is a coordination medium for on-orbit maintenance and resupply processes. L&M evaluates all Annex 1 & 2 Change Requests for Safety concerns and reviews for technical content. Evaluation of CSRD in support of MER Ops. Provide Safety and technical assessments to ensure required spares, available tools, and support equipment to perform on-orbit required maintenance are in place, and requirements for CoFR Endorsement E are satisfied.
- j. Provide Safety Observations and Variances (SOVAR) report in accordance with the appropriate work instruction.

Deliverables

- a. MER Safety Console shift reports, status reports, engineering analyses and assessments, fault tree analyses, CHIT responses, and technical presentations.
- b. Pre-flight and Post-flight data packages.
- c. Operational Controls Verification Matrix, STRR Checklist Ops inputs, CoFR Checklist Ops inputs
- d. Evaluations, assessments, Discrepancy Notices (DNs), and analyses of flight products and other vehicle and operational documentation.
- e. Agendas, protocols, meeting minutes, and other documentation associated with Ops TIMs.
- f. Observations Log, safety analyses of observations, records of SOVAR disposition.

Schedule Requirements

Schedule for delivery of management products are indicated below:

- a. MER Console products are due as specified in SSP 50437.
- b. Pre-flight packages are due to the NE Operations Lead and IMMT Rep not later than 7 calendar days prior to launch. Post-flight review packages are due to the Operations Lead and IMMT Rep not later than 30 calendar days after landing.
- c. Due dates and deadlines for ops controls matrices, STRR checklists, and CoFR checklists will be established on a review-by-review basis.
- d. Due dates and deadlines for evaluations of operations products will be identified separately and incorporated into this task order.
- e. Due dates and deadlines for TIM products will be identified separately and incorporated into this task order.

- f. SOVAR's are dispositioned in accordance with the work instruction.

2.2.2 Reliability and Maintainability

- a. Perform assessments of the GFE Preventative Maintenance Analysis (PMA) to ensure findings from the hardware providers are accurate. Review manifest to identify GFE equipment requiring preventive maintenance actions, produce GFE PMA where required, and provide the results to the R&M Panel and L&M Control Panel.
- b. Perform analyses and assessments of the Boeing R&M Watch Item List data, calculations, ground rules, assumptions and failure inclusions;. Monitor maintenance times for the on-orbit maintenance tasks to determine if initial predictions are obsolete and determine if greater efficiencies can be realized through revised procedures. Determine if updates can be realized to Preventive Maintenance (PM) tasks that will reduce inspection frequency or minimize level of PM for specific tasks.
- c. Provide an Assessment of Compliance to the reliability requirements for all major element FMEA deliveries to the R&M Panel. Perform a Critical Item Assessment in accordance with the NASA approved review checklist and assess CIL retention rationale to ensure that the recommended risk mitigation precludes the failure and or the effect from occurring. Provide an assessment of IP related FMEAs deliveries to Boeing.

Deliverables

- a. Assessments of GFE preventive maintenance analyses with recommendations for NASA disposition. Provide a GFE Preventive Maintenance Analysis for each ISS flight
- b. Assessments of CFE and IP AAA Reports, including assessments of Boeing revised MTBF's.
- c. FMEA/CIL assessments, comments, and disposition recommendations.

Schedule Requirements

- a. PMA must be approved by the Program not later than 30 calendar days prior to launch.
- b. Due dates and deadlines for R&M AAA and MTBF assessments will be established on an package-by-package basis by the ISS R&M Panel.
- c. Due dates and deadlines for FMEA/CIL assessments will be established on a package-by-package basis by the ISS R&M Panel.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Manager																
Supervisor																
Engineer 1																
Engineer 2																
Engineer 3																
Engineer 4																
Engineer 5																
Technician 1																
Technician 2																
Technician 3																
Technician 4																
Administration 1																
Administration 2																
Engineering Aide																
Junior Intern																
Senior Intern																
Total Labor																
Non-Labor Resources																
Travel																
Training																
Facilities																
Other																
NLR Subtotal																
NLR Burden																
Materials																
Minor Subcontractor																
Total NLR																
Sub-total																
Fee																
Total Estimated Cost		\$784,318		\$476,821		\$476,821		\$476,821		\$528,071		\$528,071		\$784,318		\$4,055,240

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 13-09 Rev 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p> 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: _____ Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>12/22/08</u> CONTRACTING OFFICER
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11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: _____ Reissue To: _____	13. Total <p style="text-align: center;">\$965,740</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 13-09 Rev. 1

1.0 Title of Effort: SSP PRA Support

2.0 Task Description:

Provide analytical expertise to the Space Shuttle Program for the development, maintenance and application of the Space Shuttle Probabilistic Risk Assessment (PRA).

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

Provide analytical expertise to the Space Shuttle Program for the development, maintenance and application of the Space Shuttle Probabilistic Risk Assessment (PRA). Tasks include:

- a. Shuttle PRA Development – Development of Iteration 3.1.
- b. Shuttle PRA Maintenance - Review new ground and flight data, re-quantify the basic event probabilities, update logic models to reflect "as flown" hardware/ops, and update the documentation accordingly. Shuttle PRA Integration - Perform Shuttle system integration functions in support of the Shuttle PRA effort.
- c. Shuttle PRA Applications - Utilize the Shuttle PRA to support Program decisions, special assessments and the development of fault trees to assess flight anomalies.

3.0 Deliverables

Model Updates
Fault Tree Analysis
Special Assessments

4.0 Period of Performance:

October 1, 2008 – April 30, 2009

5.0 Estimated Costs:

Contractor may provide travel, training, materials, and other non-labor resources as necessary to support task order requirements.

TO 13-08 SHUTTLE RISK SUPPORT

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Minor:																
Sub-total																
Fee																
Total Estimated Cost		\$185,635		\$114,127		\$114,127		\$143,922		\$126,045		\$126,045		\$155,840		\$965,740

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">13-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 244-8260 FAX: (281) 244-0995 E-Mail stacy.m.holden@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [<input type="checkbox"/>] is, [<input checked="" type="checkbox"/>] is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total <p style="text-align:center">\$965,457</p>
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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: _____

Task Order 13-09

1.0 Title of Effort: SSP PRA Support

2.0 Task Description:

Provide analytical expertise to the Space Shuttle Program for the development, maintenance and application of the Space Shuttle Probabilistic Risk Assessment (PRA).

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

Provide analytical expertise to the Space Shuttle Program for the development, maintenance and application of the Space Shuttle Probabilistic Risk Assessment (PRA). Tasks include:

- a. Shuttle PRA Development – Development of Iteration 3.1.
- b. Shuttle PRA Maintenance - Review new ground and flight data, re-quantify the basic event probabilities, update logic models to reflect "as flown" hardware/ops, and update the documentation accordingly. Shuttle PRA Integration - Perform Shuttle system integration functions in support of the Shuttle PRA effort.
- c. Shuttle PRA Applications - Utilize the Shuttle PRA to support Program decisions, special assessments and the development of fault trees to assess flight anomalies.

3.0 Deliverables

Model Updates
Fault Tree Analysis
Special Assessments

4.0 Period of Performance:

October 1, 2008 – April30, 2009

5.0 Estimated Costs:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 12-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [<input type="checkbox"/>] is, [<input checked="" type="checkbox"/>] is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name: Signature: _____ Date: _____	Signature: <i>Alice Jean Pursell</i> Date: <i>4/15/09</i> CONTRACTING OFFICER

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$1,259,631
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 12-09 Rev1

1. Title of Effort: Constellation Support

2. Task Description:

The contractor shall provide Constellation Program Integration and Support to Constellation Program SRQA functions.

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

2.2.1 Cx SR&QA System Safety & Reliability

Provide engineering expertise in the areas of systems safety and reliability in representing CxP SR&QA at Level II technical forums. Evaluate systems engineering solutions to technical issues, provide inputs to integrated hazard analyses, and evaluate and assess risk associated with the Program's approach to designing and operating the Constellation architecture.

2.2.1.1 Systems Engineering & Integration (SE&I)

- a. Provide technical support to the Cx SR&QA representative to the Cx Systems Engineering and Integration Office.
- b. Provide technical support to Systems Integration Groups (SIGs) as required.
- c. Identify risks from Cx integrated hazard analysis effort requiring review, assessment, or further analysis by the SIGs.
- d. Provide recommendations to SIGs regarding the safety and reliability implications of Cx systems.
- e. Assist in development of SR&QA requirements for the technical performance of the Constellation system with respect to safety, availability, and mission success.
- f. Assist in development of programmatic requirements driving implementation and commonality of SR&QA functions across the Program.
- g. Support coordination and resolution of changes or issues dealing with Program SR&QA requirements.
- h. Assist in evaluation of risks to program success posed by pending Program decisions during DDT&E and the reporting of results to the SR&QA Director.

2.2.1.2 Integrated Hazard Analysis

- a. Participate in intercenter analysis team to develop hazard/hazard cause structure and to assign hazard tasks to centers for development.
- b. As required, provide assistance to Cx SE&I in conducting Integrated Hazard Analyses and developing Integrated Hazard Reports in accordance with CxP 70038.

2.2.1.3 Integrated FMEA

- a. As required, review project level FMEAs for potential hazardous effects from system and element failure modes.

2.2.1.4 Constellation Boards, Panels, and Working Groups

- a. Provide technical support to the Constellation SR&QA Board.
- b. Provide technical support to the Cx Safety Engineering Review Panel (CSERP), Reliability and Maintainability Panel.
- c. Perform/provide qualitative and/or quantitative risk assessments of the baselining of or changes to program requirements and element interface requirements or specifications.
- d. Identify impacts to Integration Hazard Reports posed by changes, issues, or decisions pending at Program boards, panels, and working groups.
- e. Evaluate qualitative and/or quantitative risk assessments provided by Cx elements/project offices for items that represent an increase in risk to Cx safety and mission success.

- f. Identify impacts to Integration of changes to element-specific documentation.
- g. Identify and recommend program and element document updates as appropriate for integration.
- h. Provide room setup for JSC CSERP meetings, including logistical functions such as room seating arrangement as well as establishing and maintaining teleconferencing connections, as required. For meetings held at remote locations, the room setup will be provided by the organization hosting the meeting.
- i. Establish and maintain online chart viewing via internet meeting conferencing services. For meetings held at remote locations, online chart viewing and teleconferencing support will be provided remotely by personnel at JSC unless it is determined that this cannot be accomplished, necessitating travel to the specific remote location.

2.2.1.5 Design Evaluation & Review

- a. Evaluate deliverables and assess overall technical risk as part of major Program and element milestones. Verify compliance to Program SR&QA requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.
- b. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.

2.2.1.6 Human Rating

- a. Provide crew survival expertise to design and analysis activities including hazard analysis, PRA, and systems engineering.
- b. Evaluate system compliance to NASA human rating requirements. Identify issues and recommend solutions.

2.2.1.7 Constellation Operations Engineering

- a. Perform SR&QA technical risk assessments.
- b. Perform operational risk assessments for operations associated with ISS and lunar sortie missions.
- c. Work with the operations managers to identify, track and resolve safety issues and concerns associated with Constellation flight hardware and operations.
- d. Perform/provide qualitative and/or quantitative risk assessments in support of Constellation Program operations boards and panels. Change request (CR) evaluations are provided to the Board Representatives for each respective board.
- e. Assess hazards associated with joint Constellation/ISS operations.

2.2.2 Risk Management and Analysis

2.2.2.1 Probabilistic Risk Assessment

- a. Develop assigned portions of the Cx Program PRA to be integrated into the system-level model.
- b. Provide system modeling, data analysis, systems and subsystems engineering, operations, and other expertise to the development of the model and reduction and application of probability data.
- c. Participate in the Cx PRA Panel and the Cx PRA Working Group.
- d. Provide technical support to the integrated PRA development team.

2.2.2.2 Trade Studies

- a. Participate in trade studies such as design analysis cycles or targeted studies to identify potential safety and mission risks and evaluate design options.
- b. Using appropriate safety and reliability analysis tools, provide risks and risk rankings to study team(s).
- c. Develop mitigation strategies in collaboration with study team members.
- d. Develop reports and presentations as required to document findings.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">12-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p> 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor is, is not required. Sign below if required and return to contracting officer.

10. Name: Alice Jean Pursell

Name: _____
 Signature: _____ Date: _____
 Signature: *Alice Jean Pursell* Date: 9/30/08
 CONTRACTING OFFICER

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ Reissue To: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC:	13. Total <p style="text-align:center">\$1,259,376</p>
---	---

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: _____

Task Order 12-09

1. Title of Effort: Constellation Support

2. Task Description:

The contractor shall provide Constellation Program Integration and Support to Constellation Program SRQA functions.

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

2.2.1 Cx SR&QA System Safety & Reliability

Provide engineering expertise in the areas of systems safety and reliability in representing CxP SR&QA at Level II technical forums. Evaluate systems engineering solutions to technical issues, provide inputs to integrated hazard analyses, and evaluate and assess risk associated with the Program's approach to designing and operating the Constellation architecture.

2.2.1.1 Systems Engineering & Integration (SE&I)

- a. Provide technical support to the Cx SR&QA representative to the Cx Systems Engineering and Integration Office.
- b. Provide technical support to Systems Integration Groups (SIGs) as required.
- c. Identify risks from Cx integrated hazard analysis effort requiring review, assessment, or further analysis by the SIGs.
- d. Provide recommendations to SIGs regarding the safety and reliability implications of Cx systems.
- e. Assist in development of SR&QA requirements for the technical performance of the Constellation system with respect to safety, availability, and mission success.
- f. Assist in development of programmatic requirements driving implementation and commonality of SR&QA functions across the Program.
- g. Support coordination and resolution of changes or issues dealing with Program SR&QA requirements.
- h. Assist in evaluation of risks to program success posed by pending Program decisions during DDT&E and the reporting of results to the SR&QA Director.

2.2.1.2 Integrated Hazard Analysis

- a. Participate in intercenter analysis team to develop hazard/hazard cause structure and to assign hazard tasks to centers for development.
- b. As required, provide assistance to Cx SE&I in conducting Integrated Hazard Analyses and developing Integrated Hazard Reports in accordance with CxP 70038.

2.2.1.3 Integrated FMEA

- a. As required, review project level FMEAs for potential hazardous effects from system and element failure modes.

2.2.1.4 Constellation Boards, Panels, and Working Groups

- a. Provide technical support to the Constellation SR&QA Board.
- b. Provide technical support to the Cx Safety Engineering Review Panel (CSERP), Reliability and Maintainability Panel.
- c. Perform/provide qualitative and/or quantitative risk assessments of the baselining of or changes to program requirements and element interface requirements or specifications.

- d. Identify impacts to Integration Hazard Reports posed by changes, issues, or decisions pending at Program boards, panels, and working groups.
- e. Evaluate qualitative and/or quantitative risk assessments provided by Cx elements/project offices for items that represent an increase in risk to Cx safety and mission success.
- f. Identify impacts to Integration of changes to element-specific documentation.
- g. Identify and recommend program and element document updates as appropriate for integration.
- h. Provide room setup for JSC CSERP meetings, including logistical functions such as room seating arrangement as well as establishing and maintaining teleconferencing connections, as required. For meetings held at remote locations, the room setup will be provided by the organization hosting the meeting.
- i. Establish and maintain online chart viewing via internet meeting conferencing services. For meetings held at remote locations, *online chart viewing and teleconferencing support will be provided remotely by personnel at JSC unless it is determined that this cannot be accomplished, necessitating travel to the specific remote location.*

2.2.1.5 Design Evaluation & Review

- a. Evaluate deliverables and assess overall technical risk as part of major Program and element milestones. Verify compliance to Program SR&QA requirements. Develop review item dispositions and/or comments and participate in the resolution of issues related to safety and mission success.
- b. Participate in system-level trades studies to identify and evaluate risks with overall objective of reducing or eliminating risks to safety and mission success.

2.2.1.6 Human Rating

- a. Provide crew survival expertise to design and analysis activities including hazard analysis, PRA, and systems engineering.
- b. Evaluate system compliance to NASA human rating requirements. Identify issues and recommend solutions.

2.2.1.7 Constellation Operations Engineering

- a. Perform SR&QA technical risk assessments.
- b. Perform operational risk assessments for operations associated with ISS and lunar sortie missions.
- c. Work with the operations managers to identify, track and resolve safety issues and concerns associated with Constellation flight hardware and operations.
- d. Perform/provide qualitative and/or quantitative risk assessments in support of Constellation Program operations boards and panels. Change request (CR) evaluations are provided to the Board Representatives for each respective board.
- e. Assess hazards associated with joint Constellation/ISS operations.

2.2.2 Risk Management and Analysis

2.2.2.1 Probabilistic Risk Assessment

- a. Develop assigned portions of the Cx Program PRA to be integrated into the system-level model.
- b. Provide system modeling, data analysis, systems and subsystems engineering, operations, and other expertise to the development of the model and reduction and application of probability data.
- c. Participate in the Cx PRA Panel and the Cx PRA Working Group.
- d. Provide technical support to the integrated PRA development team.

2.2.2.2 Trade Studies

- a. Participate in trade studies such as design analysis cycles or targeted studies to identify potential safety and mission risks and evaluate design options.
- b. Using appropriate safety and reliability analysis tools, provide risks and risk rankings to study team(s).
- c. Develop mitigation strategies in collaboration with study team members.

d. Develop reports and presentations as required to document findings.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

TO 12-09 CONSTELLATION PROGRAM INTEGRATION

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Estimated Cost		\$243,185		\$148,274		\$148,274		\$148,274		\$164,092		\$164,092		\$243,185		\$1,259,376

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 11-09 Rev. 1.	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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Issuing Office
NASA Johnson Space Center
Attn: BJ4\Learn Comeaux
Houston, TX 77058-3696

Tel. No.: (281) 483- 6525
E-Mail learn.j.comeaux@nasa.gov

4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058
Mark For: Accountable Property

5. Contractor

Science Application International Corporation
Attn: Will Blumentritt
2450 NASA Parkway
Houston, TX 77058

Phone: (281) 335-2006

CAGE CODE:

6. Deliver On Or Before:

April 30, 2009

7. BILLING ADDRESS:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [] is, [] is not required. Sign below if required and return to contracting officer.

Name: _____

Signature: _____ Date: _____

10. Name: Alice Jean Pursell

Signature: *Alice Jean Pursell* Date: 1/15/09
CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only:

Requisition No.: _____ COMP. PART. PPC: _____

Reissue To: _____

13. Total
\$4,585,625

14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFORM TO THE CONTRACT. ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 11-09 Rev. 1

1. Title of Effort: Shuttle Support

2. Task Description:

The contractor shall provide engineering and analytical expertise to the Space Shuttle Program for the development of reliability, maintainability, and supportability analysis, flight operations, and Orbiter Systems integration, and mission support.

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

2.2.1 System Safety & Reliability:

2.2.1.1 S&MA Program Processes

Provide technical and administrative support to program level boards, panels, and processes.

1. Review contractor-provided risk assessments and identify increases in risk.
2. Perform qualitative and/or quantitative safety and mission assurance risk assessments.
3. Coordinate/resolve changes/issues dealing with Program S&MA requirements.
4. Develop and maintain Folios infobases. (HR, CIL, LCC, OMRS, Flight Rules Annex, PRACA)

2.2.1.2 Safety Engineering Review Panel (SERP) Engineering & Integration

Provide safety engineering and integration expertise to both the JSC Safety Engineering Review Panel (JSERP) and Integrated Safety Engineering Review Panel (ISERP).

- a. Assess Hazard Reports for technical accuracy and requirement compliance.
- b. Perform back-up duties to the Safety Panel Representatives from MX/SSP S&MA Program Office and NA/S&MA Directorate as required.
- c. Perform Integrated Safety Assessments.
- d. Provide Orbiter Systems technical support as required.

2.2.1.3 Flight Operations System Safety Activity

Perform ascent, orbit and entry qualitative and/or quantitative operational risk assessments

- a. Perform/provide qualitative and/or quantitative risk assessments in support of the following Shuttle program boards and panels: FOICB, FRCB, CPCB, SRP, Flight Techniques Panels and Joint Operations Panel. Change Request (CR) evaluations are provided to the Board representatives for each respective board.
- b. Participate in approach and landing technique evaluation through involvement with the AMES Vertical Motion Simulator team.
- c. Assess hazards associated with joint Shuttle/ISS operations.
- d. Provide risk assessments and status pertaining to mission activities and/or hardware/software problems in support of the S&MA Mission Management Team representative.

2.2.1.4 Systems Engineering & Integration Safety & Reliability Activity

Provide safety and mission assurance expertise in support of SSP element integration for the following areas: Propulsion, Mechanical/Structural, and Electrical Systems Integration; Ascent, Orbit, Entry Operations Integration; and Software Integration.

a. Change Evaluation

1. Perform/provide qualitative and/or quantitative risk assessments on changes to program requirements and element ICD's in support of ICB

2. Identify impacts to Integration Hazard Reports.

b. Board/Documentation

1. Identify impacts to Integration of changes to element-specific documentation.
2. Identify and recommend program and element document updates as appropriate for integration.
3. Provide S&MA technical support by performing/providing qualitative risk assessments for integration issues for other discipline-specific program baselining.
4. Perform surveillance to assure the integration contractor presents/updates hazard documentation according to Program requirements.

c. Problem Assessment

Assess Integration issues involving the SSP elements to determine impact to flight and provide S&MA position to program flight rationale. Includes but not limited to PRT participation, evaluation of out of family issues for disposition, etc.

d. Verification Assessment

Assure that controls for Integrated Hazards are verified as recorded in risk documentation and reflect Program/Project requirements.

e. New Design

Participate in element and upgrades design reviews; verifying compliance to SSP S&MA requirements, providing technical evaluations associated with SSP element interfaces, identifying issues and generating RIDs to document findings.

f. Launch Preparation

1. Certification of Flight Readiness (CoFR)
2. SMSR
3. SERP Activities (e.g., Review of integrated HR's & mission by mission safety assessments), IFA resolution, and LCC and flight rule changes, GFE CARs.
4. Risk ranking and PRA generation in support of Hazard Report updates.

g. Flight Operations

Provide real-time Mission Evaluation Room S&MA console support to the MMT, IFA identification and resolution, LCC issues and flight operations related panel support (e.g., Aborts/GNC Panel, Range Safety Panel, Intercenter Photo Working Group).

h. Ascent & On-Orbit Imaging:

Provide S&MA engineering technical support to the Intercenter Photo Working Group (IPWG).

1. Provide real time assurance of ascent and on-orbit imagery data.
2. Provide S&MA risk assessment to the Imagery Team and Shuttle S&MA.

i. Flight Software Activity:

1. Perform technical evaluations and qualitative risk assessments on software change requests and discrepancy reports and provide S&MA representation in support of the following boards: SASCB, Reconfiguration DCR Board, and the MEDS Software panel (MSP). Perform technical analysis on verification test plans procedures, and analysis results.
2. Provide technical safety support for the First Article Configuration Inspection (FACI), Configuration Inspection (CI), MEDS Software Acceptance Review (SAR) and the Software Readiness Review (SRR). Perform a mission readiness assessment and prepare a S&MA Flight Readiness Statement in support of the SRR.
3. Perform surveillance of SFOC products and processes including flight readiness, non-conformance resolution, and others as defined by the Flight Software Surveillance Plan.

Deliverables

COFR assessments.
Top 10 Program Risk recommendations.

2.2.1.5 Mission Operations and Integration Activity

Perform S&MA technical risk assessments in support of *MO/Operations and Integration*.

- a. Work with the Flight Managers to identify, track and resolve safety issues and concerns associated with Orbiter flight hardware and operations.
- b. Participate in and provide S&MA risk assessments for design and program milestone reviews for Cargo Integration Hardware.

2.2.1.6 Orbiter Systems Activity (MV)

a. Orbiter Problem Resolution Teams (PRTs):

Provide safety and mission assurance expertise to the PRTs to include the following:

1. Change Evaluation
2. Problem Reporting and Corrective Action (PRACA)
3. Verification Assessments
4. New Design
5. Quantitative Risk Assessments

b. Remote Manipulator System (RMS) Integration:

Provide S&MA representation for the RMS CCB; perform technical evaluations, and risk assessments of changes; perform integrated assessments of proposed changes to flight rules and crew procedures; provide technical S&MA engineering expertise to design reviews and program reviews.

c. Trending

Generate Orbiter contractor-furnished equipment design center PRACA trending spreadsheets to aid the OPO in monitoring vehicle hardware trends in accordance with the objectives of the Orbiter Aging Working Group.

d. Mission Support

1. Provide S&MA engineering expertise to the assessment of real-time mission risks in support of the S&MA Mission Management Team and the OPO MER manager through implementation of the Shuttle Problem Investigation Team (SPIT) process.
2. Generate CHIT responses as required to identify proposed changes in risk as a result of flight anomalies and associated work-arounds.
3. Develop/provide failure history assessments to the MER manager during Space Shuttle flight anomaly investigations as required.

e. Orbiter Integration

1. Provide inputs to OPO risk management activity.
2. Perform evaluations of S&MA data deliverables in support of hardware development milestone reviews.
3. Perform/provide quantitative/qualitative assessments of selected Orbiter systems and proposed design modifications for comparative purposes with emphasis on (1) increasing levels of safety, (2) mission success, and (3) reliability/maintenance. Coordinate analyses and results with the engineering, vehicle processing, and logistics communities using the appropriate formalized review forums
4. Perform/provide analyses for comparative assessments of different design approaches to baseline configuration.
5. Assessment of Integrated Hazards associated with Orbiter controls.
6. Provide system level technical assessments to the S&MA representatives to the Program.
7. Provide S&MA representation to the Program.

f. JSC Resident Office at KSC

1. Provide engineering support to the JSC Resident Office in dispositioning unexplained anomalies (UA's) and Prime Material Review items by performing risk assessments and quality coding verifications of these specific problems.
2. Identify configuration management (CM) processes/procedures/guidelines and assist JSC RO personnel with the management of MV CM function.
3. Participate in Orbiter Major Modification (OMM) activities to ensure proper adherence to vehicle processing quality requirements.
4. Interface with Logistics and other KSC organizations to identify data sources and provide data for quantitative risk and reliability analyses.

2.2.1.7 Reliability and Maintainability (R&M) Activity:

Provide engineering and analytical expertise to the Space Shuttle Program for the development of reliability, maintainability, and supportability analysis and participation in the SSP R&M Working Group.

- a. Shuttle S&MA R&M Working Group. Provide technical, analytical, and requirements expertise to the R&M Working Group to facilitate the performance of R&M requirements audits, assessment and resolution of R&M issues and Program changes, participation in design reviews, flight readiness reviews, and Program boards and panels to ensure the identification of R&M issues and requirement compliance, and review Prime Contractor analysis to assure technical accuracy, adequacy, and compliance with R&M policy providing corrective action recommendations as appropriate.
- b. Reliability and Maintainability Assessments and Analyses. Perform reliability and maintainability analyses to assess the impact of Shuttle design and operational changes, anomaly resolution and assess system performance with emphasis on: (1) increasing levels of safety, (2) mission success, (3) supportability, and (4) aging vehicle impacts.

Deliverables:

Bi-monthly customer satisfaction metrics.
Special PRACA assessments
CIL's and Hazard Report Review Results
CoFR assessments and status
Top 10 Risk recommendations - Monthly
R&M assessments and analysis reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 36-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

8. Type Of Order:

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

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9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name: Signature: _____ Date: _____	Signature: <u>Alice Jean Pursell</u> Date: <u>2/9/09</u> CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$282,697
---	------------------------

14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFORM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 36-09 MOD Support

1.0 TITLE OF EFFORT: Constellation Mission Operations Division Support (WBS 1.5.6.4)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Constellation Program quality and flight equipment projects (which may include GFE, CFE, and payloads), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE lifecycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 Mission Operations (MO) Support (WBS 1.5.6.4)

Provide S&MA support to CxP Mission Operations (MO) activities to include support for the MCCA, Training Facility, and MORA.

2.2.1 MCCA Support (WBS 1.5.6.4.x)

2.2.1.1 Provide S&MA support to Mission Operations Directorate (MOD) MCCA activities to include:

1. Assist in development of operations planning and crew training requirements
 - a. Integrated Planning Systems (IPS)
 - b. MCCA Automated System (MAS)
 - c. MCCA - CxP Front End Processing Subsystem (FEPS)
 - d. MCCA- CxP Command System Applications
 - e. Operational Data Reduction Complex (ODRC)
 - f. MCCA External Interfaces
 - g. Platform Service Software (PSS)
2. Participate in concept development for ground facilities to support mission planning and training
3. Perform S&MA functions related to the design and development of ground facilities and software to be used in mission planning, and real-time operations

2.2.1.2 Provide software assurance as defined below for the following MCCA applications:

The software assurance tasks for FY 2008 will include:

1. Provide inputs to software requirements
 - a. Verify traceability of parent/child requirements
 - b. Assess Verification/Validation of software requirements
 - c. Assess traceability/functional characteristics of interfaces
2. Perform software process assessments
3. Software Classification and Safety Criticality assessments
4. Provide inputs to Software Development Plans (SDPs)
5. Provide inputs to software assurance section of SDPs
6. Provide inputs to software design documents
7. Provide inputs to software assurance support for SRR and generate RIDs as required

2.2.1.3 Provide hardware S&MA support and assurance as defined below for the following MCCA applications:

The hardware assurance tasks for FY 2008 will include:

1. Provide inputs to hardware MCCA facility requirements
 - a. Verify traceability of parent/child requirements
 - b. Analyze and support the safety analysis of the hardware requirements to provide for appropriate Hardware Safety Assessments
 - c. Assess traceability/functional characteristics of hardware/software interfaces
2. Provide hardware safety support for MCCA trade studies as required to support the MCCA effort
3. Perform hardware process assessments

4. Perform assessment for MCCS in accordance with the hardware Safety Standard. This shall include an assessment of all hardware safety hazard analysis provided in support of the MCCS
5. Provide inputs to hardware safety and assurance support for SRR, SDR and generate RIDs as required

2.2.1.4 Provide hardware S&MA Quality support and assurance in support of the preparation of the Cx MCCS Requirements to support Cx MCCS operations.

2.2.2 Training Facility Support (WBS 1.5.6.4.x)

2.2.2.1 Provide S&MA support to Mission Operations Directorate (MOD) Constellation Training Facility (CxTF) activities to include:

1. Assist in the development of CxTF Level B requirements
2. Participate in the CxTF Systems Requirements Review (SRR) and generate Review Item Dispositions (RIDs) as required
3. Participate in the development of a CxTF Safety, Reliability, & Quality Assurance (SR&QA) Plan
4. Participate in the development of a CxTF Test & Verification Plan
5. Perform S&MA functions related to the design and development of CxTF hardware and software to be used in simulations and training operations. The S&MA functions are defined in the next two paragraphs.

2.2.2.2 Provide CxTF software quality assurance tasks for FY 2008 as defined below:

1. Provide inputs to software training facility Level B requirements
 - a. Verify traceability of parent/child requirements
 - b. Approve Verification/Validation of software requirements
 - c. Verify traceability/functional characteristics of interfaces
2. Perform software process assessments
3. Provide a software classification assessment
4. Perform assessment of need for Independent Verification & Validation (IV&V) of software per Software Safety Standard
5. Provide inputs to the CxTF Software Development Plan (SDP)
6. Provide inputs to the software assurance portion of the CxTF SRR

2.2.2.3 Provide CxTF hardware S&MA quality support for FY 2008 as defined below:

1. Provide inputs to hardware training facility Level B requirements
 - a. Verify traceability of parent/child requirements
 - b. Analyze and support the safety analysis of the hardware requirements
 - c. Verify traceability/functional characteristics of hardware/software interfaces
2. Perform assessment of need for IV&V of the hardware according to hardware Safety Standard
3. Provide inputs to the hardware assurance portion of the CxTF SRR

2.2.3 MORS Support (WBS 1.5.6.4.x)

2.2.3.1 Provide S&MA support to Mission Operations Directorate (MOD) MORS activities to include:

4. Assist in development of operations planning and crew training requirements
 - a. Integrated Planning Systems (IPS)
 - b. Operational Data Reduction Complex (ODRC)
 - c. RECON External Interfaces
 - d. Platform Service Software (PSS)
 - e. Reconfiguration Systems (Recon)
 - f. Constellation Training Facility(CxTF) support
5. Participate in Flight Data File development
6. Participate in concept development for ground facilities to support mission planning and training
7. Perform S&MA functions related to the design and development of ground facilities and software to be used in mission planning, simulations, and real-time operations
8. Provide real-time support to simulations, crew training, and flight operations.

2.2.3.2 Provide software assurance as defined below for the following MOD applications:

The software assurance tasks will include:

1. Provide inputs to software requirements
 - a. Verify traceability of parent/child requirements
 - b. Approve Verification/Validation of software requirements
 - c. Verify traceability/functional characteristics of interfaces
2. Perform software process assessments
3. Software classification assessment
4. Perform assessment of need for Independent Verification & Validation (IV&V) per Software Safety Standard
5. Provide inputs to Software Development Plans (SDPs)
6. Provide inputs software assurance section
7. Provide inputs to Software Design Documents (SDDs)
8. Provide inputs to software assurance support for SRR and generate RIDs as required

2.3 DELIVERABLES

Requirements Verifications / Certification Status

SDF Assessments

S&MA Assessments and Presentations

Code assessments

RIDS

List of Auditors

Audit Reports

Master Audit Schedule

Technical and metric analysis

Subcontractor performance reports

Draft letter of delegations

Recommendations for acceptance of ADPs and GCARs

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 36-09	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
-----------------------	----------------------------------	---

3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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Name: Signature: _____ Date: _____	Signature: <i>Alice Jean Pursell</i> Date: <u>9/30/08</u> CONTRACTING OFFICER

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$282,627
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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 _____

Task Order 36-09 MOD Support

1.0 TITLE OF EFFORT: Constellation Mission Operations Division Support (WBS 1.5.6.4)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Constellation Program quality and flight equipment projects (which may include GFE, CFE, and payloads), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE lifecycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 Mission Operations (MO) Support (WBS 1.5.6.4)

Provide S&MA support to CxP Mission Operations (MO) activities to include support for the MCCS, Training Facility, and MORS.

2.2.1 MCCS Support (WBS 1.5.6.4.x)

2.2.1.1 Provide S&MA support to Mission Operations Directorate (MOD) MCCS activities to include:

1. Assist in development of operations planning and crew training requirements
 - a. Integrated Planning Systems (IPS)
 - b. MCC Automated System (MAS)
 - c. MCC – CxP Front End Processing Subsystem (FEPS)
 - d. MCC- CxP Command System Applications
 - e. Operational Data Reduction Complex (ODRC)
 - f. MCCS External Interfaces
 - g. Platform Service Software (PSS)
2. Participate in concept development for ground facilities to support mission planning and training
3. Perform S&MA functions related to the design and development of ground facilities and software to be used in mission planning, and real-time operations

2.2.1.2 Provide software assurance as defined below for the following MCCS applications:

The software assurance tasks for FY 2008 will include:

1. Provide inputs to software requirements
 - a. Verify traceability of parent/child requirements
 - b. Assess Verification/Validation of software requirements
 - c. Assess traceability/functional characteristics of interfaces
2. Perform software process assessments
3. Software Classification and Safety Criticality assessments
4. Provide inputs to Software Development Plans (SDPs)
5. Provide inputs to software assurance section of SDPs
6. Provide inputs to software design documents
7. Provide inputs to software assurance support for SRR and generate RIDs as required

2.2.1.3 Provide hardware S&MA support and assurance as defined below for the following MCCS applications:

The hardware assurance tasks for FY 2008 will include:

1. Provide inputs to hardware MCCS facility requirements
 - a. Verify traceability of parent/child requirements
 - b. Analyze and support the safety analysis of the hardware requirements to provide for appropriate Hardware Safety Assessments
 - c. Assess traceability/functional characteristics of hardware/software interfaces
2. Provide hardware safety support for MCCS trade studies as required to support the MCCS effort
3. Perform hardware process assessments

4. Perform assessment for MCCS in accordance with the hardware Safety Standard. This shall include an assessment of all hardware safety hazard analysis provided in support of the MCCS
5. Provide inputs to hardware safety and assurance support for SRR, SDR and generate RIDs as required

2.2.1.4 Provide hardware S&MA Quality support and assurance in support of the preparation of the Cx MCCS Requirements to support Cx MCCS operations.

2.2.2 Training Facility Support (WBS 1.5.6.4.x)

2.2.2.1 Provide S&MA support to Mission Operations Directorate (MOD) Constellation Training Facility (CxTF) activities to include:

1. Assist in the development of CxTF Level B requirements
2. Participate in the CxTF Systems Requirements Review (SRR) and generate Review Item Dispositions (RIDs) as required
3. Participate in the development of a CxTF Safety, Reliability, & Quality Assurance (SR&QA) Plan
4. Participate in the development of a CxTF Test & Verification Plan
5. Perform S&MA functions related to the design and development of CxTF hardware and software to be used in simulations and training operations. The S&MA functions are defined in the next two paragraphs.

2.2.2.2 Provide CxTF software quality assurance tasks for FY 2008 as defined below:

1. Provide inputs to software training facility Level B requirements
 - a. Verify traceability of parent/child requirements
 - b. Approve Verification/Validation of software requirements
 - c. Verify traceability/functional characteristics of interfaces
2. Perform software process assessments
3. Provide a software classification assessment
4. Perform assessment of need for Independent Verification & Validation (IV&V) of software per Software Safety Standard
5. Provide inputs to the CxTF Software Development Plan (SDP)
6. Provide inputs to the software assurance portion of the CxTF SRR

2.2.2.3 Provide CxTF hardware S&MA quality support for FY 2008 as defined below:

1. Provide inputs to hardware training facility Level B requirements
 - a. Verify traceability of parent/child requirements
 - b. Analyze and support the safety analysis of the hardware requirements
 - c. Verify traceability/functional characteristics of hardware/software interfaces
2. Perform assessment of need for IV&V of the hardware according to hardware Safety Standard
3. Provide inputs to the hardware assurance portion of the CxTF SRR

2.2.3 MORS Support (WBS 1.5.6.4.x)

2.2.3.1 Provide S&MA support to Mission Operations Directorate (MOD) MORS activities to include:

4. Assist in development of operations planning and crew training requirements
 - a. Integrated Planning Systems (IPS)
 - b. Operational Data Reduction Complex (ODRC)
 - c. RECON External Interfaces
 - d. Platform Service Software (PSS)
 - e. Reconfiguration Systems (Recon)
 - f. Constellation Training Facility(CxTF) support
5. Participate in Flight Data File development
6. Participate in concept development for ground facilities to support mission planning and training
7. Perform S&MA functions related to the design and development of ground facilities and software to be used in mission planning, simulations, and real-time operations
8. Provide real-time support to simulations, crew training, and flight operations.

2.2.3.2 Provide software assurance as defined below for the following MOD applications:

The software assurance tasks will include:

1. Provide inputs to software requirements
 - a. Verify traceability of parent/child requirements
 - b. Approve Verification/Validation of software requirements
 - c. Verify traceability/functional characteristics of interfaces
2. Perform software process assessments
3. Software classification assessment
4. Perform assessment of need for Independent Verification & Validation (IV&V) per Software Safety Standard
5. Provide inputs to Software Development Plans (SDPs)
6. Provide inputs software assurance section
7. Provide inputs to Software Design Documents (SDDs)
8. Provide inputs to software assurance support for SRR and generate RIDs as required

2.3 DELIVERABLES

Requirements Verifications / Certification Status

SDF Assessments

S&MA Assessments and Presentations

Code assessments

RIDS

List of Auditors

Audit Reports

Master Audit Schedule

Technical and metric analysis

Subcontractor performance reports

Draft letter of delegations

Recommendations for acceptance of ADPs and GCARs

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 35-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [<input type="checkbox"/>] is, [<input checked="" type="checkbox"/>] is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name: Signature: _____ Date: _____	Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>3/9/09</u> CONTRACTING OFFICER

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$650,612
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT,
ACCPEANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

TO 35-09R1 CONSTELLATION EXTRAVEHICULAR SYSTEMS

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
No																
Total Estimated Cost		\$125,603		\$76,615		\$76,615		\$97,027		\$84,780		\$84,780		\$105,192		\$650,612

Task Order 35-09 Constellation EVA Systems

1.0 TITLE OF EFFORT: Constellation Extravehicular Activities (EVA) Support (WBS 1.5.6.3)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Constellation Program quality and flight equipment projects (which may include GFE and CFE), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE lifecycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 Constellation Extravehicular Systems (WBS 1.5.6.3)

Provide S&MA support to Constellation Extravehicular (EVA) Systems Project Office activities.

2.2.1 Constellation EVA S&R support (WBS 1.5.6.3.x)

- a. Assist in the development of S&MA requirements to be applied to EVA-related hardware, equipment, operations, and facilities.
- b. Assess and evaluate proposed concepts and designs, and identify S&MA issues related to the item or its operational usage.
- c. Participate in development and modification of EVA hardware, equipment and facilities to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.
- d. Participate in design reviews, review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- e. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- f. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- g. Track and provide status on requirements verification, system qualification, and design certification activities.
- h. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- i. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Constellation EVA System Project for discussion.
- j. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- k. Provide project inputs to the project PRA to help provide for the Loss-of-crew/loss-of-mission estimates.
- l. Participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted; closure rationale is acceptable and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
- m. Support operational use of EVA-related hardware, equipment and facilities.
- n. Provide support to the EVA Systems Project Control Boards and sub-boards including assessing S&MA issues and risk impact for all Change Requests.
- o. Provide support to boards, panels, RID reviews, etc., act as the S&MA representative as necessary and as directed by the NASA customer.

2.2.2 Constellation Program Quality Assurance (QA) (WBS 1.5.6.3.x)

Perform Quality Assurance (QA) functions for the Constellation EVA Project

- a. Perform program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for Constellation related directives, requirements per Program Office Direction.
- c. Participate in design reviews and milestones to ensure compliance with Program and Project Quality Assurance requirements.
- d. Perform reviews of Project documentation to ensure compliance with Program and Project Quality Assurance requirements.
- e. Prepare for, and implement the PRACA system support for the EVA Project.

2.2.3 Constellation Program Quality Engineering (QE) (WBS 1.5.6.3.x)

Perform Quality Engineering (QE) functions for the Constellation EVA Project

- a. Perform program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for Constellation related directives, requirements per Program Office Direction.
- c. Develop program related directives, requirements, and change requests dealing with quality and provide tracking and support to program representatives.
- d. Assess and evaluate proposed concepts and designs, and identify quality issues related to the item or its operational usage.
- e. Participate in design reviews, review provided data and documentation, and provide RID'S on quality-related issues and deficiencies.
- f. Conduct quality assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Constellation EVA System Project for discussion.
- g. Perform facility certifications and surveillance as directed by the Program Office
- h. Perform Program directed investigations of anomalies
- i. Perform and report on Quality audits as directed by the Project Office

2.3 DELIVERABLES

Requirements Verification and Certification Status

S&MA Assessments and Presentations

RIDS

Audit Reports

Weekly Activity Report and Metric scoresheet

Technical and metric analysis

Subcontractor performance reports

Draft letter of delegations

Recommendations for acceptance of ADPs and GCARs

QREX Reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">35-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p> 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE

ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
	Constellation Extravehicular Systems					

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align:center">\$650,406</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 35-09 Constellation EVA Systems

1.0 TITLE OF EFFORT: Constellation Extravehicular Activities (EVA) Support (WBS 1.5.6.3)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Constellation Program quality and flight equipment projects (which may include GFE and CFE), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE lifecycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 Constellation Extravehicular Systems (WBS 1.5.6.3)

Provide S&MA support to Constellation Extravehicular (EVA) Systems Project Office activities.

2.2.1 Constellation EVA S&R support (WBS 1.5.6.3.x)

- a. Assist in the development of S&MA requirements to be applied to EVA-related hardware, equipment, operations, and facilities.
- b. Assess and evaluate proposed concepts and designs, and identify S&MA issues related to the item or its operational usage.
- c. Participate in development and modification of EVA hardware, equipment and facilities to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.
- d. Participate in design reviews, review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- e. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- f. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- g. Track and provide status on requirements verification, system qualification, and design certification activities.
- h. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- i. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Constellation EVA System Project for discussion.
- j. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- k. Provide project inputs to the project PRA to help provide for the Loss-of-crew/loss-of-mission estimates.
- l. Participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted; closure rationale is acceptable and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
- m. Support operational use of EVA-related hardware, equipment and facilities.
- n. Provide support to the EVA Systems Project Control Boards and sub-boards including assessing S&MA issues and risk impact for all Change Requests.
- o. Provide support to boards, panels, RID reviews, etc., act as the S&MA representative as necessary and as directed by the NASA customer.

2.2.2 Constellation Program Quality Assurance (QA) (WBS 1.5.6.3.x)

Perform Quality Assurance (QA) functions for the Constellation EVA Project

- a. Perform program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for Constellation related directives, requirements per Program Office Direction.
- c. Participate in design reviews and milestones to ensure compliance with Program and Project Quality Assurance requirements.
- d. Perform reviews of Project documentation to ensure compliance with Program and Project Quality Assurance requirements.
- e. Prepare for, and implement the PRACA system support for the EVA Project.

2.2.3 Constellation Program Quality Engineering (QE) (WBS 1.5.6.3.x)

Perform Quality Engineering (QE) functions for the Constellation EVA Project

- a. Perform program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for Constellation related directives, requirements per Program Office Direction.
- c. Develop program related directives, requirements, and change requests dealing with quality and provide tracking and support to program representatives.
- d. Assess and evaluate proposed concepts and designs, and identify quality issues related to the item or its operational usage.
- e. Participate in design reviews, review provided data and documentation, and provide RID'S on quality-related issues and deficiencies.
- f. Conduct quality assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Constellation EVA System Project for discussion.
- g. Perform facility certifications and surveillance as directed by the Program Office
- h. Perform Program directed investigations of anomalies
- i. Perform and report on Quality audits as directed by the Project Office

2.3 DELIVERABLES

Requirements Verification and Certification Status

S&MA Assessments and Presentations

RIDS

Audit Reports

Weekly Activity Report and Metric scoresheet

Technical and metric analysis

Subcontractor performance reports

Draft letter of delegations

Recommendations for acceptance of ADPs and GCARs

QREX Reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - April 30, 2009

TO 35 CONSTELLATION EXTRAVEHICULAR SYSTEMS

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Estimated Cost		\$125,574		\$76,586		\$76,586		\$76,586		\$84,750		\$84,750		\$125,574		\$650,406

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 34-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [<input type="checkbox"/>] is, [<input checked="" type="checkbox"/>] is not required. Sign below if required and return to contracting officer. Name: Signature: _____ Date: _____	10. Name: N. S. Robb <i>A. J. Parsell</i> Signature: <i>A. J. Parsell</i> Date: <i>2/9/09</i> CONTRACTING OFFICER
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11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$177,262
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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 _____

TO 34-09R1 CONSTELLATION GFE PROGRAM

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Estimated Cost		\$34,203		\$20,883		\$20,883		\$26,433		\$23,103		\$23,103		\$28,653		\$177,262

Task Order 34-09 – Program Support

1.0 TITLE OF EFFORT: Constellation GFE Projects and CFE Quality Support (WBS 1.5.6)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Constellation Program quality and flight equipment projects (which may include GFE, CFE, and payloads), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE lifecycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 Constellation Program Support (WBS 1.5.6.1)

2.2.1 Constellation Program GFE Safety and Reliability (WBS 1.5.6.x)

Perform flight safety, reliability, and mission assurance for GFE. Provide safety and Mission Assurance for GFE payloads. Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements. identify design problems and provide design solutions or improvements.

- a. Participate in design reviews and program boards (as required), review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- b. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- c. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- d. Track and provide status on requirements verification, system qualification, and design certification activities.
- e. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- f. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Constellation Program for discussion.
- g. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- h. Participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted; closure rationale is acceptable and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
- i. Support operational use of hardware and software.

2.2.2 Constellation Program Software Assurance (WBS 1.5.6.x)

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation, for the Constellation Program.

- a. Ensure the conformance of software lifecycle processes and products to requirements, standards, and procedures.
- b. Define Software Assurance requirements.
- c. Perform process and product activities throughout the life cycle to provide objective insight into the maturity and quality of the software processes and products.

- d. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software lifecycle
- e. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- f. Ensure the testing of software safety critical components are sufficiently implemented and that applicable controls are in place to verify all safety conditions
- g. Conduct analysis of proposed changes on system safety
- h. Evaluate the reliability of the software products created throughout the life cycle
- i. Ensure that the software being developed or maintained satisfies the functional and performance requirements
- j. Ensure that each phase of the development process yields the right software products
- k. Participate in major milestone reviews and certification/acceptance of the software.

2.2.3 Constellation Program Quality Engineering (QE) (WBS 1.5.6.x)

Perform Quality Engineering (QE) functions at Program-level subcontractors,

- a. Perform program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for Constellation related directives, requirements per Program Office Direction.
- c. Develop program related directives, requirements, and change requests dealing with quality and provide tracking and support to program representatives.
- d. Perform facility certifications and surveillance as directed by the Program Office
- e. Perform Program directed investigations of anomalies

2.2.4 Constellation Program GFE and CFE Procurement Quality Assurance (WBS 1.5.6.x)

Perform PQA functions at contractors and subcontractors:

- a. Assure that Constellation Program, CEV Project, Lunar Lander Project and miscellaneous Constellation related sub-project contractors and vendors have a quality assurance program, and that it's adequately addressed in the procurement cycle. A Supplier Scorecard will be kept for NASA Contractors and for Suppliers of Criticality 1, 1 R, 1 S, 2, and 2R hardware. The Supplier Scorecard will track key attributes for Constellation products such as quality performance, delivery performance, cost of poor quality (scrap, rework, warranty, concession, returns, etc.), and corrective action attributes.
- b. Where identified, perform Pre-Award surveys of suppliers.
- c. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications.
- d. Review purchase orders to determine if Government Source Inspection (GSI) is required.
- e. Review purchase orders to determine appropriate quality instructions.
- f. Assure consistency of contractor and subcontractor activities with Federal Acquisition Regulation (FAR) requirements.
- g. Prepare DRAFT DCMA letters of delegation
- h. Manage working agreements and Letters of Delegation (LOD) in accordance with NPR 8735.2 for product assurance actions performed by support contractors or the Defense Contract Management Agency (DCMA), including process flow information and the coordination of QA issues and concerns between suppliers and Agency management.
- i. Reconcile existing DCMA Quality Leading Indicators (QLI) reports with product requirements.

2.2.5 Constellation Program Audits (WBS 1.5.6.x)

Participate in NASA-sponsored audits in accordance with the requirements of CxP 70059, SR&QA Requirements.

- a. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements implementation at NASA contractors, subcontractors, and vendors.
- b. Perform independent surveillance and periodic audits on Center, contractor and subcontractor S&MA products and processes.
- c. Provide audit expertise to advise Constellation Technical Management Representatives (TMR's) on audit development planning.

2.3 Lunar Landing Module (LLM) Project Support (WBS 1.5.6.2)

The following series of tasks are incorporated as "place holders" for developing future work packages for the Lunar Landing Module project. No activities are currently active.

- 2.3.1 LLM Project GFE Safety and Reliability – Reserved for future work.
- 2.3.2 LLM Project GFE Quality Engineering - Reserved for future work.
- 2.3.4 LLM Project GFE Software Assurance - Reserved for future work.
- 2.3.5 LLM Project CFE and GFE Audits - Reserved for future work.
- 2.3.6 LLM CFE Quality Engineering - Reserved for future work.

2.4 Constellation Portable Equipment (Cx PE) (WBS 1.5.6.5)

The following series of tasks are incorporated as "place holders" for developing future work packages for the Constellation Portable Equipment project. No activities are currently active.

- 2.4.1 Cx PE Project GFE Safety and Reliability - Reserved for future work.
- 2.4.2 Cx PE Project GFE Quality Assurance - Reserved for future work.
- 2.4.3 Cx PE Project GFE Quality Engineering - Reserved for future work.
- 2.4.4 Cx PE Project GFE Software Assurance - Reserved for future work.

2.5 DELIVERABLES

Requirements Verification/Certification Status
SDF Assessments
S&MA Assessments and Presentations
Code assessments
RIDS
List of Auditors
Audit Reports
Master Audit Schedule
Technical and metric analysis
Subcontractor performance reports
Draft letter of delegations

3.0 PERIOD OF PERFORMANCE: October 1 2008 - April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">34-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align:center">\$177,247</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 34-09 – Program Support

1.0 TITLE OF EFFORT: Constellation GFE Projects and CFE Quality Support (WBS 1.5.6)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Constellation Program quality and flight equipment projects (which may include GFE, CFE, and payloads), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE lifecycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 Constellation Program Support (WBS 1.5.6.1)

2.2.1 Constellation Program GFE Safety and Reliability (WBS 1.5.6.x)

Perform flight safety, reliability, and mission assurance for GFE. Provide safety and Mission Assurance for GFE payloads. Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.

- a. Participate in design reviews and program boards (as required), review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- b. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- c. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- d. Track and provide status on requirements verification, system qualification, and design certification activities.
- e. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- f. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Constellation Program for discussion.
- g. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- h. Participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted; closure rationale is acceptable and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
- i. Support operational use of hardware and software.

2.2.2 Constellation Program Software Assurance (WBS 1.5.6.x)

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation, for the Constellation Program.

- a. Ensure the conformance of software lifecycle processes and products to requirements, standards, and procedures.
- b. Define Software Assurance requirements.
- c. Perform process and product activities throughout the life cycle to provide objective insight into the maturity and quality of the software processes and products.

- d. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software lifecycle
- e. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- f. Ensure the testing of software safety critical components are sufficiently implemented and that applicable controls are in place to verify all safety conditions
- g. Conduct analysis of proposed changes on system safety
- h. Evaluate the reliability of the software products created throughout the life cycle
- i. Ensure that the software being developed or maintained satisfies the functional and performance requirements
- j. Ensure that each phase of the development process yields the right software products
- k. Participate in major milestone reviews and certification/acceptance of the software.

2.2.3 Constellation Program Quality Engineering (QE) (WBS 1.5.6.x)

Perform Quality Engineering (QE) functions at Program-level subcontractors,

- a. Perform program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for Constellation related directives, requirements per Program Office Direction.
- c. Develop program related directives, requirements, and change requests dealing with quality and provide tracking and support to program representatives.
- d. Perform facility certifications and surveillance as directed by the Program Office
- e. Perform Program directed investigations of anomalies

2.2.4 Constellation Program GFE and CFE Procurement Quality Assurance (WBS 1.5.6.x)

Perform PQA functions at contractors and subcontractors:

- a. Assure that Constellation Program, CEV Project, Lunar Lander Project and miscellaneous Constellation related sub-project contractors and vendors have a quality assurance program, and that it's adequately addressed in the procurement cycle. A Supplier Scorecard will be kept for NASA Contractors and for Suppliers of Criticality 1, 1 R, 1 S, 2, and 2R hardware. The Supplier Scorecard will track key attributes for Constellation products such as quality performance, delivery performance, cost of poor quality (scrap, rework, warranty, concession, returns, etc.), and corrective action attributes.
- b. Where identified, perform Pre-Award surveys of suppliers.
- c. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications.
- d. Review purchase orders to determine if Government Source Inspection (GSI) is required.
- e. Review purchase orders to determine appropriate quality instructions.
- f. Assure consistency of contractor and subcontractor activities with Federal Acquisition Regulation (FAR) requirements.
- g. Prepare DRAFT DCMA letters of delegation
- h. Manage working agreements and Letters of Delegation (LOD) in accordance with NPR 8735.2 for product assurance actions performed by support contractors or the Defense Contract Management Agency (DCMA), including process flow information and the coordination of QA issues and concerns between suppliers and Agency management.
- i. Reconcile existing DCMA Quality Leading Indicators (QLI) reports with product requirements.

2.2.5 Constellation Program Audits (WBS 1.5.6.x)

Participate in NASA-sponsored audits in accordance with the requirements of CxP 70059, SR&QA Requirements.

- a. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements implementation at NASA contractors, subcontractors, and vendors.
- b. Perform independent surveillance and periodic audits on Center, contractor and subcontractor S&MA products and processes.
- c. Provide audit expertise to advise Constellation Technical Management Representatives (TMR's) on audit development planning.

2.3 Lunar Landing Module (LLM) Project Support (WBS 1.5.6.2)

The following series of tasks are incorporated as "place holders" for developing future work packages for the Lunar Landing Module project. No activities are currently active.

- 2.3.1 LLM Project GFE Safety and Reliability – Reserved for future work.
- 2.3.2 LLM Project GFE Quality Engineering - Reserved for future work.
- 2.3.4 LLM Project GFE Software Assurance - Reserved for future work.
- 2.3.5 LLM Project CFE and GFE Audits - Reserved for future work.
- 2.3.6 LLM CFE Quality Engineering - Reserved for future work.

2.4 Constellation Portable Equipment (Cx PE) (WBS 1.5.6.5)

The following series of tasks are incorporated as "place holders" for developing future work packages for the Constellation Portable Equipment project. No activities are currently active.

- 2.4.1 Cx PE Project GFE Safety and Reliability - Reserved for future work.
- 2.4.2 Cx PE Project GFE Quality Assurance - Reserved for future work.
- 2.4.3 Cx PE Project GFE Quality Engineering - Reserved for future work.
- 2.4.4 Cx PE Project GFE Software Assurance - Reserved for future work.

2.5 DELIVERABLES

Requirements Verification/Certification Status
SDF Assessments
S&MA Assessments and Presentations
Code assessments
RIDS
List of Auditors
Audit Reports
Master Audit Schedule
Technical and metric analysis
Subcontractor performance reports
Draft letter of delegations

3.0 PERIOD OF PERFORMANCE: October 1 2008 - April 30, 2009

TO 34 CONSTELLATION GFE PROGRAM

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Estimated Cost		\$34,203		\$20,880		\$20,880		\$20,880		\$23,100		\$23,100		\$34,203		\$177,247

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 31-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p> 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>4/5/09</u> CONTRACTING OFFICER
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11. SCHEDULE						
ITEM NO	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align: center;">\$153,343</p>
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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 _____

1.0 TITLE OF EFFORT: CxP) Mission Operations Project (MOP) SUPPORT

1.0 TASK DESCRIPTION: :

This task provides internal and external configuration management (CM) support as well as integration support to the Mission Operations Project (MOP).

The objective of this task is to synergize existing CM techniques and capabilities within MOD/MOP and further develop CM capabilities for MOP to ensure integration with Level 2 CxP initiatives. The contractor shall coordinate with MOP and Level 2 CM representatives regarding the content and format of all CM initiatives prior to development of all final products.

2.1 STATEMENT OF WORK REFERENCE: SOW 5.0

2.2 REQUIREMENTS:

2.2.1 CxP MOP

2.2.1.1 MO Project Internal CM Support:

- Lead Implementer of CM Plan for MOP project Items
 - CM process work instruction (WI)
 - Book manager for any related WI – if needed
 - Own CM Windchill areas, change request (CR) form, control board (CB) presentation template, etc.
 - Track documentation baselined (MOP applicable document list)
 - Organize/request numbers for MOP/MOD documents for Cx.
- Execute MOP level CM reviews
 - i.e., accept and route CRs, track closures, etc.
- Interface and support to CxP CM office for any MOP items
 - Including CxP audits of MOP
 - Pushback on overhead items
- CM Office secretariat for major MOP life cycle reviews (ex. Preliminary Design Review (PDR) and Technical Coordination Meetings (TCMs), external review activity
- Assistance in basic document quality assurance (DQA) implementation
- NASA CM best practices
 - NASA standard

2.2.1.2 MO Project External CM Support –Flight Directors Office (FDO):

- Provide inputs to MOP CM plan for non-internal MOP processes
- Lead implementer of CM plan for CxP CRs as well as Crew Exploration Vehicle (CEV)/Crew Launch Vehicle (CLV) CRs
 - Ensure TCM support
 - Support CxP boards for closure
 - Bring cost impact CRs or other major CRs effecting MOP to MOPCB for assessment
- Support CxP and MOP CM office processes
 - Since lead review and tracking of all external CRs for MOP/MOD

2.2.1.3 MOP Control Board and MOP Internal Reviews:

- Establish an operating standard for MOPCB and MOP Program Status Review (PSR)

- Develop best practices for communication, action item tracking/closure, agendas, distribution lists, minutes, action log, archiving of presentations, setting up and running the meeting
- Keep list of board members and all formal CM documents

2.3 DELIVERABLES

<u>No.</u>	<u>Description</u>	<u>Due Date</u>	<u>Format</u>
1	CM status	Monthly	NASA provided format
2	Service order status	<i>Monthly</i>	NASA provided format
3	Work instructions and updates	<i>As required</i>	NASA provided format
4	IT seat and inventory reports	<i>As required</i>	NASA provided format
5	Presentation materials and assessments	<i>As required</i>	NASA provided format

Technical Performance Measures and Success Criteria

- Timeliness, accuracy and quality of required monthly and special reports.
- Established processes to generate, negotiate, and implement task agreements.
- Established process for task agreement performance tracking including cost, technical and schedule.
- Established process for required boards and panels complete with agendas, facilitation, minutes and action list.
- Timely staffing of open positions, staffing attrition (plan vs. actual)

Nondisclosure Statements

The Contractor shall maintain a nondisclosure statement, per company policy, an individual nondisclosure for each person supporting this Task Order (TO), and a summary of the procedures for information control and protection that are applicable to all personnel supporting this TO.

It is anticipated that the Contractor will have access to, be furnished with, or use the following types of recorded information:

1. Information pertaining to third parties, with limited rights or restricted rights, in the form of notices submitted via NASA or directly to the Contractor.
2. Information pertaining to third parties, which NASA has agreed to handle under protective arrangement.
3. Information of which NASA intends to control the use and dissemination.
4. Information governed by the Privacy Act of 1974, 5 U.S.C. 552a

In order to provide appropriate management and control for protecting this information, the Contractor agrees to: (1) use and disclose such information only to the extent necessary to perform the work required under this Delivery Order, with particular emphasis on restricting the information to employees having a "need to know"; and, (2) establish the procedures and controls necessary to prevent disclosure of this information outside of the Contractor's scope of work in this Delivery Order, except in accordance with written instructions from the Contracting Officer.

Potential Organizational Conflict of Interest Pertaining to Crew Exploration Vehicle (CEV) Procurement Activities

To the extent that the work under this contract requires access to Limited Rights Data, Restricted Computer Software, or Confidential Business Information of other companies, and as long as these data remain proprietary, confidential or sensitive, the Contractor shall protect these data from unauthorized use and disclosure and agrees not to use such information to compete with those other companies. The Contractor also shall protect sensitive Government information from unauthorized use and disclosure and agrees not to use it to compete with the companies the products of which the Government test data and analysis pertain. Such sensitive Government information includes test data and analysis furnished under this contract. "Sensitive Information" referred to in this clause includes information received from other companies as well as sensitive Government information.

In order to neutralize or mitigate the potential organizational conflict of interest derived from the Contractor's access to information, the Contractor agrees to establish and maintain, until the CEV competitive procurement has concluded, a firewall plan with the following components:

- (1) Strict segregation of all personnel having access to Sensitive Information including but not limited to CEV Phase 1 trade studies and information provided under this contract, from participation on all competitive CEV proposal activities involving that data.
- (2) Identification by name of those individuals who have been segregated for purposes of accessing Sensitive Information. The Contractor shall be required to keep this list current and make this list available to all those authorized to access the data. Disclosure of Sensitive Information to non-Government individuals not on this list is strictly prohibited. It is emphasized that individuals on this list shall be employees with a "need to know."
- (3) Training of segregated personnel regarding organizational conflicts of interest, including: mitigation, firewalls, and management and protection of data.
- (4) A requirement for personnel having access to Sensitive Information to sign an agreement that indicates their understanding of their responsibilities and agreement to comply with the firewall plan and company policy regarding the protection of information, as well as the ramifications for violations of those responsibilities.

This clause shall be included in all subcontracts subject to any organizational conflict of interest in performance of this contract.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

Contractor may provide travel, training, materials, and other non-labor resources as necessary to support task order requirements.

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">31-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [<input type="checkbox"/>] is, [<input checked="" type="checkbox"/>] is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
Name: Signature: _____ Date: _____	

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align:center">\$153,299</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authroized U.S. Government Representative

Date

1.0 TITLE OF EFFORT: CxP Mission Operations Project (MOP) SUPPORT

2.0 TASK DESCRIPTION :

This task provides internal and external configuration management (CM) support as well as integration support to the Mission Operations Project (MOP).

The objective of this task is to synergize existing CM techniques and capabilities within MOD/MOP and further develop CM capabilities for MOP to ensure integration with Level 2 CxP initiatives. The contractor shall coordinate with MOP and Level 2 CM representatives regarding the content and format of all CM initiatives prior to development of all final products.

2.1 STATEMENT OF WORK REFERENCE: SOW 5.0

2.2 REQUIREMENTS:

2.2.1 CxP MOP

2.2.1.1 MO Project Internal CM Support:

- Lead Implementer of CM Plan for MOP project Items
 - CM process work instruction (WI)
 - Book manager for any related WI – if needed
 - Own CM Windchill areas, change request (CR) form, control board (CB) presentation template, etc.
 - Track documentation baselined (MOP applicable document list)
 - Organize/request numbers for MOP/MOD documents for Cx.
- Execute MOP level CM reviews
 - i.e., accept and route CRs, track closures, etc.
- Interface and support to CxP CM office for any MOP items
 - Including CxP audits of MOP
 - Pushback on overhead items
- CM Office secretariat for major MOP life cycle reviews (ex. Preliminary Design Review (PDR) and Technical Coordination Meetings (TCMs), external review activity
- Assistance in basic document quality assurance (DQA) implementation
- NASA CM best practices
- NASA standard

2.2.1.2 MO Project External CM Support –Flight Directors Office (FDO):

- Provide inputs to MOP CM plan for non-internal MOP processes
- Lead implementer of CM plan for CxP CRs as well as Crew Exploration Vehicle (CEV)/Crew Launch Vehicle (CLV) CRs
 - Ensure TCM support
 - Support CxP boards for closure
 - Bring cost impact CRs or other major CRs effecting MOP to MOPCB for assessment
- Support CxP and MOP CM office processes
 - Since lead review and tracking of all external CRs for MOP/MOD

2.2.1.3 MOP Control Board and MOP Internal Reviews:

- Establish an operating standard for MOPCB and MOP Program Status Review (PSR)

Develop best practices for communication, action item tracking/closure, agendas, distribution lists, minutes, action log, archiving of presentations, setting up and running the meeting

Keep list of board members and all formal CM documents

2.3 DELIVERABLES

<u>No.</u>	<u>Description</u>	<u>Due Date</u>	<u>Format</u>
1	CM status	Monthly	NASA provided format
2	Service order status	<i>Monthly</i>	NASA provided format
3	Work instructions and updates	<i>As required</i>	NASA provided format
4	IT seat and inventory reports	<i>As required</i>	NASA provided format
5	Presentation materials and assessments	<i>As required</i>	NASA provided format

Technical Performance Measures and Success Criteria

Timeliness, accuracy and quality of required monthly and special reports.

Established processes to generate, negotiate, and implement task agreements.

Established process for task agreement performance tracking including cost, technical and schedule.

Established process for required boards and panels complete with agendas, facilitation, minutes and action list.

Timely staffing of open positions, staffing attrition (plan vs. actual)

Nondisclosure Statements

The Contractor shall maintain a nondisclosure statement, per company policy, an individual nondisclosure for each person supporting this Task Order (TO), and a summary of the procedures for information control and protection that are applicable to all personnel supporting this TO.

It is anticipated that the Contractor will have access to, be furnished with, or use the following types of recorded information:

1. Information pertaining to third parties, with limited rights or restricted rights, in the form of notices submitted via NASA or directly to the Contractor.
2. Information pertaining to third parties, which NASA has agreed to handle under protective arrangement.
3. Information of which NASA intends to control the use and dissemination.
4. Information governed by the Privacy Act of 1974, 5 U.S.C. 552a

In order to provide appropriate management and control for protecting this information, the Contractor agrees to: (1) use and disclose such information only to the extent necessary to perform the work required under this Delivery Order, with particular emphasis on restricting the information to employees having a "need to know"; and, (2) establish the procedures and controls necessary to prevent disclosure of this information outside of the Contractor's scope of work in this Delivery Order, except in accordance with written instructions from the Contracting Officer.

Potential Organizational Conflict of Interest Pertaining to Crew Exploration Vehicle (CEV) Procurement Activities

To the extent that the work under this contract requires access to Limited Rights Data, Restricted Computer Software, or Confidential Business Information of other companies, and as long as these data remain proprietary, confidential or sensitive, the Contractor shall protect these data from unauthorized use and disclosure and agrees not to use such information to compete with those other companies. The Contractor also shall protect sensitive Government information from unauthorized use and disclosure and agrees not to use it to compete with the companies the products of which the Government test data and analysis pertain. Such sensitive Government information includes test data and analysis furnished under this contract. "Sensitive Information" referred to in this clause includes information received from other companies as well as sensitive Government information.

In order to neutralize or mitigate the potential organizational conflict of interest derived from the Contractor's access to information, the Contractor agrees to establish and maintain, until the CEV competitive procurement has concluded, a firewall plan with the following components:

- (1) Strict segregation of all personnel having access to Sensitive Information including but not limited to CEV Phase 1 trade studies and information provided under this contract, from participation on all competitive CEV proposal activities involving that data.
- (2) Identification by name of those individuals who have been segregated for purposes of accessing Sensitive Information. The Contractor shall be required to keep this list current and make this list available to all those authorized to access the data. Disclosure of Sensitive Information to non-Government individuals not on this list is strictly prohibited. It is emphasized that individuals on this list shall be employees with a "need to know."
- (3) Training of segregated personnel regarding organizational conflicts of interest, including: mitigation, firewalls, and management and protection of data.
- (4) A requirement for personnel having access to Sensitive Information to sign an agreement that indicates their understanding of their responsibilities and agreement to comply with the firewall plan and company policy regarding the protection of information, as well as the ramifications for violations of those responsibilities.

This clause shall be included in all subcontracts subject to any organizational conflict of interest in performance of this contract.

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

Contractor may provide travel, training, materials, and other non-labor resources as necessary to support task order requirements.

TO 31 MOP SUPPORT

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Estimated Cost		\$29,555		\$18,072		\$18,072		\$18,072		\$19,986		\$19,986		\$29,555		\$153,299

The NLR elements included in our proposal are based on historical data derived from prior years for this task order.

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 30-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
-------------------------------------	---	---

3. Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 FAX: E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
--	---

5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>4/15/09</u> CONTRACTING OFFICER
---	---

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total <p style="text-align: center;">\$258,648</p>
---	---

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: _____ Date _____

Authorized U.S. Government Representative

Task Order 30-09 Rev. 1

- 1.0 TITLE OF EFFORT:** JSC Center Risk Management
- 2.0 TASK DESCRIPTION:** Provide expert support to the JSC Center Risk Manager in developing,, maintaining, and enhancing the JSC Center Risk Management Process.
- 2.1 SOW Reference: 8.2.2b**
- 2.1.1 Support to JSC Center Risk Management Office (AC3):** The contractor shall provide expertise to support the development, maintenance, and enhancement of the JSC Risk Management Process including documenting and tracking risks, developing presentation packages, performing integrated analysis of Center and local program risks, plus developing and tracking of metrics. The contractor shall help the JSC Center Risk Manager interface with the spaceflight programs assigned to JSC (i.e. Space Shuttle, Space Station and Constellation) and the projects and organizations supporting them to continue emphasis to improve project efficiency, reduce cost, and improve performance through rigorous continuous risk management.
- 1) Facilitate implementation of risk management within JSC organizations (*Product 3: JSC Risk Management Web Tool; Product 5: Risk Trend/Metric Reports*)
 - a. Assist in the development and maintenance of risk management processes
 - b. Assist in maintaining JSC risk management database and web tool
 - c. Support the JSC institutional risk reviews
 - d. Capture minutes and provide tracking of actions at reviews
 - 2) Maintain the JSC risk management database (*Product 4: JSC Risk Management Database*)
 - 3) JSC Risk Management Plan development (*Product 2: Risk Management Procedural Requirement*)
 - 4) Assist in providing risk management support to JMC activities (*Product 1: Monthly JSC Management Council Risk Review Package*)
 - 5) Seek enhancements to the overall risk management process and recommend changes/updates (*Product 3: JSC Risk Management Web Tool; Product 5: Risk Trend/Metric Reports*)
 - 6) Help facilitate the JSC RM Working Group activities
 - 7) Assist in the development and maintenance of risk management processes to establish consistency with Agency, other Centers, and Programs
 - 8) Help facilitate the Core JSC / Joint Program Risk Management Working Group activities
 - 9) Provide risk management training to JSC Directorates
 - 10) Brief JSC Directorates in JSC risk management requirements.
 - 11) Assist in facilitating periodic Directorate and sub-Directorate Risk Reviews
 - 12) Define risks based on gap analysis
 - 13) Define new risks to center objectives
 - 14) Identify risks impacting Programs, Projects, and other Centers
 - 15) Perform assessment of existing risks (*Product 6: Data Mining Reports*)
 - 16) Assist in cost and schedule analysis for identified risks (*Product 6: Data Mining Reports*)
 - 17) Assist in data mining activities for identification of new risks (*Product 6: Data Mining Reports*)
 - 18) Participate in risk management benchmarking activities (other NASA Centers and Industries)
 - 19) Assist in the definition of, and data gathering for, risk management performance indicators
 - 20) Perform analysis of risk management performance indicators for the Directorates and Center

Products:

- 1) Monthly JSC Management Council Risk Review Package
- 2) JSC Risk Management Procedural Requirement
- 3) JSC Risk Management Web Tool
- 4) JSC Risk Management Database
- 5) Risk Trend /Metric Reports
- 6) Data Mining Reports

The contractor will provide these product deliverables/schedules/milestones to the assigned Point of Contact / COTR for each task.

Monthly reports on the status of assigned sub-tasks shall include progress against schedule, any problems encountered in performing the assigned task, and any significant interim findings

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - April 30, 2009

4.0 ESTIMATED COST:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 29-09 Rev 1
2. Date Of Order See Block 10
NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER
Certified for National Defense under DPAS (15 CFR 700) DO-C9

3. Issuing Office
NASA Johnson Space Center
Attn: BJ4\Learon Comeaux
Houston, TX 77058-3696
Tel. No.: (281) 483-6525
E-Mail learon.j.comeaux@nasa.gov
4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058
Mark For: Accountable Property

5. Contractor
Science Application International Corporation
Attn: Will Blumentritt
2450 NASA Parkway
Houston, TX 77058
Phone: (281) 335-2006
CAGE CODE:
6. Deliver On Or Before:
April 30, 2009
7. BILLING ADDRESS:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [] is, [] is not required. Sign below if required and return to contracting officer.
10. Name: Alice Jean Pursell
Name: _____
Signature: _____ Date: _____
Signature: *Alice Jean Pursell* Date: 12/23/08
CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only:
Requisition No.: _____ COMP. PART. PPC:
Reissue To: _____
13. Total
\$774,046

14. Quantities In "Quantity Accepted" Column Have Been:
 INSPECTED ACCEPTED RECEIVED
TO CONFROM TO THE CONTRACT,
ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____ Date: _____
Authorized U.S. Government Representative

Task Order 29-09 CEV Rev 1

1.0 TITLE OF EFFORT: CEV GFE Projects and CFE Quality Support (WBS 1.5.7)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized CEV Project quality and flight equipment projects (which may include GFE, CFE, and payloads), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE life-cycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 Crew Exploration Vehicle (CEV) Project Support (WBS 1.5.7.1)

2.2.1 CEV Project GFE Safety and Reliability (WBS 1.5.7.1.x)

Perform flight safety, reliability, and mission assurance for GFE. Provide safety and Mission Assurance for GFE payloads. Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.

- a. Participate in design reviews, participate in project Integrated Product Teams (IPTs), participate in CEV panels and working groups (as required), review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- b. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- c. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- d. Track and provide status on requirements verification, system qualification, and design certification activities.
- e. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- f. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the CEV Project for discussion.
- g. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- h. Participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted; closure rationale is acceptable and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
- i. Support operational use of hardware and software.

2.2.2. CEV Project GFE Quality Assurance (WBS 1.5.7.1.x)

Provide Quality Assurance support for GFE.

- a. Perform non-RITF related hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities.
- b. Perform designated Government Mandatory Inspection Points (GMI P's).
- c. Oversee facility maintenance on human-rated chambers and testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA and contractor facilities.
- d. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities.

- e. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.
- f. Prepare and submit QREX Reports.

2.2.3 CEV Project GFE Quality Engineering (WBS 1.5.7.1.x) Provide Quality Engineering support for GFE.

- a. Assess design as well as implementation and verification of S&MA requirements.
- b. Assess plans and procedures for manufacturing and test of hardware.
- c. Perform documentation reviews and evaluation tasks associated with receiving, inspection, fabrication, assembly, test, processing, and shipment of GFE at JSC facilities.
- d. Conduct surveillance of flight hardware with regard to receiving, inspecting, fabricating, assembling, testing, processing and shipping of GFE at JSC facilities.
- e. Perform readiness assessments prior to shipment of flight hardware.
- f. Support special teams conducting assessments and investigations.

2.2.4 CEV Project GFE Software Assurance (WBS 1.5.7.1.x)

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation, for GFE flight and ground systems.

- a. Ensure the conformance of software lifecycle processes and products to CxP requirements, standards, and procedures.
- b. Define Software Assurance requirements.
- c. Perform process and product assessment throughout the life cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software lifecycle
- e. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- f. Ensure the testing of software safety critical components are sufficiently implemented and that applicable controls are in place to verify all safety conditions Conduct analysis of proposed changes on software safety Evaluate the reliability of the software products created throughout the life cycle
- g. Ensure that the software being developed or maintained satisfies the functional and performance requirements
- h. Ensure that each phase of the development process yields the right software products
- i. Participate in major milestone reviews and certification/acceptance of the software.
- j. Conduct surveillance of GFE software lifecycle activities.

2.2.5 CEV CFE Quality Engineering (QE) (WBS 1.5.7.1.x)

Perform Quality Engineering (QE) functions at the Project-level:

- a. Participate in design reviews, review provided data and documentation, and provide RIDs on S&MA-related issues and deficiencies.
- b. Review proposed implementation of quality requirements.
- c. Ensure effective performance of Government Contract Quality Assurance for work performed by NASA prime contractors
- d. Identify the processes needed for the quality management system and their application throughout the CEV Project. Determine the sequence and interaction of these processes. Determine criteria and methods needed to ensure that both the operation and control of these processes are effective. Ensure the availability of resources and information necessary to support the operation and monitoring of these processes. Monitor, measure and analyze these processes.
- e. Implement actions necessary to achieve planned results and continual improvement of these processes
- f. Review plans for production.
- g. Ensure readiness to proceed with design, development, or manufacturing, as well as Certification of Flight Readiness (CoFR) Reviews Assure inclusion of necessary quality requirements flowdown to suppliers.
- h. Review and approve waivers and deviations against CEV Quality Assurance requirements

- i. Ensure that verifications of Government Mandatory Inspection Points (GMIPs) are properly identified and executed during vehicle processing. Ensure the implementation of Foreign Object Debris (FOD)/Contamination Control Plans by the CEV Project and its prime contractors, and verify compliance.

2.2.6 CEV Project GFE and CFE Audits (WBS 1.5.7.1.x)

Participate in NASA-sponsored audits.

- a. Perform process assessments and audits, and prepare reports documenting results.
- b. Perform statistical analyses, and benchmark S&MA processes.
- c. Perform technical and metric analyses, and present results.
- d. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements and implementations at NASA contractors, subcontractors, and vendors.
- e. Perform independent surveillance and periodic audits of contractor and subcontractor on S&MA products and processes.

2.2.7 Pyrotechnics Support (WBS 1.5.7.1.x)

Provide Pyrotechnics expertise to conduct all safety and reliability requirement assessments, reviews, evaluations, reporting, and recommendations related to all aspects of the Pyrotechnics Subsystems associated with the Crew Exploration Vehicle (CEV), the Lunar Lander and the associated launch vehicle. This will cover storage, transportation, installation, testing, activation/deployment, and safing of the Subsystems, hardware and software/firmware components. This also covers all pyrotechnic applications, support requirements and operations for all mission phases to include: storage, transportation, installation, pad escape, launch, ascent staging, mission aborts, mission uses, re-entry and recovery.

2.3 CEV Parachute Assembly System (CPAS) (WBS 1.5.7.2)

2.3.2 CPAS Project GFE Safety and Reliability (WBS 1.5.7.2.x)

Perform flight (including developmental flight test) safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for CPAS in accordance with the requirements established in Paragraph 2.2.1 above.

2.3.1. CPAS Project GFE Quality Assurance (WBS 1.5.7.2.x)

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2 above.

2.3.2 CPAS Project GFE Quality Engineering (WBS 1.5.7.2.x)

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.3 above.

2.4 CEV Aeroscience Project (CAP) (WBS 1.5.7.3)

Perform Process Assurance activities in support for GFE in accordance with the Constellation Program S&MA requirements.

2.5 Constellation Low Impact Docking System (Cx LIDS) (WBS 1.5.7.4)

2.5.1. Cx LIDS Project GFE Safety and Reliability (WBS 1.5.7.4.x)

Perform flight safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for Cx LIDS in accordance with the requirements established in Paragraph 2.2.1 above.

2.5.2. Cx LIDS Project GFE Quality Assurance (WBS 1.5.7.4.x)

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2 above.

2.5.3. Cx LIDS Project GFE Quality Engineering (WBS 1.5.7.4.x)

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.3 above.

2.5.4. Cx LIDS Project GFE Software Assurance (WBS 1.5.7.4.x)

Provide Software Assurance in support of GFE in accordance with the requirements established in Paragraph 2.2.4 above.

2.6 APAS to LIDS Adapter Segment (ATLAS) (WBS 1.5.7.5)

2.6.1. ATLAS Project GFE Safety and Reliability (WBS 1.5.7.5.x)

Perform flight safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for ATLAS in accordance with the requirements established in Paragraph 2.2. 1 above.

2.6.2. ATLAS Project GFE Quality Assurance (WBS 1.5.7.5.x)

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2 above.

2.6.3. ATLAS Project GFE Quality Engineering (WBS 1.5.7.5.x)

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.3 above.

2.6.4. ATLAS Project GFE Software Assurance (WBS 1.5.7.5.x)

Provide Software Assurance in support of GFE in accordance with the requirements established in Paragraph 2.2.4 above.

2.7 ISS CEV Communication Adapter (ICCA) (WBS 1.5.7.6)

2.7.1 ICCA Project GFE Safety and Reliability (WBS 1.5.7.6.x)

Perform flight safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for ICCA in accordance with the requirements established in Paragraph 2.2.1 above.

2.7.2 ICCA Project GFE Quality Assurance (WBS 1.5.7.6.x)

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2 above.

2.7.3 ICCA Project GFE Quality Engineering (WBS 1.5.7.6.x)

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.3 above.

2.7.4 ICCA Project GFE Software Assurance (WBS 1.5.7.6.x)

Provide Software Assurance in support of GFE in accordance with the requirements established in Paragraph 2.2.4 above.

2.3 DELIVERABLES

Requirements Verifications / Certification Status

SDF Assessments

S&MA Assessments and Presentations

Code assessments

RIDS

List of Auditors

Audit Reports

Master Audit Schedule

Technical and metric analysis

Subcontractor performance reports

Draft letter of delegations

Recommendations for acceptance of ADPs and GCARs

QREX Reports

3.0 PERIOD OF PERFORMANCE: October 1 2008 - April 30,2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">29-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
---	---

5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: _____ Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align:center">\$773,761</p>
---	---

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 _____

Task Order 29-09

1.0 TITLE OF EFFORT: CEV GFE Projects and CFE Quality Support

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized CEV Project quality and flight equipment projects (which may include GFE, CFE, and payloads), provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the GFE life-cycle as defined in EA-WI-023 and EA-WI-025. Provide support to on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 STATEMENT OF WORK REFERENCE: Section 5.0 - Program Support, Section 6.0 - JSC Project Support, Section 8.0 - Advanced Programs, Assurance Methodologies, and Special Processes

2.2 REQUIREMENTS:

2.2.1 Crew Exploration Vehicle (CEV) Project Support

2.2.1.1. CEV Project GFE Safety and Reliability

Perform flight safety, reliability, and mission assurance for GFE. Provide safety and Mission Assurance for GFE payloads.

Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.

- a. Participate in design reviews, participate in project Integrated Product Teams (IPTs), participate in CEV panels and working groups (as required), review provided data and documentation, and provide RID's on S&MA-related issues and deficiencies.
- b. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- c. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- d. Track and provide status on requirements verification, system qualification, and design certification activities.
- e. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- f. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the CEV Project for discussion.
- g. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- h. Participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted; closure rationale is acceptable and

complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

- i. Support operational use of hardware and software.

2.2.1.2. CEV Project GFE Quality Assurance

Provide Quality Assurance support for GFE.

- a. Perform non-RITF related hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities.
- b. Perform designated Government Mandatory Inspection Points (GMIP's).
- c. Oversee facility maintenance on human-rated chambers and testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA and contractor facilities.
- d. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities.
- e. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.
- f. Prepare and submit QREX Reports.

2.2.1.3. CEV Project GFE Quality Engineering

Provide Quality Engineering support for GFE.

- a. Assess design as well as implementation and verification of S&MA requirements.
- b. Assess plans and procedures for manufacturing and test of hardware.
- c. Perform documentation reviews and evaluation tasks associated with receiving, inspection, fabrication, assembly, test, processing, and shipment of GFE at JSC facilities.
- d. Conduct surveillance of flight hardware with regard to receiving, inspecting, fabricating, assembling, testing, processing and shipping of GFE at JSC facilities.
- e. Perform readiness assessments prior to shipment of flight hardware.
- f. Support special teams conducting assessments and investigations.

2.2.1.4. CEV Project GFE Software Assurance

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation, for GFE flight and ground systems.

- a. Ensure the conformance of software lifecycle processes and products to CxP requirements, standards, and procedures.
- b. Define Software Assurance requirements.
- c. Perform process and product assessment throughout the life cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software lifecycle
- e. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.

- f. Ensure the testing of software safety critical components are sufficiently implemented and that applicable controls are in place to verify all safety conditions
- g. Conduct analysis of proposed changes on software safety
- h. Evaluate the reliability of the software products created throughout the life cycle
- i. Ensure that the software being developed or maintained satisfies the functional and performance requirements
- j. Ensure that each phase of the development process yields the right software products
- k. Participate in major milestone reviews and certification/acceptance of the software.
- l. Conduct surveillance of GFE software life-cycle activities.

2.2.1.5. CEV CFE Quality Engineering (QE)

Perform Quality Engineering (QE) functions at the Project-level:

- a. Participate in design reviews, review provided data and documentation, and provide RIDs on S&MA-related issues and deficiencies.
- b. Review proposed implementation of quality requirements.
- c. Ensure effective performance of Government Contract Quality Assurance for work performed by NASA prime contractors
- d. Identify the processes needed for the quality management system and their application throughout the CEV Project. Determine the sequence and interaction of these processes. Determine criteria and methods needed to ensure that both the operation and control of these processes are effective. Ensure the availability of resources and information necessary to support the operation and monitoring of these processes. Monitor, measure and analyze these processes.
- e. Implement actions necessary to achieve planned results and continual improvement of these processes
- f. Review plans for production.
- g. Ensure readiness to proceed with design, development, or manufacturing, as well as Certification of Flight Readiness (CoFR) Reviews
- h. Assure inclusion of necessary quality requirements flowdown to suppliers.
- i. Review and approve waivers and deviations against CEV Quality Assurance requirements
- j. Ensure that verifications of Government Mandatory Inspection Points (GMIPs) are properly identified and executed during vehicle processing
- k. Ensure the implementation of Foreign Object Debris (FOD)/Contamination Control Plans by the CEV Project and its prime contractors, and verify compliance,

2.2.1.6. CEV Project GFE and CFE Audits

Participate in NASA-sponsored audits.

- a. Perform process assessments and audits, and prepare reports documenting results.
- b. Perform statistical analyses, and benchmark S&MA processes.
- c. Perform technical and metric analyses, and present results.
- d. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements and implementations at NASA contractors, subcontractors, and vendors.

- e. Perform independent surveillance and periodic audits of contractor and subcontractor on S&MA products and processes.

2.2.1.7 Pyrotechnics Support

Provide Pyrotechnics expertise to conduct all safety and reliability requirement assessments, reviews, evaluations, reporting, and recommendations related to all aspects of the Pyrotechnics Subsystems associated with the Crew Exploration Vehicle (CEV), the Lunar Lander and the associated launch vehicle. This will cover storage, transportation, installation, testing, activation/deployment, and safing of the Subsystems, hardware and software/firmware components. This also covers all pyrotechnic applications, support requirements and operations for all mission phases to include: storage, transportation, installation, pad escape, launch, ascent staging, mission aborts, mission uses, re-entry and recovery.

2.2.2 CEV Parachute Assembly System (CPAS)

2.2.2.1. CPAS Project GFE Safety and Reliability

Perform flight (including developmental flight test) safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for CPAS in accordance with the requirements established in Paragraph 2.2.2.1 above.

2.2.2.2. CPAS Project GFE Quality Assurance

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2.2 above.

2.2.2.3. CPAS Project GFE Quality Engineering

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.2.3 above.

2.2.3 CEV Aerospace Project (CAP)

2.2.3.1. CAP Process Support

Perform Process Assurance activities in support for GFE in accordance with the Constellation Program S&MA requirements.

2.2.4 Constellation Low Impact Docking System (Cx LIDS)

2.2.4.1. Cx LIDS Project GFE Safety and Reliability

Perform flight safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for Cx LIDS in accordance with the requirements established in Paragraph 2.2.2.1 above.

2.2.4.2. Cx LIDS Project GFE Quality Assurance

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2.2 above.

2.2.4.3. Cx LIDS Project GFE Quality Engineering

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.2.3 above.

2.2.4.4. Cx LIDS Project GFE Software Assurance

Provide Software Assurance in support of GFE in accordance with the requirements established in Paragraph 2.2.2.4 above.

2.2.5 APAS to LIDS Adapter Segment (ATLAS)

2.2.5.1. ATLAS Project GFE Safety and Reliability

Perform flight safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for ATLAS in accordance with the requirements established in Paragraph 2.2.2.1 above.

2.2.5.2. ATLAS Project GFE Quality Assurance

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2.2 above.

2.2.5.3. ATLAS Project GFE Quality Engineering

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.2.3 above.

2.2.5.4. ATLAS Project GFE Software Assurance

Provide Software Assurance in support of GFE in accordance with the requirements established in Paragraph 2.2.2.4 above.

2.2.6 ISS CEV Communication Adapter (ICCA)

2.2.6.1. ICCA Project GFE Safety and Reliability

Perform flight safety, reliability, and mission assurance for GFE. Provide Mission Assurance support for ICCA in accordance with the requirements established in Paragraph 2.2.2.1 above.

2.2.6.2. ICCA Project GFE Quality Assurance

Provide Quality Assurance support for GFE in accordance with the requirements established in Paragraph 2.2.2.2 above.

2.2.6.3. ICCA Project GFE Quality Engineering

Provide Quality Engineering support for GFE in accordance with the requirements established in Paragraph 2.2.2.3 above.

2.2.6.4. ICCA Project GFE Software Assurance

Provide Software Assurance in support of GFE in accordance with the requirements established in Paragraph 2.2.2.4 above.

2.3 DELIVERABLES

Requirements Verifications / Certification Status
SDF Assessments
S&MA Assessments and Presentations
Code assessments
RIDs
List of Auditors
Audit Reports
Master Audit Schedule
Technical and metric analysis
Subcontractor performance reports
Draft letter of delegations
Recommendations for acceptance of ADPs and GCARs
QREX Reports

3.0 PERIOD OF PERFORMANCE: October 1 2008 - April 30, 2009

4.0 RESOURCE TABLE:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align: center;">23-09 Rev. 1</p>	2. Date Of Order <p style="text-align: center;">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
---	---

5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name:	Signature: <i>Alice Jean Pursell</i> Date: <i>4/15/09</i>
Signature:	Date:
CONTRACTING OFFICER	

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total <p style="text-align: center;">\$399,830</p>
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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 _____

Originator: Learnon Comeaux (BJ)

TMR: David Thelen (NA13)

1. Title of Effort: Chief S&MA Officer (CSO) Support

2. Date of Request:

3. Statement of Work / Task Description

- a. Chief S&MA Officers Support
(SOW References: 5.0a-e, 7.1.2.a)

Provide support to the program-level Chief S&MA Officers (CSO) as follows: Assist each CSO in performing the tasks and responsibilities associated with the functions of the CSO. Assist each CSO to identify, evaluate and track concerns and issues related to the flight risks of the Space Shuttle, International Space Station and Constellation programs. Produce an integrated SMSR Topic list from among the CSOs, S&MA Directors and S&MA Divisions for submission to the NASA Headquarters SMSR Facilitator via the CSOs. Evaluate and follow assigned issues. Make recommendations to the CSO regarding the need for detailed assessments or analysis and work with the Special Assessments Coordinator to initiate required efforts. Develop presentations and support meetings as designated by the CSO.

Contractor may provide travel, training, materials, and other non-labor resources as necessary to support task order requirements.

4. Period of Performance

The period of performance does not commence until the CO has granted authorization to proceed.

This task order period of performance starts no sooner than 10/01/2008 and ends 04/30/2009.

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">23-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total <p style="text-align:center">\$399,721</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authroized U.S. Government Representative _____ Date _____

Originator: Learnon Comeaux (BJ)

TMR: David Thelen (NA13)

1. Title of Effort: Chief S&MA Officer (CSO) Support

2. Date of Request: The date of request will be assigned upon TMR approval.

3. Statement of Work / Task Description

- a. Chief S&MA Officers Support
(SOW References: 5.0a-e, 7.1.2.a)

Provide support to the program-level Chief S&MA Officers (CSO) as follows: Assist each CSO in performing the tasks and responsibilities associated with the functions of the CSO. Assist each CSO to identify, evaluate and track concerns and issues related to the flight risks of the Space Shuttle, International Space Station and Constellation programs. Produce an integrated SMSR Topic list from among the CSOs, S&MA Directors and S&MA Divisions for submission to the NASA Headquarters SMSR Facilitator via the CSOs. Evaluate and follow assigned issues. Make recommendations to the CSO regarding the need for detailed assessments or analysis and work with the Special Assessments Coordinator to initiate required efforts. Develop presentations and support meetings as designated by the CSO.

Contractor may provide travel, training, materials, and other non-labor resources as necessary to support task order requirements.

4. Period of Performance

The period of performance does not commence until the CO has granted authorization to proceed.

This task order period of performance starts no sooner than 10/01/2008 and ends 04/30/2009.

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 11-09	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483- 6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

8. Type Of Order:

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

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9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name: Signature: _____ Date: _____	Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$4,584,105
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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 _____

Task Order 11-09

1. Title of Effort: Shuttle Support

2. Task Description:

The contractor shall provide engineering and analytical expertise to the Space Shuttle Program for the development of reliability, maintainability, and supportability analysis, flight operations, and Orbiter Systems integration, and mission support.

2.1 SOW Reference: Section C, Subsections 5.0, and 6.0

2.2 Requirements

2.2.1 System Safety & Reliability:

2.2.1.1 S&MA Program Processes

Provide technical and administrative support to program level boards, panels, and processes.

1. Review contractor-provided risk assessments and identify increases in risk.
2. Perform qualitative and/or quantitative safety and mission assurance risk assessments.
3. Coordinate/resolve changes/issues dealing with Program S&MA requirements.
4. Develop and maintain Folios infobases. (HR, CIL, LCC, OMRS, Flight Rules Annex, PRACA)

2.2.1.2 Safety Engineering Review Panel (SERP) Engineering & Integration

Provide safety engineering and integration expertise to both the JSC Safety Engineering Review Panel (JSERP) and Integrated Safety Engineering Review Panel (ISERP).

- a. Assess Hazard Reports for technical accuracy and requirement compliance.
- b. Perform back-up duties to the Safety Panel Representatives from MX/SSP S&MA Program Office and NAs&MA Directorate as required.
- c. Perform Integrated Safety Assessments.
- d. Provide Orbiter Systems technical support as required.

2.2.1.3 Flight Operations System Safety Activity

Perform ascent, orbit and entry qualitative and/or quantitative operational risk assessments

- a. Perform/provide qualitative and/or quantitative risk assessments in support of the following Shuttle program boards and panels: FOICB, FRCB, CPCB, SRP, Flight Techniques Panels and Joint Operations Panel. Change Request (CR) evaluations are provided to the Board representatives for each respective board.
- b. Participate in approach and landing technique evaluation through involvement with the AMES Vertical Motion Simulator team.
- c. Assess hazards associated with joint Shuttle/ISS operations.
- d. Provide risk assessments and status pertaining to mission activities and/or hardware/software problems in support of the S&MA Mission Management Team representative.

2.2.1.4 Systems Engineering & Integration Safety & Reliability Activity

Provide safety and mission assurance expertise in support of SSP element integration for the following areas: Propulsion, Mechanical/Structural, and Electrical Systems Integration; Ascent, Orbit, Entry Operations Integration; and Software Integration.

- a. Change Evaluation

1. Perform/provide qualitative and/or quantitative risk assessments on changes to program requirements and element ICD's in support of ICB
2. Identify impacts to Integration Hazard Reports.

b. Board/Documentation

1. Identify impacts to Integration of changes to element-specific documentation.
2. Identify and recommend program and element document updates as appropriate for integration.
3. Provide S&MA technical support by performing/providing qualitative risk assessments for integration issues for other discipline-specific program baselining.
4. Perform surveillance to assure the integration contractor presents/updates hazard documentation according to Program requirements.

c. Problem Assessment

Assess Integration issues involving the SSP elements to determine impact to flight and provide S&MA position to program flight rationale. Includes but not limited to PRT participation, evaluation of out of family issues for disposition, etc.

d. Verification Assessment

Assure that controls for Integrated Hazards are verified as recorded in risk documentation and reflect Program/Project requirements.

e. New Design

Participate in element and upgrades design reviews; verifying compliance to SSP S&MA requirements, providing technical evaluations associated with SSP element interfaces, identifying issues and generating RIDs to document findings.

f. Launch Preparation

1. Certification of Flight Readiness (CoFR)
2. SMSR
3. SERP Activities (e.g., Review of integrated HR's & mission by mission safety assessments), IFA resolution, and LCC and flight rule changes, GFE CARs.
4. Risk ranking and PRA generation in support of Hazard Report updates.

g. Flight Operations

Provide real-time Mission Evaluation Room S&MA console support to the MMT, IFA identification and resolution, LCC issues and flight operations related panel support (e.g., Aborts/GNC Panel, Range Safety Panel, Intercenter Photo Working Group).

h. Ascent & On-Orbit Imaging:

Provide S&MA engineering technical support to the Intercenter Photo Working Group (IPWG).

1. Provide real time assurance of ascent and on-orbit imagery data.
2. Provide S&MA risk assessment to the Imagery Team and Shuttle S&MA.

i. Flight Software Activity:

1. Perform technical evaluations and qualitative risk assessments on software change requests and discrepancy reports and provide S&MA representation in support of the following boards: SASCB, Reconfiguration DCR Board, and the MEDS Software panel (MSP). Perform technical analysis on verification test plans procedures, and analysis results.

2. Provide technical safety support for the First Article Configuration Inspection (FACI), Configuration Inspection (CI), MEDS Software Acceptance Review (SAR) and the Software Readiness Review (SRR). Perform a mission readiness assessment and prepare a S&MA Flight Readiness Statement in support of the SRR.
3. Perform surveillance of SFOC products and processes including flight readiness, non-conformance resolution, and others as defined by the Flight Software Surveillance Plan.

Deliverables

COFR assessments.

Top 10 Program Risk recommendations.

2.2.1.5 Mission Operations and Integration Activity

Perform S&MA technical risk assessments in support of MO/Operations and Integration.

- a. Work with the Flight Managers to identify, track and resolve safety issues and concerns associated with Orbiter flight hardware and operations.
- b. Participate in and provide S&MA risk assessments for design and program milestone reviews for Cargo Integration Hardware.

2.2.1.6 Orbiter Systems Activity (MV)

a. Orbiter Problem Resolution Teams (PRTs):

Provide safety and mission assurance expertise to the PRTs to include the following:

1. Change Evaluation
2. Problem Reporting and Corrective Action (PRACA)
3. Verification Assessments
4. New Design
5. Quantitative Risk Assessments

b. Remote Manipulator System (RMS) Integration:

Provide S&MA representation for the RMS CCB; perform technical evaluations, and risk assessments of changes; perform integrated assessments of proposed changes to flight rules and crew procedures; provide technical S&MA engineering expertise to design reviews and program reviews.

c. Trending

Generate Orbiter contractor-furnished equipment design center PRACA trending spreadsheets to aid the OPO in monitoring vehicle hardware trends in accordance with the objectives of the Orbiter Aging Working Group.

d. Mission Support

1. Provide S&MA engineering expertise to the assessment of real-time mission risks in support of the S&MA Mission Management Team and the OPO MER manager through implementation of the Shuttle Problem Investigation Team (SPIT) process.
2. Generate CHIT responses as required to identify proposed changes in risk as a result of flight anomalies and associated work-arounds.
3. Develop/provide failure history assessments to the MER manager during Space Shuttle flight anomaly investigations as required.

e. Orbiter Integration

1. Provide inputs to OPO risk management activity.
2. Perform evaluations of S&MA data deliverables in support of hardware development milestone reviews.

3. Perform/provide quantitative/qualitative assessments of selected Orbiter systems and proposed design modifications for comparative purposes with emphasis on (1) increasing levels of safety, (2) mission success, and (3) reliability/maintenance. Coordinate analyses and results with the engineering, vehicle processing, and logistics communities using the appropriate formalized review forums
4. Perform/provide analyses for comparative assessments of different design approaches to baseline configuration.
5. Assessment of Integrated Hazards associated with Orbiter controls.
6. Provide system level technical assessments to the S&MA representatives to the Program.
7. Provide S&MA representation to the Program.

f. JSC Resident Office at KSC

1. Provide engineering support to the JSC Resident Office in dispositioning unexplained anomalies (UA's) and Prime Material Review items by performing risk assessments and quality coding verifications of these specific problems.
2. Identify configuration management (CM) processes/procedures/guidelines and assist JSC RO personnel with the management of MV CM function.
3. Participate in Orbiter Major Modification (OMM) activities to ensure proper adherence to vehicle processing quality requirements.
4. Interface with Logistics and other KSC organizations to identify data sources and provide data for quantitative risk and reliability analyses.

2.2.1.7 Reliability and Maintainability (R&M) Activity:

Provide engineering and analytical expertise to the Space Shuttle Program for the development of reliability, maintainability, and supportability analysis and participation in the SSP R&M Working Group.

- a. Shuttle S&MA R&M Working Group. Provide technical, analytical, and requirements expertise to the R&M Working Group to facilitate the performance of R&M requirements audits, assessment and resolution of R&M issues and Program changes, participation in design reviews, flight readiness reviews, and Program boards and panels to ensure the identification of R&M issues and requirement compliance, and review Prime Contractor analysis to assure technical accuracy, adequacy, and compliance with R&M policy providing corrective action recommendations as appropriate.
- b. Reliability and Maintainability Assessments and Analyses. Perform reliability and maintainability analyses to assess the impact of Shuttle design and operational changes, anomaly resolution and assess system performance with emphasis on: (1) increasing levels of safety, (2) mission success, (3) supportability, and (4) aging vehicle impacts.

Deliverables:

Bi-monthly customer satisfaction metrics.
 Special PRACA assessments
 CIL's and Hazard Report Review Results
 CoFR assessments and status
 Top 10 Risk recommendations - Monthly
 R&M assessments and analysis reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COSTS:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 10-09 Rev 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009
	7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name: Signature: _____ Date: _____	Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>12/23/08</u> CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total \$1,132,705
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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 _____

Task Order 10-09 NT Infrastructure Rev. 1

1.0 TASK TITLE: NT infrastructure Support (WBS 1.1.1)

2.0 TASK DESCRIPTION:

Coordinate and conduct activities related to S&MA NT infrastructure functions and responsibilities. Provide support to activities for authorized organizational functions that benefit all programs and projects and support the functions and responsibilities of the NT Division. Infrastructure functions include assessment of new and emerging technologies, Procurement Quality Assurance (PQA), performance of audits, EEE parts assurance, NASA Advisories and Alerts distribution and tracking, special processes engineering, and flight readiness assessments and supporting activities.

2.1 STATEMENT OF WORK EXPERIENCE Section 6.0 - JSC Project Support,
Section 8.2 - Assurance Methodologies and Technologies

2.2 REQUIREMENTS

2.2.1 Procurement Quality Assurance (PQA) (WBS 1.1.1.1)

Assist NASA in the performance of PQA to verify JSC quality provisions are identified and implemented for each procurement and are consistent with the Federal Acquisition Regulation (FAR) through assisting NASA with the following activities:

- a. Develop quality requirements and provisions recommendations for contracts.
- b. Review and make recommendations for approval on proposed requirements.
- c. Develop Government Source Inspection (GSI) delegation documents.
- d. Analyze Government, Agency, and JSC contractor plans and procedures.
- e. Assess milestone review data packages and generate Review Item Dispositions (RID's).
- f. Perform surveys and audits and generate reports (or inputs for reports) Assure inclusion of supplier audits/reports into the Supplier Assessment System.
- g. Perform problem assessments and recommend resolutions.
- h. Provide a liaison between suppliers and Government agencies, and provide technical recommendations.
- i. Track documentation produced and reviewed.
- j. Maintain Contract Administration Reimbursement Hours Reporting and Projections, and generate reports.
- k. Consolidate and analyze S&MA surveillance reports.
- l. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications. Utilize DCMA Quality Leading Indicator Reports to perform risk assessments for product quality requirements flowdown with the DCMA letters of delegation.
- m. Review purchase orders to determine if Government Source Inspection (GSI) is required. Develop GMIP plans in accordance with NPR 8735.2 and coordinate with DCMA.
- n. Review purchase orders to determine appropriate quality instructions.
- o. Assure consistency of contractor and subcontractor activities with Federal
- p. Acquisition Regulation (FAR) requirements and requirements of NPR 8735.2.
- q. Prepare DRAFT DCMA letters of delegation in accordance with NPR 8735.2.
- r. Review Purchase Cards to verify inclusion of Quality requirement.
- s. Manage and support the Procurement Quality assurance Database.

2.2.2 S&MA Audits (WBS 1.1.1.6)

Assist in the management of NASA-sponsored audits.

- a. Manage a joint audit program for combining contractor-NASA audits at common subcontractors.
- b. Maintain and publish a Master Audit Schedule of audit activity.

2.2.3 EEE Parts Assurance (WBS 1.1.1.2)

Provide EEE Parts Assurance.

- a. Recommend plans for EEE parts control policy and requirements, and work across Directorate, NASA Centers, Programs, and Projects to assure proper implementation.
- b. Identify and track EEE parts issues by generating plans and implementing those plans to resolve issues.
- c. Provide representative to NASA Parts Steering Committees and participate with all NASA Centers in setting electronic parts policy guidelines by developing the NASA Standard Parts List, reviewing and providing comments on (i) military specifications and (ii) NASA policy for EEE parts.

2.2.4 NASA Advisories and ALERT'S (WBS 1.1.1.3)

Support the JSC implementation of the NASA Advisories and Government-Industry Data Exchange Program (GIDEP)/Acute Launch Emergency Reliability Tip (ALERT) System.

- a. Establish and maintain the ALERT distribution list.
- b. Review ALERT's for applicability to JSC contracts, distribute, track, and review responses for adequacy.

2.2.5 Special Processes Engineering (WBS 1.1.1.4)

Provide support to the following tasks in the areas of Nondestructive Evaluation (NDE), electrical and electronics manufacturing, composite materials manufacturing, welding and brazing, precision cleaning and contamination control, and statistical processes:

- a. Prepare NDE plans and instructions, develop NDE techniques, and provide technical expertise to NDE inspection personnel performing NDE tasks.
- b. Perform NDE inspections.
- c. Review technical documents and provide recommendations to resolve potential process control issues (e.g., engineering changes, waivers/deviations, failure investigation reports, technical data submittals, engineering drawings, etc.)
- d. Provide technical expertise to metallic materials, nonmetallics such as RCC, TPS, adhesives, films coatings, and soft goods like Teflon, metallic issues such as fracture control and corrosion.
- e. Perform fracture control testing and analysis.
- f. Perform QA inspections utilizing the computer measurement machine.
- g. Develop and evaluate inspection requirements, special processes, and workmanship standards for the design and manufacture of high reliability electrical/electronics packages and systems for space flight applications.
- h. Develop and evaluate inspection requirements, evaluate test plans and results, and analyze failures in the design and manufacture of advanced composite lightweight materials.
- i. Evaluate industrial workmanship standards, specialized processes, and emerging technologies proposed for adoption by the NASA community for high reliability electrical/electronics packages and systems for space flight applications.
- j. Review welding and brazing work authorization documents and associated
- k. Engineering drawings to assure weldability as well as correctness of drawing notes, welding symbols, and NDT inspection requirements.
- l. Participate as special processes subject matter experts during surveys, vendor qualification evaluations, government source inspections, surveillance, and audits of JSC and contractor manufacturing facilities, including preparing checklists, documenting findings and observations, and providing recommended resolutions for identified problem conditions.
- m. Prepare special processes specifications and detailed process instructions.
- n. Process Quality Purchase Order Addendum for Fluids Procurement (JSC Form 131 3) forms for bottled compressed gas and specialty gas orders.
- o. Develop and evaluate inspection requirements, special processes (including NDE), and workmanship standards for design and manufacture of micro-electro-mechanical systems (MEMS).

2.2.6 Flight Equipment Data System (FEDS) Customer Requirements (WBS 1.1.1.7)

Define and document customer/user requirements needed to support development of a consolidated data architecture and associated processes to facilitate S&MA Certification of Flight Readiness (CoFR) activities. This effort will address the need to consolidate certain existing databases, systems and processes and will allow for future expansion to support additional applications and users.

2.3 DELIVERABLES

GSI delegation documents for NASA approval
Survey and Audit reports
Reimbursement Hours Reporting and Projection reports
S&MA consolidated surveillance report analyses
EEE Part Issue Resolution Plans
Up-to-date ALERT Distribution List
Special Processes Specifications and detailed process instructions
Inspection requirements
Special processes and workmanship standards
FEDS data architecture

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - September 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align: center;">10-09</p>	2. Date Of Order <p style="text-align: center;">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p>
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7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name: Signature: _____ Date: _____	Signature: <u>Alice Jean Pursell</u> Date: <u>9/30/08</u> CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: _____ Reissue To: _____	13. Total <p style="text-align: center;">\$1,132,382</p>
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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

Task Order 10-09

1.0 TASK TITLE: NT Infrastructure Support

2.0 TASK DESCRIPTION:

Coordinate and conduct activities related to S&MA NT infrastructure functions and responsibilities. Provide support to activities for authorized organizational functions that benefit all programs and projects and support the functions and responsibilities of the NT Division. Infrastructure functions include assessment of new and emerging technologies, Procurement Quality Assurance (PQA), performance of audits, EEE parts assurance, NASA Advisories and Alerts distribution and tracking, special processes engineering, and flight readiness assessments and supporting activities.

2.1 STATEMENT OF WORK EXPERIENCE Section 6.0 - JSC Project Support, Section 8.2 – Assurance Methodologies and Technologies

2.2 REQUIREMENTS

2.2.1 Procurement Quality Assurance (PQA):

Assist NASA in the performance of PQA to verify JSC quality provisions are identified and implemented for each procurement and are consistent with the Federal Acquisition Regulation (FAR) through assisting NASA with the following activities:

- a. Develop quality requirements and provisions recommendations for contracts.
- b. Review and make recommendations for approval on proposed requirements.
- c. Develop Government Source Inspection (GSI) delegation documents.
- d. Analyze Government, Agency, and JSC contractor plans and procedures.
- e. Assess milestone review data packages and generate Review Item Dispositions (RID's).
- f. Perform surveys and audits and generate reports (or inputs for reports). Assure inclusion of supplier audits/reports into the Supplier Assessment System.
- g. Perform problem assessments and recommend resolutions.
- h. Provide a liaison between suppliers and Government agencies, and provide technical recommendations.
- i. Track documentation produced and reviewed.
- j. Maintain Contract Administration Reimbursement Hours Reporting and Projections, and generate reports.
- k. Consolidate and analyze S&MA surveillance reports.
- l. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications. Utilize DCMA Quality Leading Indicator Reports to perform risk assessments for product quality requirements flowdown with the DCMA letters of delegation.
- m. Review purchase orders to determine if Government Source Inspection (GSI) is required. Develop GMIP plans in accordance with NPR 8735.2 and coordinate with DCMA.
- n. Review purchase orders to determine appropriate quality instructions.
- o. Assure consistency of contractor and subcontractor activities with Federal Acquisition Regulation (FAR) requirements and requirements of NPR 8735.2.

- p. Prepare *DRAFT* DCMA letters of delegation in accordance with NPR 8735.2.
- q. Review Purchase Cards to verify inclusion of Quality requirement.
- r. Manage and support the Procurement Quality assurance Database.

2.2.2 S&MA Audits

Assist in the management of NASA-sponsored audits.

- a. Manage a joint audit program for combining contractor-NASA audits at common subcontractors.
- b. Maintain and publish a Master Audit Schedule of audit activity.

2.2.3 EEE Parts Assurance

Provide EEE Parts Assurance.

- a. Recommend plans for EEE parts control policy and requirements, and work across Directorate, NASA Centers, Programs, and Projects to assure proper implementation.
- b. Identify and track EEE parts issues by generating plans and implementing those plans to resolve issues.
- c. Provide representative to NASA Parts Steering Committees and participate with all NASA Centers in setting electronic parts policy guidelines by developing the NASA Standard Parts List, reviewing and providing comments on (i) military specifications and (ii) NASA policy for EEE parts.
- d. Arrange for the destructive physical analyses of EEE components.

2.2.4 NASA Advisories and ALERT's:

Support the JSC implementation of the NASA Advisories and Government-Industry Data Exchange Program (GIDEP) / Acute Launch Emergency Reliability Tip (ALERT) System.

- a. Establish and maintain the ALERT distribution list.
- b. Review ALERT's for applicability to JSC contracts, distribute, track, and review responses for adequacy.

2.2.5 Special Processes Engineering:

Provide support to the following tasks in the areas of Nondestructive Evaluation (NDE), electrical and electronics manufacturing, composite materials manufacturing, welding and brazing, precision cleaning and contamination control, and statistical processes:

- a. Prepare NDE plans and instructions, develop NDE techniques, and provide technical expertise to NDE inspection personnel performing NDE tasks.
- b. Perform NDE inspections.

- c. Review technical documents and provide recommendations to resolve potential process control issues (e.g., engineering changes, waivers/deviations, failure investigation reports, technical data submittals, engineering drawings, etc.)
- d. Provide technical expertise to metallic materials, nonmetallics such as RCC, TPS, adhesives, films coatings, and soft goods like Teflon, metallic issues such as fracture control and corrosion.
- e. Perform fracture control testing and analysis.
- f. Perform QA inspections utilizing the computer measurement machine.
- g. Develop and evaluate inspection requirements, special processes, and workmanship standards for the design and manufacture of high reliability electrical/electronics packages and systems for space flight applications.
- h. Develop and evaluate inspection requirements, evaluate test plans and results, and analyze failures in the design and manufacture of advanced composite lightweight materials.
- i. Evaluate industrial workmanship standards, specialized processes, and emerging technologies proposed for adoption by the NASA community for high reliability electrical/electronics packages and systems for space flight applications.
- j. Review welding and brazing work authorization documents and associated engineering drawings to assure weldability as well as correctness of drawing notes, welding symbols, and NDT inspection requirements.
- k. Participate as special processes subject matter experts during surveys, vendor qualification evaluations, government source inspections, surveillance, and audits of JSC and contractor manufacturing facilities, including preparing checklists, documenting findings and observations, and providing recommended resolutions for identified problem conditions.
- l. Prepare special processes specifications and detailed process instructions.
- m. Process Quality Purchase Order Addendum for Fluids Procurement (JSC Form 1313) forms for bottled compressed gas and specialty gas orders.
- n. Develop and evaluate inspection requirements, special processes (including NDE), and workmanship standards for design and manufacture of micro-electro-mechanical systems (MEMS).

2.2.6 Flight Equipment Data System (FEDS) Customer Requirements:

Define and document customer/user requirements needed to support development of a consolidated data architecture and associated processes to facilitate S&MA Certification of Flight Readiness (CoFR) activities. This effort will address the need to consolidate certain existing databases, systems and processes and will allow for future expansion to support additional applications and users.

2.3 DELIVERABLES

GSI delegation documents for NASA approval
 Survey and Audit reports
 Reimbursement Hours Reporting and Projection reports
 S&MA consolidated surveillance report analyses
 EEE Part Issue Resolution Plans
 Up-to-date ALERT Distribution List
 Special Processes Specifications and detailed process instructions

Inspection requirements
Special processes and workmanship standards
FEDS data architecture
EEE DPA Test Results

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">08-09 Rev 1</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name:	Signature: <i>Alice Jean Pursell</i> Date: <u>12/23/08</u>
Signature:	CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC:	13. Total <p style="text-align:center">\$2,091,824</p>
Reissue To:	

14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT,
ACCPEANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authroized U.S. Government Representative _____ Date _____

Task Order 08-09 Rev. 1

1.0 TITLE OF EFFORT: Extravehicular Activity (EVA) Projects Support (WBS 1.2.2)

2.0 TASK DESCRIPTION: Coordinate and conduct S&MA activities for authorized Extravehicular Activity quality and flight equipment projects, provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the EVA GFE life-cycle as defined in EA-WI-023 and EA-WI-025. Provide support to pre-flight activities and on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 Statement of Work Reference: Section 6.0 - JSC Project Support

2.2 Requirements:

2.2.1 EVA GFE

2.2.1.1 EVA GFE Safety and Reliability (WBS 1.2.2.1)

Perform flight safety, reliability, and mission assurance for GFE.

- a. Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements, identify design problems and provide design solutions or improvements.
- b. Participate in design reviews, review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- d. Identify potential critical items list failure modes, causes, effects indicators of verification, and acceptance rationale.
- e. Track and provide status on requirements verification, system qualification, and design certification activities.
- f. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified. Assess waivers to assure adequate and appropriate acceptance rationales are provided.
- g. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, program/project management, and the EVA Project Office for discussion.
- h. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- i. In accordance with JSC 28035, participate in problem/anomaly investigations of design and safety related problems during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective action (if taken) is appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
- j. Support operational use of hardware and software. Participate in development of CHIT'S in order to assure compliance with S&MA and performance requirements.
- k. Submit Operational Constraints for Extravehicular Activity and flight equipment projects and assure the operational constraints are officially approved for each flight in the Operational Control Agreement Database (OCAD).
- l. Perform updates to safety documentation for the SAFER as driven by hardware design modifications or changes to operations and present/deliver such updates to the FESRRP and PRCB for approval.
- m. Supply special assessments (e.g., PRA and trade studies) and involve subject matter experts as required.
- n. Complete training/certification requirements.

- o. Perform review of the EVA Support Equipment Lists (ESEL's) to ensure the manifest plans meet S&R mission assurance goals.
- p. In accordance with NT-CWI-004, conduct a risk assessment for shipments with open issues requiring NT management concurrence.

2.2.1.2 EVA GFE Quality Assurance (WBS 1.2.2.2)

2.2.1.2.1 EVA GFE In-Line Quality Assurance

For in-line Quality Assurance support for GFE performed on the One EVA contract, the contractor shall:

- a. Perform non-RITF related in-line hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities.
- b. Perform and assign as required designated Mandatory Inspection Points (MIP's).
- c. Oversee facility maintenance on human-rated chambers and testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA and contractor facilities.
- d. Perform in-line support of the Bond Rooms for shipping and receiving of flight hardware.
- e. Perform designated Mandatory inspection Points (MIP's) on One EVA hardware and projects at other NASA centers as requested by EVA Project Office.
- f. Maintain NT QAS ISO work instructions
- g. Develop and submit Weekly Activity Report to the NASA Monitor of all activities completed or in process.

2.2.1.2.2 EVA GFE Surveillance Quality Assurance

For contract surveillance of the Engineering and Science Contract (ESC), the contractor shall:

- a. Perform and assign as required designated Government Mandatory Inspection Points (GMIP's).
- b. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities per the surveillance plan.
- c. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.
- d. Perform surveillance of the Bond Rooms which are responsible for ESC hardware.
- e. Perform, prepare and enter into the appropriate database Surveillance Reports of the ESC Inline activities.
- f. Assist QE in analyzing surveillance data including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.

2.2.1.2.3 EVA Quality Assurance at the Neutral Buoyancy Laboratory

- a. Participates in assigned Manned Post Test Debriefs to capture and record anomalies.
- b. Generate/Issue/Close Interim Discrepancy Reports, provide to the responsible engineers, and track to closure.
- c. Perform process surveillance assessments specific to the USA EMU and Tool Labs per the Surveillance Plan.
- d. Aid in the resolution of poolside anomalies.
- e. Develop and submit Weekly Activity Report to the NASA Monitor of all activities 7 completed or in process.
- f. Participate on NBL incident response and investigation teams.
- g. Support 1st or 2nd shift, depending on the NBL operations.
- h. Participate as a formal (sign off) member of the Test Readiness Review Board

2.2.1.3 EVA GFE Quality Engineering (WBS 1.2.2.3)

2.2.1.3.1 Provide Quality Engineering surveillance support for EVA GFE developed at JSC

- a. Review GFE requirements with respect to EVA requirements and JSG standards and processes.

- b. Implement surveillance of GFE design and development process as defined in EA-WI-023.
- c. Provide surveillance of JSC processes and products with respect to applicable SLPs, including manufacturing, assembling and testing of hardware and associated Work Authorizing Documents (WADs).
- d. Review and approve MRBs.
- e. Develop GMIP Plans or assign GMIPs to CRIT 1 or 2 WADs as applicable in accordance with NPR 8735.2.
- f. Provide surveillance of acceptance for flight (readiness for shipment) process.
- g. Review acceptance data packages (ADP's) to verify completeness and compliance to EVA requirements.
- h. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- i. Provide surveillance of receiving, inspection, processing, and shipment of GFE at JSC facilities.
- j. Analyze surveillance data; define criteria for establishing sampling and prompting audits. Provide monthly metrics and associated report, including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.
- k. Maintain NT QE ISO work instructions.
- l. Provide administrative function for Quality Steering Team Review (QSTR) Board and associated Process-Based Mission Assurance (PBMA) secure workgroup website.
- m. Support weekly staff meetings with respect to significant accomplishments, issues, and schedules.

2.2.7.3.2 Provide Quality Engineering in-line support for EVA GFE.

- a. Review flight hardware/software, GSE documents and specifications with respect to all facets of quality engineering, e.g., manufacturability, appropriate sequence of events, appropriate standards.
- b. Review plans, procedures, processes, controls and inspection requirements.
- c. Evaluate inspection/test methods, tools, instruments, and processes.
- d. Identify Mandatory Inspection Points (MIPS).
- e. Investigate problems that have occurred at the onsite JSC fabrication and test facilities and define causes, effects, conditions, and associated procedures related to problem areas, and review history of similar problems.
- f. Participate in discussions and meetings with JSC design groups, technical divisions.
- g. Provide review and assistance in the development of critical items lists (CILs) as a derivative of the failure modes and effects analysis (FMEA).
- h. Provide Quality Engineering coverage in selected onsite facilities and test area.
- i. Review rejections and/or nonconformances of delivered or manufactured articles. Considerations will include materials, processes, manufacturing methods, inspection and test techniques, handling, and storage.
- j. Prepare and/or provide recommendations for revisions to quality assurance plans for selected onsite facilities and tests.
- k. Evaluate GFE engineering change requests for quality engineering impact. Provide recommendations for acceptance, rejection, or modification to the changes.
- l. Participate in and support test readiness reviews, user readiness reviews, operational readiness reviews and the associated boards to validate configuration and acceptability of proceeding with the associated event. This includes supporting the event itself, e.g., a test.
- m. Maintain a current status of work progress and problems and prepare technical briefings to include previous test problems and open items on test articles and facilities that might affect test planning and operation.
- n. Review the board agenda items, identify key issues, and prepare necessary IS&QD inputs to the SR&QA board member, by providing recommendations.
- o. Perform in-depth reviews of test plans and procedures.
- p. Review and approve GFE and GSE drawings in accordance with JPR 8500.4.
- q. Participate and conduct Pre-shipment Readiness Reviews in accordance with NT-CWI-004.
- r. In accordance with JSC 28035, participate in problem/anomaly investigations of manufacturing related problems during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective action (if

taken) is appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

2.2.1.4 EVA GFE Software Assurance (WBS 1.2.2.4)

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation for GFE flight and ground systems performed at JSC.

- a. Define Software Assurance requirements.
- b. Ensure the conformance of software life-cycle processes and products to Software Assurance requirements, standards, and procedures.
- c. Perform process and product assessment throughout the life-cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Provide support to boards and panels.
- e. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software life-cycle.
- f. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- g. Ensure the testing of software safety critical components are sufficiently
- h. implemented and that applicable controls are in place to verify all safety conditions.
- i. Conduct analysis of proposed changes on software safety.
- j. Evaluate the reliability of the software products created throughout the life-cycle.
- k. Ensure that the software being developed or maintained satisfies the functional and performance requirements.
- l. Ensure that each phase of the development process yields the right software products.
- m. Participate in major milestone reviews and certification/acceptance of the software.
- n. Conduct surveillance of GFE software life-cycle activities.

2.2.4.5 EVA Operations (WBS 1.2.2.5)

Provide support to on-orbit planning, training, and flightstage EVA operations.

- a. Support EVA mission crew training and simulations.
- b. Perform EVA risk assessments.
- c. Prepare Operational Risk Assessment Executive Summary Reports (ORAESR's).
- d. Provide real-time flight support.
- e. Participate in investigations of in-flight anomalies and failures, and in the implementation of problem resolutions.
- f. Perform operations support to the MER and SPIT as needed to resolve issues.
- g. Review integrated hazard reports, supply comments, and provide real-time review support to the ISS SRP and/or JSERP.
- h. Provide evaluations on SODF, Flight Rule, FDF, and program-level CRs as applicable to EVA.
- i. Complete training requirements toward ISS MER console operator certification.
- j. Participate in pre-flight and in-flight EVA Team 4/Tiger Team activities.
- k. Supply EVA and flight readiness assessments per the process and criteria documented in JSC-28222, "EVA CoFR Requirements and Implementation Plan."
- l. Provide readiness assessments to the following reviews: CoFR1/CoFR2,
- m. CoER1/CoER2, SMARR, SMSR, STR Board, and Center Director pre-FRR.

2.2.1.6 EVA/CRAVE Audits (WBS 1.2.2.8)

For support of EVA/CRAVE GFE/CFE Audits, the contractor shall participate in NASA sponsored audits as defined by the Audit Management Office in accordance with NTADM-004 and NT-ADM-008 at JSC, other NASA Centers and contractor's facilities.

- a. Provide Lead and/or participating auditors for Gap Studies, Pre-award, Capability, QMS, etc.
- b. Document findings and prepare the final report.
- c. Provide support to scheduled Audit meetings.
- d. Participate in the Joint Audit Planning Committee.
- e. Perform statistical analyses, and benchmark S&MA processes.

- f. Perform technical and metric analyses, and present results.
- g. Participate in NASA Headquarters mandated audits (i.e., PA&R, IPS, IFO, etc.).

2.2.1.7 EVA Flight Readiness (WBS 1.2.2.7)

Assesses and evaluate data and documentation in accordance with NT-ADM-014 and make recommendations for flight readiness of GFE projects. Specific tasks include, but are not limited to:

- a. Data – Records Management
 - Evaluate CCB Change Requests (CR's) and other Program documents to identify flight GFE that has been manifested for flight.
 - Review mission hardware certification length/missions to ensure certification is current for the mission duration.
 - Support GFE engineers in collection and management of data that supports S&MA CoFR evaluation and status reporting in this task order.
 - Implement and manage centralized CoFR endorsement status collection and reporting capability to the frequency defined in NT-ADM-014
 - Evaluate and update NT-ADM-014 to remain current with Program unique CoFR reporting requirements.
 - Track requirements verification and certification status.
 - Assess the configuration and utilization plans against flight certifications.
 - Prepare Certification of Flight Readiness (CoFR) presentations and support to CoFR meetings to discuss status and issues related to MRB's, system acceptance, open items status (1027), data trends, and audit reports.
 - Identify data and information required for accomplishment of S&MA responsibilities and functions leading to flight readiness assessments and CoFR endorsements. Assess adequacy of data and information to support flight readiness activities.
 - Provide status of all open CoFR endorsements, including PRACA and GCAR items, and track the open status through closure to support CoFR presentations.
 - Assess QARC documentation on flight item manufacturing and test results in order to report on the status of these items in support of Flight Readiness.
 - Perform engineering review of flight GFE for its intended application, including launch, landing and on-orbit operations.
- b. GFE Records Management in Support of Flight Readiness
 - Staff satellite record centers to maintain configuration, status accounting and accessibility to work authorizing and shipping records and data created by engineering according to NASA records requirements
 - Maintain configuration and accessibility of S&MA approved GFE hardware certifications and certificates according to NASA records requirement.
 - **Maintain configuration and accessibility of JSC GFE PRACA Records to JSC 28035 and NASA records requirements.**
 - **Evaluate program data requirements for impact to S&MA work instructions, records management and flight readiness activity.**

2.2.2 CRAVE Support (WBS 1.2.2.9)

Crew, Robotics, and Vehicle Equipment (CRAVE) activities to be supported are described in Internal Task Agreement (ITA) no. 9085. Activities will include Safety and Reliability, Quality Assurance, Quality Engineering, Software Assurance, Operations, Audits, Flight Readiness, and Sustaining Engineering. CRAVE Project to be worked, as identified in ITA no. 9085, include:

- Trace Gas Analyzer
- Urine Monitoring System
- Refrigerator Freezer Services
- Enhanced Right Angle Drive
- Tile Repair Hand Tools
- Large Area Repair Build to Print
- Large Area Repair Config Mgmt
- Large Area Repair PGT Stand
- Large Area Repair Fastener
- Large Area Repair Punch & Handle

- Sublimator Driven Coldplate
- Chamber V GSE
- Flight Hardware Development

2.2.3 Miscellaneous Engineering Hardware Support (WBS 1.2.2.6)

EVA Tools and Equipment Branch (EC7) activities to be supported are described in Internal Task Agreement (ITA) no. 9086. Activities will include Safety and Reliability, Quality Assurance, Quality Engineering, Software Assurance, Operations, Audits, Flight Readiness, and Sustaining Engineering. EC7 Project to be worked, as identified in ITA no. 9086, include:

- EVA Thermal Sensor
- Crack Repair Palette
- Crack Repair Bag
- EVA Punch Tool
- EVA Scrapers
- Manual Crack Repair Gun
- Gap Gauges
- RCC Drills
- Plug Installation Tool
- EVA Marker
- Ruler/Protuberance Gauge
- HST Tools
- MMWS Tool Stowage Caddy
- Plug Repair Assembly
- Crack Repair Material
- Plug Installation Verification Tool
- Tile Overlay Assembly and Tools
- Tile Repair Ablative Dispenser
- ORU Temp Stowage Device
- REBA Batteries
- Shuttle Slidewire

The Crew, Robotics, and Vehicle Equipment (CRAVE) contract primarily consists of work required to perform the design, development, testing, manufacturing, and evaluation (DDTM8E) and sustaining engineering (SE) necessary to certify, deliver and maintain Extravehicular Activity (EVA) equipment, Flight Crew Equipment (FCE), Crew Health Care Systems (CHeCS), Extravehicular Robotics (EVR) equipment, Environmental Control and Life Support (ECLSS) equipment, and Active Thermal Control Systems (ATCS) equipment, including ground support equipment (GSE). The products and services provided through CRAVE will support the Space Shuttle, the International Space Station (ISS), and advanced programs of Government-Furnished Equipment (GFE) for future human Space Flight programs. GFE consists of both mechanical and electrical/electronic hardware and software elements

2.2.4 Shuttle RCC Large Area Repair (WBS 1.2.2.0)

The Space Shuttle Reinforced Carbon-Carbon (RCC) Large Area Repair (LAR) activities to be supported are described in Internal Task Agreement (ITA) no. 9086. Activities will include Safety and Reliability, Quality Assurance, Quality Engineering, Operations, Audits, Flight Readiness, and Sustaining Engineering. The Shuttle LAR Project to be worked, as identified in ITA no. 9086, includes:

- Existing Hardware Modification
- EVA Gap Gauge
- EVA Punch Tool
- Manual Crack Repair Gun
- ORU Transfer Bag
- Plug Installation Verification Tool Torque Limiter
- EVA fastener/washer retention hardware
- New Hardware Development
- EVA Hole Punch Tool
- RCC drill with stop
- EVA fastener/washer retention hardware
- Crew handling and training aids

2.3 Deliverables:

Audit Reports
 QREX Reports
 Approved ADP's
 Technical & surveillance metric analyses
 PBS Surveillance Reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

1. Order No. 08-09
2. Date Of Order See Block 10
NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER
Certified for National Defense under DPAS (15 CFR 700) DO-C9

3. Issuing Office
NASA Johnson Space Center
Attn: BJ4\Learon Comeaux
Houston, TX 77058-3696
Tel. No.: (281) 483-6525
4. Ship To:
Transportation Officer, Building 421
NASA Johnson Space Center
Houston, TX 77058
Mark For: Accountable Property

5. Contractor
Science Application International Corporation
Attn: Will Blumentritt
2450 NASA Parkway
Houston, TX 77058
6. Deliver On Or Before:
April 30, 2009

7. BILLING ADDRESS:
NASA Johnson Space Center
Attn: LF231/Accounts Payable Group
Houston, TX 77058-3696
Phone: (281) 335-2006
CAGE CODE:

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor is, is not required. Sign below if required and return to contracting officer.
10. Name: Alice Jean Pursell
Name: _____
Signature: _____ Date: _____
Signature: *Alice Jean Pursell* Date: 9/30/08
CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only:
Requisition No.: COMP. PART. PPC:
Reissue To:
13. Total
\$2,090,959

14. Quantities In "Quantity Accepted" Column Have Been:
 INSPECTED ACCEPTED RECEIVED
TO CONFROM TO THE CONTRACT,
ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____
Authorized U.S. Government Representative Date

Task Order 08-09

1.0 TITLE OF EFFORT: Extravehicular Activity (EVA) Projects Support

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Extravehicular Activity quality and flight equipment projects, provide and discuss S&MA topics and issues, and participate in all S&MA activities associated with the EVA GFE life-cycle as defined in EA-WI-023 and EA-WI-025. Provide support to pre-flight activities and on-orbit operations including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues for GFE assets.

2.1 Statement of Work Reference: Section 6.0 - JSC Project Support

2.2 Requirements:

2.2.1 EVA GFE

2.2.1.1 EVA GFE Safety and Reliability

Perform flight safety, reliability, and mission assurance for GFE.

- a. Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.
- b. Participate in design reviews, review provided data and documentation, and provide RID's on S&MA-related issues and deficiencies.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- d. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- e. Track and provide status on requirements verification, system qualification, and design certification activities.
- f. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified. Assess waivers to assure adequate and appropriate acceptance rationales are provided.
- g. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, program/project management, and the EVA Project Office for discussion.
- h. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- i. In accordance with JSC 28035, participate in problem/anomaly investigations of design and safety related problems during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective action (if taken) is appropriate and effective; closure documentation (including trend coding) is thorough and complete;

and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

- j. Support operational use of hardware and software. Participate in development of CHIT's in order to assure compliance with S&MA and performance requirements.
- k. Submit Operational Constraints for Extravehicular Activity and flight equipment projects and assure the operational constraints are officially approved for each flight in the Operational Control Agreement Database (OCAD).
- l. Perform updates to safety documentation for the SAFER as driven by hardware design modifications or changes to operations and present/deliver such updates to the FESRRP and PRCB for approval.
- m. Supply special assessments (e.g., PRA and trade studies) and involve subject matter experts as required.
- n. Complete training/certification requirements.
- o. Perform review of the EVA Support Equipment Lists (ESEL's) to ensure the manifest plans meet S&R mission assurance goals.
- p. In accordance with NT-CWI-004, conduct a risk assessment for shipments with open issues requiring NT management concurrence.

2.2.1.2 EVA GFE Quality Assurance

2.2.1.2.1 EVA GFE In-Line Quality Assurance

For in-line Quality Assurance support for GFE performed on the One EVA contract, the contractor shall:

- a. Perform non-RITF related in-line hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities.
- b. Perform and assign as required designated Mandatory Inspection Points (MIP's).
- c. Oversee facility maintenance on human-rated chambers and testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA and contractor facilities.
- d. Perform in-line support of the Bond Rooms for shipping and receiving of flight hardware.
- e. Perform designated Mandatory Inspection Points (MIP's) on One EVA hardware and projects at other NASA centers as requested by EVA Project Office.
- f. Maintain NT QAS ISO work instructions
- g. Develop and submit Weekly Activity Report to the NASA Monitor of all activities completed or in process.

2.2.1.2.2 EVA GFE Surveillance Quality Assurance

For contract surveillance of the Engineering and Science Contract (ESC), the contractor shall:

- a. Perform and assign as required designated Government Mandatory Inspection Points (GMIP's).
- b. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE at JSC facilities per the surveillance plan.
- c. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.

- d. Perform surveillance of the Bond Rooms which are responsible for ESC hardware.
- e. Perform, prepare and enter into the appropriate database Surveillance Reports of the ESC Inline activities.
- f. Assist QE in analyzing surveillance data including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.

2.2.1.2.3 EVA Quality Assurance at the Neutral Buoyancy Laboratory

- a. Participates in assigned Manned Post Test Debriefs to capture and record anomalies.
- b. Generate/Issue/Close Interim Discrepancy Reports, provide to the responsible engineers, and track to closure.
- c. Perform process surveillance assessments specific to the USA EMU and Tool Labs per the Surveillance Plan.
- d. Aid in the resolution of poolside anomalies.
- e. Develop and submit Weekly Activity Report to the NASA Monitor of all activities 7 completed or in process.
- f. Participate on NBL incident response and investigation teams.
- g. Support 1st or 2nd shift, depending on the NBL operations.
- h. Participate as a formal (sign off) member of the Test Readiness Review Board

2.2.1.3 EVA GFE Quality Engineering:

2.2.1.3.1 Provide Quality Engineering surveillance support for EVA GFE developed at JSC

- a. Review GFE requirements with respect to EVA requirements and JSC standards and processes.
- b. Implement surveillance of GFE design and development process as defined in EA-WI-023.
- c. Provide surveillance of JSC processes and products with respect to applicable SLPs, including manufacturing, assembling and testing of hardware and associated Work Authorizing Documents (WADs).
- d. Review and approve MRBs.
- e. Develop GMIP Plans or assign GMIPs to CRIT 1 or 2 WADs as applicable in accordance with NPR 8735.2.
- f. Provide surveillance of acceptance for flight (readiness for shipment) process.
- g. Review acceptance data packages (ADP's) to verify completeness and compliance to EVA requirements.
- h. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- i. Provide surveillance of receiving, inspection, processing, and shipment of GFE at JSC facilities.
- j. Analyze surveillance data; define criteria for establishing sampling and prompting audits. Provide monthly metrics and associated report, including recommendations

for necessary audits and level of surveillance for each area of interest based upon surveillance findings.

- k. Maintain NT QE ISO work instructions.
- l. Provide administrative function for Quality Steering Team Review (QSTR) Board and associated Process-Based Mission Assurance (PBMA) secure workgroup website.
- m. Support weekly staff meetings with respect to significant accomplishments, issues, and schedules.

2.2.1.3.2 Provide Quality Engineering in-line support for EVA GFE.

- a. Review flight hardware/software, GSE documents and specifications with respect to all facets of quality engineering, e.g., manufacturability, appropriate sequence of events, appropriate standards.
- b. Review plans, procedures, processes, controls and inspection requirements.
- c. Evaluate inspection/test methods, tools, instruments, and processes.
- d. Identify mandatory inspection points (MIPs).
- e. Investigate problems that have occurred at the onsite JSC fabrication and test facilities and define causes, effects, conditions, and associated procedures related to problem areas, and review history of similar problems.
- f. Participate in discussions and meetings with JSC design groups, technical divisions.
- g. Provide review and assistance in the development of critical items lists (CILs) as a derivative of the failure modes and effects analysis (FMEA).
- h. Provide quality engineering coverage in selected onsite facilities and test area.
- i. Review rejections and/or nonconformances of delivered or manufactured articles. Considerations will include materials, processes, manufacturing methods, inspection and test techniques, handling, and storage.
- j. Prepare and/or provide recommendations for revisions to quality assurance plans for selected onsite facilities and tests.
- k. Evaluate GFE engineering change requests for quality engineering impact. Provide recommendations for acceptance, rejection, or modification to the changes.
- l. Participate in and support test readiness reviews, user readiness reviews, operational readiness reviews and the associated boards to validate configuration and acceptability of proceeding with the associated event. This includes supporting the event itself, e.g., a test.
- m. Maintain a current status of work progress and problems and prepare technical briefings to include previous test problems and open items on test articles and facilities that might affect test planning and operation.
- n. Review the board agenda items, identify key issues, and prepare necessary IS&QD inputs to the SR&QA board member, by providing recommendations.
- o. Perform in-depth reviews of test plans and procedures.
- p. Review and approve GFE and GSE drawings in accordance with JPR 8500.4.
- q. Participate and conduct Pre-shipment Readiness Reviews in accordance with NT-CWI-004.
- r. In accordance with JSC 28035, participate in problem/anomaly investigations of manufacturing related problems during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective action (if taken) is appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

2.2.1.4 EVA GFE Software Assurance:

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation for GFE flight and ground systems performed at JSC.

- a. Define Software Assurance requirements.
- b. Ensure the conformance of software life-cycle processes and products to Software Assurance requirements, standards, and procedures.
- c. Perform process and product assessment throughout the life-cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Provide support to boards and panels.
- e. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software life-cycle.
- f. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- g. Ensure the testing of software safety critical components are sufficiently implemented and that applicable controls are in place to verify all safety conditions.
- h. Conduct analysis of proposed changes on software safety.
- i. Evaluate the reliability of the software products created throughout the life-cycle.
- j. Ensure that the software being developed or maintained satisfies the functional and performance requirements.
- k. Ensure that each phase of the development process yields the right software products.
- l. Participate in major milestone reviews and certification/acceptance of the software.
- m. Conduct surveillance of GFE software life-cycle activities.

2.2.1.5 EVA Operations:

Provide support to on-orbit planning, training, and flight/stage EVA operations.

- a. Support EVA mission crew training and simulations.
- b. Perform EVA risk assessments.
- c. Prepare Operational Risk Assessment Executive Summary Reports (ORAESR's).
- d. Provide real-time flight support.
- e. Participate in investigations of in-flight anomalies and failures, and in the implementation of problem resolutions.
- f. Perform operations support to the MER and SPIT as needed to resolve issues.
- g. Review integrated hazard reports, supply comments, and provide real-time review support to the ISS SRP and/or JSERP.
- h. Provide evaluations on SODF, Flight Rule, FDF, and program-level CRs as applicable to EVA.
- i. Complete training requirements toward ISS MER console operator certification.
- j. Participate in pre-flight and in-flight EVA Team 4/Tiger Team activities.
- k. Supply EVA and flight readiness assessments per the process and criteria documented in JSC-28222, "EVA CoFR Requirements and Implementation Plan."

- I. Provide readiness assessments to the following reviews: CoFR1/CoFR2, CoER1/CoER2, SMARR, SMSR, STR Board, and Center Director pre-FRR.

2.2.1.6 EVA/CRAVE Audits:

For support of EVA/CRAVE GFE/CFE Audits, the contractor shall participate in NASA-sponsored audits as defined by the Audit Management Office in accordance with NT-ADM-004 and NT-ADM-008 at JSC, other NASA Centers and contractor's facilities.

- a. Provide Lead and/or participating auditors for Gap Studies, Pre-award, Capability, QMS, etc.
- b. Document findings and prepare the final report.
- c. Provide support to scheduled Audit meetings.
- d. Participate in the Joint Audit Planning Committee.
- e. Perform statistical analyses, and benchmark S&MA processes.
- f. Perform technical and metric analyses, and present results.
- g. Participate in NASA Headquarters mandated audits (i.e., PA&R, IPS, IFO, etc.).

2.2.1.7 EVA Flight Readiness:

Assesses and evaluate data and documentation and make recommendations for flight readiness of hardware/software. Specific tasks include:

- a. Evaluation of CCB Change Requests (CR's) and other Program documents to identify flight hardware/software that has been manifested for flight.
- b. Tracking requirements verification and certification status.
- c. Assessing hardware/software configuration and hardware/software utilization plans against flight hardware/software certifications.
- d. Preparation of Certification of Flight Readiness (CoFR) presentations and support to CoFR meetings to discuss status and issues related to manifested items.
- e. Identification of data and information required for accomplishment of S&MA responsibilities and functions leading to flight readiness assessments and CoFR endorsements. Assessment of adequacy of data and information to support flight readiness activities.
- f. Provide status of open PRACA and GCAR items, and track the open status through closure to support CoFR presentations.
- g. Assess QARC documentation on flight item manufacturing and test results in order to report on the status of these items in support of Flight Readiness.

2.2.2 CRAVE Support

Crew, Robotics, and Vehicle Equipment (CRAVE¹) activities to be supported are described in Internal Task Agreement (ITA) no. 9085. Activities will include Safety and Reliability, Quality Assurance, Quality Engineering, Software Assurance, Operations, Audits, Flight Readiness, and Sustaining Engineering. CRAVE Project to be worked, as identified in ITA no. 9085, include:

- Trace Gas Analyzer
- Urine Monitoring System
- Refrigerator Freezer Services
- Enhanced Right Angle Drive
- Tile Repair Hand Tools
- Large Area Repair Build to Print
- Large Area Repair Config Mgmt
- Large Area Repair PGT Stand
- Large Area Repair Fastener
- Large Area Repair Punch & Handle
- Sublimator Driven Coldplate
- Chamber V GSE
- Flight Hardware Development

2.2.3 Miscellaneous Engineering Hardware Support

EVA Tools and Equipment Branch (EC7) activities to be supported are described in Internal Task Agreement (ITA) no. 9086. Activities will include Safety and Reliability, Quality Assurance, Quality Engineering, Software Assurance, Operations, Audits, Flight Readiness, and Sustaining Engineering. EC7 Project to be worked, as identified in ITA no. 9086, include:

- EVA Thermal Sensor
- Crack Repair Palette
- Crack Repair Bag
- EVA Punch Tool
- EVA Scrapers
- Manual Crack Repair Gun
- Gap Gauges
- RCC Drills
- Plug Installation Tool
- EVA Marker
- Ruler/Protuberance Gauge

- HST Tools
- MMWS Tool Stowage Caddy
- Plug Repair Assembly
- Crack Repair Material
- Plug Installation Verification Tool
- Tile Overlay Assy and Tools
- Tile Repair Ablative Dispenser
- ORU Temp Stowage Device
- REBA Batteries
- Shuttle Slidewire

¹ The Crew, Robotics, and Vehicle Equipment (CRAVE) contract primarily consists of work required to perform the design, development, testing, manufacturing, and evaluation (DDTM&E) and sustaining engineering (SE) necessary to certify, deliver and maintain Extravehicular Activity (EVA) equipment, Flight Crew Equipment (FCE), Crew Health Care Systems (CHeCS), Extravehicular Robotics (EVR) equipment, Environmental Control and Life Support (ECLSS) equipment, and Active Thermal Control Systems (ATCS) equipment, including ground support equipment (GSE). The products and services provided through CRAVE will support the Space Shuttle, the International Space Station (ISS), and advanced programs of Government-Furnished Equipment (GFE) for future human Space Flight programs. GFE consists of both mechanical and electrical/electronic hardware and software elements.

2.2.4 Shuttle RCC Large Area Repair

The Space Shuttle Reinforced Carbon-Carbon (RCC) Large Area Repair (LAR) activities to be supported are described in Internal Task Agreement (ITA) no. 9086. Activities will include Safety and Reliability, Quality Assurance, Quality Engineering, Operations, Audits, Flight Readiness, and Sustaining Engineering. The Shuttle LAR Project to be worked, as identified in ITA no. 9086, includes:

- Existing Hardware Modification
- EVA Gap Gauge
- EVA Punch Tool
- Manual Crack Repair Gun
- ORU Transfer Bag
- Plug Installation Verification Tool Torque Limiter
- EVA fastener/washer retention hardware
- New Hardware Development
- EVA Hole Punch Tool
- RCC drill with stop
- EVA fastener/washer retention hardware
- Crew handling and training aids

2.3 Deliverables:

- Audit Reports
- QREX Reports
- Approved ADP's
- Technical & surveillance metric analyses
- PBS Surveillance Reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 07-09 Rev 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name:	Signature: <i>Alice Jean Pursell</i> Date: <u>12/23/08</u>
Signature:	CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total \$1,915,803
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 07-09 ISS Rev 1

1.0 TITLE OF EFFORT: ISS GFE Projects and CFE Quality Support (WBS 1.2.1)

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized International Space Station Program quality and flight equipment projects (which may include GFE, GSE, CFE, and payloads). Identify and discuss S&MA topics and issues. Participate in all S&MA activities associated with the GFE life-cycle, as defined in EA-WI-023 and EA-WI-025. Provide support to pre and post flight activities as well as to on-orbit operations, including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues.

2.1 STATEMENT OF WORK REFERENCE: Section 6.0 JSC Project Support; Section 5 Program Support

2.2 REQUIREMENTS:

2.2.1 ISS GFE Safety and Reliability (WBS 1.2.1.1)

Provide Safety and Reliability support for GFE and ISS payloads.

- a. Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements,
- b. Participate in design reviews, review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- d. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- e. Track and provide status on requirements verification, system qualification, and design certification activities.
- f. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- g. Develop preventative maintenance assessments (PMA) to assure that the appropriate actions are in place to maintain hardware functionality.
- h. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the ISS Program for discussion.
- i. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- j. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective action (if taken) is appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
- k. Support operational use of flight GFE. Participate in development of CHIT's that ensure compliance with hazard report and performance requirements.
 - a. Submit operational constraints for flight equipment projects, assure the operational constraints are officially approved for each flight in the Operational Control Agreement Database (OCAD), and verify proper implementation.
- l. Supply special assessments (e.g., PRA and trade studies) and involve subject matter experts, as required.
- m. Provide for operational support to the MER and SPIT as needed to resolve issues.
- n. In accordance with NT-CWI-004, conduct a risk assessment for shipments with open issues requiring NT management concurrence.

2.2.2 ISS GFE Quality Assurance (WBS 1.2.1.2)

2.2.2.1 Provide In-Line Quality Assurance support for ISS GFE/GSE

- a. Perform non-RITF related in-line hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE/GSE at JSC facilities.
- b. Oversee facility maintenance on human-rated chambers and testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA contractor facilities.
- c. Perform in-line support of the Bond Rooms for shipping and receiving of flight hardware.
- d. Perform in-line support of the Food Laboratory, Shipping and Receiving of flight hardware, and Non-Destructive Evaluation (NDE).
- e. Perform designated Mandatory Inspection Points (MIP's) on ISS hardware/projects at other NASA Centers.
- f. Maintain NT QAS ISO work instructions.
- g. Develop and submit Weekly Activity Report to the NASA Monitor of all activities completed or in process.

2.2.2.2 Provide surveillance Quality Assurance for ISS projects/hardware

- a. Perform and assign as required designated Government Mandatory Inspection Points (GMIPs).
- b. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE/GSE at JSC facilities per the surveillance plan.
- c. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.
- d. Perform surveillance of the Bond Rooms which are responsible for ESCG hardware.
- e. Perform, prepare and enter into the appropriate database Surveillance Reports of the ESCG and/or USA in-line activities.
- f. Assist QE in analyzing surveillance data including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.

2.2.3 ISS GFE Quality Engineering (WBS 1.2.1.3)

2.2.3.1 Provide Quality Engineering surveillance support for ISS GFE developed at JSC.

- a. Review and approve GFE requirements with respect to ISS requirements and JSC standards and processes.
- b. Implement surveillance of GFE design and development process as defined in EA-WI-023.
- c. Provide surveillance of JSC processes and products with respect to applicable SLPs, including manufacturing, assembling and testing of hardware and associated Work Authorizing Documents (WADS).
- d. Develop GMIP Plans or assign GMIP's to Criticality 1 or 2 WAD'S as applicable in accordance with JSC 63335.
- e. Provide surveillance of acceptance for flight (readiness for shipment) process.
- f. In accordance with SSP 30695, review acceptance data packages (ADP's) to verify completeness and compliance to ISS requirements.
- g. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- h. Provide surveillance of receiving, inspection, processing, and shipment of GFE at JSC facilities.
- i. Submit surveillance data to PBS, participate in the analysis of the data and generation of the surveillance report. Provide monthly metrics and associated report, including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.
- j. Maintain NT QE ISO work instructions.
- k. Provide administrative function for Quality Steering Team Review (QSTR) Board and associated secure workgroup website.

- l. Support weekly staff meetings with respect to significant accomplishments, issues, and schedules.
- m. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Reviews (ORR's)? and other appropriate reviews/boards when Criticality 1 or 2 Class I equipment is involved.

2.2.3.2 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA) Bioastronautics Contract ISS GFE.

- a. Review and approve flight hardware and GSE documents and specifications with respect to all facets of quality engineering; e.g., manufacturability, appropriate sequence of events, key characteristics, and appropriate standards. Review and approve GFE requirements with respect to EVA requirements and JSC standards and processes.
- b. Review and approve plans, drawings, procedures, processes, controls and inspection requirements.
- c. Evaluate inspection/test methods, tools, instruments, and processes.
- d. In accordance with NT-PQE-007, identify mandatory inspection points (MIP's).
- e. In accordance with NT-CWI-003, investigate nonconformances that have occurred at JSC fabrication and test facilities to understand the cause and effects; determine the appropriate disposition for the nonconforming item(s); determine if the nonconformance meets the criteria for a Reportable Problem in accordance to JSC 28035; and, when appropriate, initiate FIAR's. Review the history of similar nonconformance occurrences.
- f. Participate in discussions and meetings with JSC design groups and technical divisions.
- g. Provide review and assistance in the development of critical items lists (CIL's) as a derivative of the failure modes and effects analysis (FMEA).
- h. Provide quality engineering coverage in selected onsite facilities and test area.
- i. Review rejections and/or nonconformances of delivered or manufactured articles. Considerations will include materials, processes, manufacturing methods, inspection and test techniques, handling, and storage.
- j. Prepare and/or provide recommendations for revisions to quality assurance plans for selected onsite facilities and tests.
- k. Evaluate GFE engineering change requests for quality engineering impact. Provide recommendations for acceptance, rejection, or modification to the changes.
- l. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Review (ORR's), and other appropriate readiness reviews/boards.
- m. Maintain a current status of work progress and problems and prepare technical briefings to include previous test problems and open items on test articles and facilities that might affect test planning and operation.
- n. Review the FCE CCB agenda, identify key issues, and prepare necessary IS&QD inputs to the S&MA board member.
- o. Perform in-depth reviews of test plans and procedures.
- p. In accordance with NT-CWI-004, participate in Pre-Shipment Readiness Reviews.
- q. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- r. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are properly documented. When appropriate, initiate FIAR's. Assure that adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective actions (if taken) are appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

2.2.3.3 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA) Food Laboratory ISS GFE

- a. Participate on PRT.
- b. Initiate and close FIAR's/ISOD's.
- c. Review all space food TPS's and DR's for content accuracy and validity for Space Shuttle.
- d. Review Form 1027's and resolve open items.
- e. Review all food lab related drawings for accuracy.

- f. Review all space food specifications, as needed.
- g. Participate in the Space Food systems sensory panel.
- h. Provide disposal of Class 3 food items, as needed.

2.2.4 ISS GFE Software Assurance (WBS 1.2.1.4)

Provide Software Assurance including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation for GFE flight and ground systems performed at JSC.

- a. Define Software Assurance requirements.
- b. Ensure the conformance of software life-cycle processes and products to Software Assurance requirements, standards, and procedures.
- c. Perform process and product assessment throughout the life-cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Provide support to boards and panels.
- e. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software life-cycle.
- f. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- g. Ensure the testing of software safety critical components is sufficiently implemented and that applicable controls are in place to verify all safety conditions.
- h. Conduct analysis of proposed changes on software safety.
- i. Evaluate the reliability of the software products created throughout the life-cycle.
- j. Ensure that the software being developed or maintained satisfies the functional and performance requirements.
- k. Ensure that each phase of the development process yields the right software products.
- l. Participate in major milestone reviews and certification/acceptance of the software.
- m. Conduct surveillance of GFE software life-cycle activities.

2.2.5 ISS CFE S&MA

2.2.5.1 ISS CFE Quality Engineering (WBS 1.2.1.6)

Perform CFE Quality Engineering functions in support of the ISS Program.

- a. Perform analysis of vehicle engineering Change Requests (CRs) to determine impacts and validity. Provide written reports to ISS Program evaluator.
- b. Participate on DCMA Program Panel and other Quality teams (Program and Prime Contractors), as required.

2.2.5.2 ISS GFE/CFE Procurement Quality Assurance

Perform PQA functions at contractors and subcontractors:

- a. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications. Utilize DCMA Quality Leading Indicator Reports to perform risk assessments for product quality requirements flow down with the DCMA letters of delegation.
- b. Review purchase orders to determine if Government Source Inspection (GSI) is required. Develop GMIP plans in accordance with NPR 8735.2 and coordinate with DCMA.
- c. Review purchase orders to determine appropriate quality instructions.
- d. Assure consistency of contractor and subcontractor activities with Federal Acquisition Regulation (FAR) requirements and requirements of NPR 8735.2.
- e. Prepare Draft DCMA letters of delegations in accordance with NPR 8735.2
- f. Review JSC Purchase Card procurements to verify inclusion of Quality requirement.
- g. Manage and support the Procurement Quality Assurance Database.
- h. Reconcile existing DCMA RAMP reports with product requirements.

2.2.6 ISS CFE and GFE Audits (WBS 1.2.1.5)

Participate in NASA-sponsored audits. Support NASA-sponsored audits.

- a. Provide historical data as to previous ISS audits (audit reports, audit checklists, etc.) to assure consistency of approach by the Audit Management Office and Glenn Research Center.

- b. Provide Space Shuttle Program Master Audit Schedule utilizing SAS. This includes support of the Joint Audit Planning Committee in providing Master Audit Schedule information and determining contractor/subcontractor changes.
- c. Perform process assessments and audits, and prepare reports documenting results.
- d. Perform statistical analysis and benchmark S&MA processes.
- e. Perform technical and metric analyses, and present results.
- f. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements and implementation at NASA contractors, subcontractors, and vendors.

2.2.7 ISS Flight Readiness (WBS 1.2.1.8)

Assesses and evaluate data and documentation in accordance with NT-ADM-014 and make recommendations for flight readiness of GFE projects. Specific tasks include, but are not limited to:

- a. Data – Records Management
 - Evaluate CCB Change Requests (CR's) and other Program documents to identify flight GFE that has been manifested for flight.
 - Review mission hardware certification length/missions to ensure certification is current for the mission duration.
 - Support GFE engineers in collection and management of data that supports S&MA CoFR evaluation and status reporting in this task order.
 - Implement and manage centralized CoFR endorsement status collection and reporting capability to the frequency defined in NT-ADM-014
 - Evaluate and update NT-ADM-014 to remain current with Program unique CoFR reporting requirements.
 - Track requirements verification and certification status.
 - Assess the configuration and utilization plans against flight certifications.
 - Prepare Certification of Flight Readiness (CoFR) presentations and support to CoFR meetings to discuss status and issues related to MRB's, system acceptance, open items status (1027), data trends, and audit reports.
 - Identify data and information required for accomplishment of S&MA responsibilities and functions leading to flight readiness assessments and CoFR endorsements. Assess adequacy of data and information to support flight readiness activities.
 - Provide status of all open CoFR endorsements, including PRACA and GCAR items, and track the open status through closure to support CoFR presentations.
 - Assess QARC documentation on flight item manufacturing and test results in order to report on the status of these items in support of Flight Readiness.
 - Perform engineering review of flight GFE for its intended application, including launch, landing and on-orbit operations.
 - GFE Records Management in Support of Flight Readiness
 - Staff satellite record centers to maintain configuration, status accounting and accessibility to work authorizing and shipping records and data created by engineering according to NASA records requirements

2.2.8 ISS Capability Upgrades (WBS 1.2.1.7)

Perform S&MA tasks required to identify requirements and assure requirements implementation for specific ISS Capability Upgrade Projects as defined in eITA No. 7297. ISS Capability Upgrades include Crew Quarters, Total Organic Carbon Analyzer (TOCA), Oxygen Generation System (OGS), Preventive Maintenance (PM) Laptop Software, Regenerative ECLS Contingency Hose (RECH) Pre-Treat Assembly, RECH Water Ops Assembly, and the Potable Water Dispenser (PWD).

2.2.9 Automated Transfer Vehicle (ATV) support (WBS 1.2.1.x)

Provide S&MA support for U.S. GFE cargo to be delivered to the ISS on the European Space Agency (ESA) ATVs.

2.2.10 ISS GFE Safety and Reliability (WBS 1.2.1)

- a. Lead U.S. GFE cargo discussions in teleconferences supporting the ATV launch preparations as the discussions relate to certification of U.S. GFE assets.
- b. Act as the primary technical coordinator and panel interface for U.S. GFE cargo going to the Flight Equipment Safety and Reliability Review Panel (FESRRQ) ATV Cargo Safety Reviews
- c. Attend safety reviews; provide assurance for simplified safety certificates.
- d. Generate and track reflight letters to show compliance with ESA-ATV-PR-13830 safety process requirements.
- e. Coordinate the review, approval, and tracking of certificates and reflight letters for U.S. GFE cargo.
- f. Initiate or respond to requests for clarification or questions regarding U.S. GFE cargo.
- g. Generate and periodically update safety requirements and documents.
- h. In conjunction with International Partners coordinate the processes, templates, and requirements for U.S. cargo during appropriate teleconferences, internal meetings, and multi-lateral meetings and reviews.
- i. Provide technical assurance and tracking of Ground Safety checklists to ALENIA for approval.
- j. Evaluate data and information exports to ensure compliance with Export Control Regulations.

2.2.1.1 ISS GFE Flight Readiness (ATV) (WBS 1.2.1.8)

Assesses and evaluate data and documentation in accordance with NT-ADM-014 and make recommendations for flight readiness of GFE projects. Specific tasks include, but are not limited to:

- b. Data – Records Management
 - Evaluate CCB Change Requests (CR's) and other Program documents to identify flight GFE that has been manifested for flight.
 - Review mission hardware certification length/missions to ensure certification is current for the mission duration.
 - Support GFE engineers in collection and management of data that supports S&MA CoFR evaluation and status reporting in this task order.
 - Implement and manage centralized CoFR endorsement status collection and reporting capability to the frequency defined in NT-ADM-014
 - Evaluate and update NT-ADM-014 to remain current with Program unique CoFR reporting requirements.
 - Track requirements verification and certification status.
 - Assess the configuration and utilization plans against flight certifications.
 - Prepare Certification of Flight Readiness (CoFR) presentations and support to CoFR meetings to discuss status and issues related to MRB's, system acceptance, open items status (1027), data trends, and audit reports.
 - Identify data and information required for accomplishment of S&MA responsibilities and functions leading to flight readiness assessments and CoFR endorsements. Assess adequacy of data and information to support flight readiness activities.
 - Provide status of all open CoFR endorsements, including PRACA and GCAR items, and track the open status through closure to support CoFR presentations.
 - Assess QARC documentation on flight item manufacturing and test results in order to report on the status of these items in support of Flight Readiness.
 - Perform engineering review of flight GFE for its intended application, including launch, landing and on-orbit operations.
 - GFE Records Management in Support of Flight Readiness
 - Staff satellite record centers to maintain configuration, status accounting and accessibility to work authorizing and shipping records and data created by engineering according to NASA records requirements

2.2.12 ISS CFE Quality (WBS 1.2.1.x)

- a. Design and System Reviews for ISS Hardware
 1. Review Quality Documentation
 2. Write RIDS where quality documentation is missing or is not in compliance with SSP 41173 and sections of SSP 41170

3. Reconcile any disagreements with Document Creator
- b. CoFR Support
 1. Identifying status of H/W manifested for flight to include NASA to NASA, Boeing integration and CMC integration:
 - a. Obtain Boeing Tracked Linked Matrix Report and update weekly and track HW to closure
 - b. Down load OPMT for Boeing Open Paper related to SCANS, FCA, PCA, AR and D&PB
 - c. Contact Vehicle Office and obtain weekly HW status reports; also see EMCR webpage
 - d. Query OISR database for open PR/IPR/DR and contact CAPPs techs to monitor closure
 - e. Contact CMC Quality Manager to obtain weekly status ports for HW CMC has responsibility
 2. Set up tracking system for H/W that has open paper and track to closure.
 3. Identify by SPRT team all open PRACAs; distribute review form to Vehicle Subsystem Engineer and keep current
 4. Obtain signed PRACA review forms from NASA SPRT co-chair with rationale for acceptance or identification of potential constraint
 5. Ensure ISS QA Mgr and Lead are notified of any potential constraints prior to SMARR
 6. Track Closure or ISOD for GFE FIARS that are classified as Station or Bilateral
 7. Review FRA presentation material and insure all open papers agree with GFE; if not reconcile differences
 8. Review IRMA weekly for any QA identified risks
 9. Obtain status of GIDEP Alerts and Advisories from NASA Coordinator and from GFE Hardware Home page
 10. Create and maintain ISS CFE worksheet in GFE Hardware Matrix Integration Report
 11. Create QA Checklist per flight for SMARR, SORR and FRR
 12. Create Exception sheet for HW with open paper that does not have ECD or closure plan
 13. Prepare SMARR presentation for ISS QA Mgr and update for SORR and FRR
- c. Provide support for NASA Vehicle Safety to M&P and Payloads ARis/PARIS SPRT Teams
 1. attend telecons
 2. review and sign off for closure to PRACA
- d. Process Improvement
 1. perform research for process improvement activity assigned by the customer
 2. create report to include findings and recommendations for improvement
 3. current activities:
 - a. ISS QA Mgr Survey
 - b. Identification of HW providers required to maintain sustaining engineering support
- e. On Orbit Quality Assurance:
 1. Review IFI database and identify IFIs that should be elevated to GFE FIAR or ISS PRACA and present to customer.
 2. Support On Orbit Configuration Working Group
- f. Training:
 1. Identify, Develop and provide training for Civil Servants, Contractors and DCMA in basic Quality Requirements for ISS.
 2. Support DCMA TIMS by providing training resource

2.3 DELIVERABLES

Audit Reports
 Technical and surveillance metric analyses
 DRAFT Letters of Delegation
 COFR Assessments

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - April 30, 2009

TO 7-09R1 ISS GFE PROJECTS AND CFE QUALITY

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Estimated Cost		\$370,932		\$225,063		\$225,063		\$285,842		\$249,374		\$249,374		\$310,153		\$1,915,803

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">07-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor [<input type="checkbox"/>] is, [<input checked="" type="checkbox"/>] is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name:	Signature: <i>Alice Jean Pursell</i> Date: <i>9/30/08</i>
Signature:	CONTRACTING OFFICER
Date:	

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total <p style="text-align:center">\$1,915,045</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 07-09

1.0 TITLE OF EFFORT: ISS GFE Projects and CFE Quality Support

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized International Space Station Program quality and flight equipment projects (which may include GFE, GSE, CFE, and payloads). Identify and discuss S&MA topics and issues. Participate in all S&MA activities associated with the GFE life-cycle, as defined in EA-WI-023 and EA-WI-025. Provide support to pre and post flight activities as well as to on-orbit operations, including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues.

2.1 STATEMENT OF WORK REFERENCE: Section 6.0 JSC Project Support;
Section 5 Program Support

2.2 REQUIREMENTS:

2.2.1 ISS GFE Safety and Reliability

Provide Safety and Reliability support for GFE and ISS payloads.

- a. Participate in development and modification of hardware and software to identify and discuss hardware criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.
- b. Participate in design reviews, review provided data and documentation, and provide RID's on S&MA-related issues and deficiencies.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- d. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- e. Track and provide status on requirements verification, system qualification, and design certification activities.
- f. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified.
- g. Develop preventative maintenance assessments (PMA) to assure that the appropriate actions are in place to maintain hardware functionality.
- h. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the ISS Program for discussion.
- i. Assure that hardware operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- j. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both

proximate and root causes; interim and final closure rationale is acceptable; corrective action (if taken) is appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

- k. Support operational use of flight GFE. Participate in development of CHIT's that ensure compliance with hazard report and performance requirements.
- l. Submit operational constraints for flight equipment projects, assure the operational constraints are officially approved for each flight in the Operational Control Agreement Database (OCAD), and verify proper implementation.
- m. Supply special assessments (e.g., PRA and trade studies) and involve subject matter experts, as required.
- n. Provide for operational support to the MER and SPIT as needed to resolve issues.
- o. In accordance with NT-CWI-004, conduct a risk assessment for shipments with open issues requiring NT management concurrence.

2.2.2 ISS GFE Quality Assurance

2.2.2.1 Provide In-Line Quality Assurance support for ISS GFE/GSE:

- a. Perform non-RITF related in-line hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE/GSE at JSC facilities.
- b. Oversee facility maintenance on human-rated chambers and testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA contractor facilities.
- c. Perform in-line support of the Bond Rooms for shipping and receiving of flight hardware.
- d. Perform in-line support of the Food Laboratory, Shipping and Receiving of flight hardware, and Non-Destructive Evaluation (NDE).
- e. Perform designated Mandatory Inspection Points (MIP's) on ISS hardware/projects at other NASA Centers.
- f. Maintain NT QAS ISO work instructions.
- g. Develop and submit Weekly Activity Report to the NASA Monitor of all activities completed or in process.

2.2.2.2 Provide surveillance Quality Assurance for ISS projects/hardware:

- a. Perform and assign as required designated Government Mandatory Inspection Points (GMIPs).
- b. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE/GSE at JSC facilities per the surveillance plan.
- c. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.
- d. Perform surveillance of the Bond Rooms which are responsible for ESCG hardware.
- e. Perform, prepare and enter into the appropriate database Surveillance Reports of the ESCG and/or USA in-line activities.

- f. Assist QE in analyzing surveillance data including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.

2.2.3 ISS GFE Quality Engineering

2.2.3.1 Provide Quality Engineering surveillance support for ISS GFE developed at JSC.

- a. Review and approve GFE requirements with respect to ISS requirements and JSC standards and processes.
- b. Implement surveillance of GFE design and development process as defined in EA-WI-023.
- c. Provide surveillance of JSC processes and products with respect to applicable SLPs, including manufacturing, assembling and testing of hardware and associated Work Authorizing Documents (WADs).
- d. Develop GMIP Plans or assign GMIP's to Criticality 1 or 2 WAD's as applicable in accordance with JSC 63335.
- e. Provide surveillance of acceptance for flight (readiness for shipment) process.
- f. In accordance with SSP 30695, review acceptance data packages (ADP's) to verify completeness and compliance to ISS requirements.
- g. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- h. Provide surveillance of receiving, inspection, processing, and shipment of GFE at JSC facilities.
- i. Submit surveillance data to PBS, participate in the analysis of the data and generation of the surveillance report. Provide monthly metrics and associated report, including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.
- j. Maintain NT QE ISO work instructions.
- k. Provide administrative function for Quality Steering Team Review (QSTR) Board and associated secure workgroup website.
- l. Support weekly staff meetings with respect to significant accomplishments, issues, and schedules.
- m. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Reviews (ORR's), and other appropriate reviews/boards when Criticality 1 or 2 Class I equipment is involved.

2.2.3.2 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA) Bioastronautics Contract ISS GFE.

- a. Review and approve flight hardware and GSE documents and specifications with respect to all facets of quality engineering; e.g., manufacturability, appropriate sequence of events, key characteristics, and appropriate standards. Review and approve GFE requirements with respect to EVA requirements and JSC standards and processes.
- b. Review and approve plans, drawings, procedures, processes, controls and inspection requirements.
- c. Evaluate inspection/test methods, tools, instruments, and processes.

- d. In accordance with NT-PQE-007, identify mandatory inspection points (MIP's).
- e. In accordance with NT-CWI-003, investigate nonconformances that have occurred at JSC fabrication and test facilities to understand the cause and effects; determine the appropriate disposition for the nonconforming item(s); determine if the nonconformance meets the criteria for a Reportable Problem in accordance to JSC 28035; and, when appropriate, initiate FIAR's. Review the history of similar nonconformance occurrences.
- f. Participate in discussions and meetings with JSC design groups and technical divisions.
- g. Provide review and assistance in the development of critical items lists (CIL's) as a derivative of the failure modes and effects analysis (FMEA).
- h. Provide quality engineering coverage in selected onsite facilities and test area.
- i. Review rejections and/or nonconformances of delivered or manufactured articles. Considerations will include materials, processes, manufacturing methods, inspection and test techniques, handling, and storage.
- j. Prepare and/or provide recommendations for revisions to quality assurance plans for selected onsite facilities and tests.
- k. Evaluate GFE engineering change requests for quality engineering impact. Provide recommendations for acceptance, rejection, or modification to the changes.
- l. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Review (ORR's), and other appropriate readiness reviews/boards.
- m. Maintain a current status of work progress and problems and prepare technical briefings to include previous test problems and open items on test articles and facilities that might affect test planning and operation.
- n. Review the FCE CCB agenda, identify key issues, and prepare necessary IS&QD inputs to the S&MA board member.
- o. Perform in-depth reviews of test plans and procedures.
- p. In accordance with NT-CWI-004, participate in Pre-Shipment Readiness Reviews.
- q. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- r. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are properly documented. When appropriate, initiate FIAR's. Assure that adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective actions (if taken) are appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

2.2.3.3 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA) Food Laboratory ISS GFE

- a. Participate on PRT.
- b. Initiate and close FIAR's/ISOD's.
- c. Review all space food TPS's and DR's for content accuracy and validity for Space Shuttle.
- d. Review Form 1027's and resolve open items.
- e. Review all food lab related drawings for accuracy.
- f. Review all space food specifications, as needed.

- g. Participate in the Space Food systems sensory panel.
- h. Provide disposal of Class 3 food items, as needed.

2.2.4 ISS GFE Software Assurance

Provide Software Assurance including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation for GFE flight and ground systems performed at JSC.

- a. Define Software Assurance requirements.
- b. Ensure the conformance of software life-cycle processes and products to Software Assurance requirements, standards, and procedures.
- c. Perform process and product assessment throughout the life-cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Provide support to boards and panels.
- e. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software life-cycle.
- f. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- g. Ensure the testing of software safety critical components is sufficiently implemented and that applicable controls are in place to verify all safety conditions.
- h. Conduct analysis of proposed changes on software safety.
- i. Evaluate the reliability of the software products created throughout the life-cycle.
- j. Ensure that the software being developed or maintained satisfies the functional and performance requirements.
- k. Ensure that each phase of the development process yields the right software products.
- l. Participate in major milestone reviews and certification/acceptance of the software.
- m. Conduct surveillance of GFE software life-cycle activities.

2.2.5 ISS CFE S&MA

2.2.5.1 ISS CFE Quality Engineering

Perform CFE Quality Engineering functions in support of the ISS Program.

- a. Perform analysis of vehicle engineering Change Requests (CRs) to determine impacts and validity. Provide written reports to ISS Program evaluator.
- b. Participate on DCMA Program Panel and other Quality teams (Program and Prime Contractors), as required.

2.2.5.2 ISS GFE/CFE Procurement Quality Assurance

Perform PQA functions at contractors and subcontractors:

- a. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications. Utilize DCMA Quality Leading Indicator Reports to perform

- risk assessments for product quality requirements flow down with the DCMA letters of delegation.
- b. Review purchase orders to determine if Government Source Inspection (GSI) is required. Develop GMIP plans in accordance with NPR 8735.2 and coordinate with DCMA.
 - c. Review purchase orders to determine appropriate quality instructions.
 - d. Assure consistency of contractor and subcontractor activities with Federal Acquisition Regulation (FAR) requirements and requirements of NPR 8735.2.
 - e. Prepare Draft DCMA letters of delegations in accordance with NPR 8735.2
 - f. Review JSC Purchase Card procurements to verify inclusion of Quality requirement.
 - g. Manage and support the Procurement Quality Assurance Database.
 - h. Reconcile existing DCMA RAMP reports with product requirements.

2.2.6 ISS CFE and GFE Audits

Participate in NASA-sponsored audits.

Support NASA-sponsored audits.

- a. Provide historical data as to previous ISS audits (audit reports, audit checklists, etc.) to assure consistency of approach by the Audit Management Office and Glenn Research Center.
- b. Provide Space Shuttle Program Master Audit Schedule utilizing SAS. This includes support of the Joint Audit Planning Committee in providing Master Audit Schedule information and determining contractor/subcontractor changes.
- c. Perform process assessments and audits, and prepare reports documenting results.
- d. Perform statistical analysis and benchmark S&MA processes.
- e. Perform technical and metric analyses, and present results.
- f. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements and implementation at NASA contractors, subcontractors, and vendors.

2.2.7 ISS Flight Readiness

Assesses and evaluate data and documentation in accordance with NT-ADM-014 and make recommendations for flight readiness of GFE projects. Specific tasks include:

- a. Evaluation of CCB Change Requests (CR's) and other Program documents to identify flight GFE and payloads that have been manifested for flight.
- b. Track requirements verification and certification status.
- c. Assessment of the configuration and utilization plans against flight certifications with respect to ISS manifested items.
- d. Preparation of Certification of Flight Readiness (CoFR) presentations and support to CoFR meetings to discuss status and issues related to manifested items.
- e. Identification of data and information required for accomplishment of S&MA responsibilities and functions leading to flight readiness assessments and CoFR

- endorsements. Assessment of adequacy of data and information to support flight readiness activities.
- f. Provide integrated status of open CoFR endorsement items, and track the open status through closure to support CoFR presentations.
 - g. Integrate Cert, FIAR and Hazard ECD's obtained from EA and communicate changes to S&R.
 - h. Assess QARC documentation on flight item manufacturing and test results in order to report on the status of these items in support of Flight Readiness.
 - i. Perform engineering review of flight GFE for its intended application, including launch, landing and on-orbit operations.

2.2.8 ISS Capability Upgrades:

Perform S&MA tasks required to identify requirements and assure requirements implementation for specific ISS Capability Upgrade Projects as defined in eITA No. 7297. ISS Capability Upgrades include Crew Quarters, Total Organic Carbon Analyzer (TOCA), Oxygen Generation System (OGS), Preventive Maintenance (PM) Laptop Software, Regenerative ECLS Contingency Hose (RECH) Pre-Treat Assembly, RECH Water Ops Assembly, and the Potable Water Dispenser (PWD).

2.2.9 Automated Transfer Vehicle (ATV) support

Provide S&MA support for U.S. GFE cargo to be delivered to the ISS on the European Space Agency (ESA) ATVs.

2.2.10 ISS GFE Safety and Reliability

- a. Lead U.S. GFE cargo discussions in teleconferences supporting the ATV launch preparations as the discussions relate to certification of U.S. GFE assets.
- b. Act as the primary technical coordinator and panel interface for U.S. GFE cargo going to the Flight Equipment Safety and Reliability Review Panel (FESRRP) ATV cargo Safety Reviews.
- c. Attend safety reviews; provide assurance for simplified safety certificates.
- d. Generate and track reflight letters to show compliance with ESA-ATV-PR-13830 safety process requirements.
- e. Coordinate the review, approval, and tracking of certificates and reflight letters for U.S. GFE cargo.
- f. Initiate or respond to requests for clarification or questions regarding U.S. GFE cargo.
- g. Generate and periodically update safety requirements and documents.
- h. In conjunction with International Partners coordinate the processes, templates, and requirements for U.S. cargo during appropriate teleconferences, internal meetings, and multi-lateral meetings and reviews.
- i. Provide technical assurance and tracking of Ground Safety checklists to ALENIA for approval.
- j. Evaluate data and information exports to ensure compliance with Export Control Regulations.

2.2.11 ISS GFE Flight Readiness

- a. Assess launch vehicle manifests for U.S. cargo on the ATV; identify the reflight and new flight items, as well as the requirement for certificates.
- b. Report certification status for flight readiness as needed.
- c. Provide for data management of International Partner (IP) Cargo Safety Certifications

2.2.12 ISS CFE Quality

- a. Design and System Reviews for ISS Hardware
 1. Review Quality Documentation
 2. Write RIDS where quality documentation is missing or is not in compliance with SSP 41173 and sections of SSP 41170
 3. Reconcile any disagreements with Document Creator
- b. CoFR Support
 1. Identifying status of H/W manifested for flight to include NASA to NASA, Boeing Integration and CMC integration:
 - a. Obtain Boeing Tracked Linked Matrix Report and update weekly and track HW to closure
 - b. Download OPMT for Boeing Open Paper related to SCANS, FCA, PCA, AR and D&PB
 - c. Contact Vehicle Office and obtain weekly HW status reports; also see EMCR webpage
 - d. Query OISR database for open PR/IPR/DR and contact CAPPs techs to monitor closure
 - e. Contact CMC Quality Manager to obtain weekly status reports for HW CMC has responsibility
 2. Set up tracking system for H/W that has open paper and track to closure.
 3. Identify by SPRT team all open Praca; distribute review form to Vehicle Subsystem Engineer and keep current
 4. Obtain signed PRACA review forms from NASA SPRT co-chair with rationale for acceptance or identification of potential constraint
 5. Ensure ISS QA Mgr and Lead are notified of any potential constraints prior to SMARR
 6. Track Closure or ISOD for GFE FIARS that are classified as Station or Bi-lateral
 7. Review FRA presentation material and insure all open papers agree with GFE; if not reconcile differences
 8. Review IRMA weekly for any QA identified risks
 9. Obtain status of GIDEP Alerts and Advisories from NASA Coordinator and from GFE Hardware Home page
 10. Create and maintain ISS CFE worksheet in GFE Hardware Matrix Integration Report
 11. Create QA Checklist per flight for SMARR, SORR and FRR
 12. Create Exception sheet for HW with open paper that does not have ECD or closure plan
 13. Prepare SMARR presentation for ISS QA Mgr and update for SORR and FRR

- c. Provide support for NASA Vehicle Safety to M&P and Payloads ARis/PARIS SPRT Teams
 - a. attend telecons
 - b. review and sign off for closure to PRACA
- d. Process Improvement
 - a. perform research for process improvement activity assigned by the customer
 - b. create report to include findings and recommendations for improvement
 - c. current activities:
 - 1. ISS QA Mgr Survey
 - 2. Identification of HW providers required to maintain sustaining engineering support
- e. On Orbit Quality Assurance:
 - a. Review IFI database and identify IFIs that should be elevated to GFE FIAR or ISS PRACA and present to customer
 - b. Support On Orbit Configuration Working Group
- f. Training:
 - a. Identify, Develop and provide training for Civil Servants, Contractors and DCMA in basic Quality Requirements for ISS.
 - b. Support DCMA TIMS by providing training resource

2.3 DELIVERABLES

Audit Reports
Technical and surveillance metric analyses
DRAFT Letters of Delegation
COFR Assessments

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

TO 7 ISS GFE PROJECTS AND CFE QUALITY

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
					74	\$7,570										
Total Estimated Cost		\$370,825		\$224,954		\$224,954		\$224,954		\$249,266		\$249,266		\$370,825		\$1,915,045

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 06-09 Rev 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p>
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7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: _____ Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <u>Alice Jean Pursell</u> Date: <u>12/23/08</u> CONTRACTING OFFICER
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11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: _____ Reissue To: _____	13. Total <p style="text-align: center;">\$2,202,640</p>
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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 _____

Task Order 06-09 Rev. 1

1.0 TITLE OF EFFORT: Space Shuttle GFE Projects and CFE Quality Support (WBS 1.3.3)

2.0 DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Space Shuttle Program quality and flight equipment projects (which may include GFE, GSE, CFE, and payloads). Identify and discuss S&MA topics and issues. Participate in all S&MA activities associated with the GFE life-cycle, as defined in EA-WI-023 and EA-WI-025. Provide support to pre and post flight activities as well as to on-orbit operations, including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues.

2.1 STATEMENT OF WORK REFERENCE Section 6.0 JSC Project Support; Section 5 Program Support

2.2 REQUIREMENTS

2.2.1. SSP GFE Safety and Reliability (WBS 1.3.3.1)

Provide Safety and Reliability support for GFE and Orbiter payloads.

2.2.2 SSP GFE Quality Assurance (WBS 1.3.3.2)

2.2.2.1 Provide In-Line Quality Assurance support for SSP GFE/GSE:

- a. Perform non-RITF related in-line hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFVGSE at JSC facilities.
- b. Oversee facility maintenance in testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA and contractor facilities.
- c. Perform in-line support of the Bond Rooms for shipping and receiving of flight hardware.
- d. Perform designated Mandatory Inspection Points (MIP's) on SSP hardware/projects at other NASA Centers.
- e. Maintain NT QAS ISO work instructions
- f. Develop and submit Weekly Activity Report to the NASA Monitor of all activities completed or in process.

2.2.2.2 Provide surveillance Quality Assurance for SSP projects/hardware:

- a. Perform and assign as required designated Government Mandatory Inspection Points (GMIP's).
- b. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE/GSE at JSC facilities per the surveillance plan.
- c. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.
- d. Perform surveillance of the Bond Rooms which are responsible for ESCG hardware.
- e. Perform, prepare and enter into the appropriate database Surveillance Reports of the ESCG and/or USA in-line activities.
- f. Assist QE in analyzing surveillance data including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.
- g. Participate in development and modification of GFE to identify and discuss criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.
- h. Participate in design reviews, review provided data and documentation, and provide RID'S on S&MA-related issues and deficiencies.
- i. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods
- j. Identify potential critical items list failure modes, causes, effects, methods of verification, and

- acceptance rationale.
- k. Track and provide status on requirements verification, system qualification, and design certification activities.
 - l. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified. Assess waiver details to assure adequate and appropriate acceptance rationale is performed.
 - m. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Space Shuttle Program for discussion.
 - n. Assure that operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
 - o. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective action (if taken) is appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.
 - p. Support operational use of flight GFE. Participate in development of CHIT'S that ensure compliance with hazard report and performance requirements.
 - q. Submit operational constraints for flight equipment projects, assure the operational constraints are officially approved for each flight in the Operational Control Agreement Database (OCAD), and verify proper implementation.
 - r. Supply special assessments (e.g., PRA and trade studies) and involve subject matter experts, as required.
 - s. Provide for operational support to the MER and the SPIT as needed to resolve issues.
 - t. In accordance with NT-CWI-004, conduct a risk assessment for shipments with open issues requiring NT management concurrence.

2.2.3. SSP GFE Quality Engineering (WBS 1.3.3.3)

2.2.3.1 Provide Quality Engineering surveillance support for SSP GFE developed at JSC.

- a. Review and approve GFE requirements with respect to SSP requirements and JSC standards and processes.
- b. Implement surveillance of GFE design and development process as defined in EA-WI-023.
- c. Provide surveillance of JSC processes and products with respect to applicable SLP's, including manufacturing, assembling and testing of hardware and associated Work Authorizing Documents (WAD's).
- d. Develop GMIP Plans and assign GMIP's to Criticality 1 or 2 WAD's as applicable in accordance with JSC 63335.
- e. Provide surveillance of acceptance for flight (readiness for shipment) process:
- f. In accordance with SN-D-0007 and SN-S-0008, review acceptance data packages (ADP's) to verify completeness and compliance.
- g. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- h. Provide surveillance of receiving, inspection, processing, and shipment of GFE at JSC facilities.
- i. Submit surveillance data to PBS, participate in the analysis of the data and generation of the surveillance report. Provide monthly metrics and associated report, including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.
- j. Maintain NT QE ISO work instructions.
- k. Provide administrative function for Quality Systems Technical Review (QSTR) Board and associated secure workgroup website.
- l. Support weekly staff meetings with respect to significant accomplishments, issues, and schedules.
- m. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Review (ORR's), and other appropriate reviews/boards when Criticality 1 or 2 Class I equipment is involved.

2.2.3.2 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA)

Bioastronautics Contract SSP GFE.

- a. Review and approve flight hardware and GSE documents and specifications with respect to all facets of quality engineering; e.g., manufacturability, appropriate sequence of events, key characteristics, and appropriate standards. Review and approve GFE requirements with respect to SSP requirements and JSC standards and processes.
- b. Review and approve plans, drawings, procedures, processes, controls and inspection requirements.
- c. Evaluate inspection/test methods, tools, instruments, and processes.
- d. In accordance with NT-PQE-007, identify mandatory inspection points (MIP's).
- e. In accordance with NT-CWI-003, investigate nonconformances that have occurred at JSC fabrication and test facilities to understand the cause and effects; determine the appropriate disposition for the nonconforming item(s); determine if the nonconformance meets the criteria for a Reportable Problem in accordance to JSC 28035; and, when appropriate, initiate FIAR's. Review the history of similar nonconformance occurrences.
- f. Participate in discussions and meetings with JSC design groups and technical divisions.
- g. Provide review and assistance in the development of critical items lists (CIL's) as a derivative of the failure modes and effects analysis (FMEA).
- h. Provide quality engineering coverage in selected onsite facilities and test area.
- i. Review rejections and/or nonconformances of delivered or manufactured articles. Considerations will include materials, processes, manufacturing methods, inspection and test techniques, handling, and storage.
- j. Prepare and/or provide recommendations for revisions to quality assurance plans for selected onsite facilities and tests.
- k. Evaluate GFE engineering change requests for quality engineering impact. Provide recommendations for acceptance, rejection, or modification to the changes.
- l. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Review (ORR's), and other appropriate readiness reviews/boards.

- m. Maintain a current status of work progress and problems and prepare technical briefings to include previous test problems and open items on test articles and facilities that might affect test planning and operation.
- n. Review the FCE CCB agenda, identify key issues, and prepare necessary IS&QD inputs to the S&MA board member.
- o. Perform in-depth reviews of test plans and procedures.
- p. In accordance with NT-CWI-004, participate in Pre-Shipment Readiness Reviews.
- q. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- r. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are properly documented. When appropriate, initiate FIAR's. Assure that adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective actions (if taken) are appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

2.2.3.3 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA) Food Laboratory SSP GFE.

- a. Participate on PRT.
- b. Initiate and close FIAR's/ISOD's.
- c. Review all space food TPS's and DR's for content accuracy and validity for Space Shuttle.
- d. Review Form 1027's and resolve open items. Review all food lab related drawings for accuracy.
- e. Review all space food specifications, as needed.
- f. Participate in the Space Food systems sensory panel.
- g. Provide disposal of Class 3 food items, as needed.

2.2.4. SSP GFE Software Assurance

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation for GFE flight and ground systems performed at JSC.

- a. Define Software Assurance requirements.
- b. Ensure the conformance of software life-cycle processes and products to Software Assurance requirements, standards, and procedures.
- c. Perform process and product assessment throughout the life-cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Provide support to boards and panels.
- e. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software life-cycle.
- f. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- g. Ensure the testing of software safety critical components are sufficiently implemented and that applicable controls are in place to verify all safety conditions.
- h. Conduct analysis of proposed changes on software safety.
- i. Evaluate the reliability of the software products created throughout the life-cycle.
- j. Ensure that the software being developed or maintained satisfies the functional and performance requirements.
- k. Ensure that each phase of the development process yields the right software products.
- l. Participate in major milestone reviews and certification/acceptance of the software.
- m. Conduct surveillance of GFE software life-cycle activities.

2.2.5 SSP CFE S&MA

2.2.5.1. SSP CFE Quality Engineering (WBS 1.3.3.6)

Perform Program-level Quality Engineering (QE) functions.

- a. Perform Program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for SSP related directives and requirements per Program Office direction.
- c. Develop Program related directives/requirements/change requests dealing with quality and provide tracking and support to Program representatives.
- d. Perform facility certifications/surveillanceas directed by the Program Office.
- e. Perform Program directed investigations of anomalies.
- f. Provide support to the SSP Quality Panel.

2.2.5.2. SSP GFE/CFE Procurement Quality Assurance

Perform PQA functions at contractors and subcontractors:

- a. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications. Utilize DCMA Quality Leading Indicator Reports to perform risk assessments for product quality requirements flow down with the DCMA letters of delegation.
- b. Review purchase orders to determine if Government Source Inspection (GSI) is required. Develop GMIP plans in accordance with NPR 8735.2 and coordinate with DCMA.
- c. Review purchase orders to determine appropriate quality instructions.
- d. Assure consistency of contractor and subcontractor activities with Federal Acquisition Regulation (FAR) requirements and requirements of NPR 8735.2.
- e. Prepare Draft DCMA letters of delegations in accordance with NPR 8735.2
- f. Review JSC Purchase Card procurements to verify inclusion of Quality requirement.
- g. Manage and support the Procurement Quality Assurance Database.

2.2.6. SSP GFE and CFE Audits (WBS 1.3.3.5)

Support NASA-sponsored audits.

- a. Provide historical data as to previous SSP audits (audit reports, audit checklists, etc.) to assure consistency of approach by the Audit Management Office and Glenn Research Center.
- b. Provide Space Shuttle Program Master Audit Schedule utilizing SAS. This includes support of the Joint Audit Planning Committee in providing Master Audit Schedule information and determining contractor/subcontractor changes.
- c. Perform process assessments and audits, and prepare reports documenting results.
- d. Perform technical analyses, and present results.
- e. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements and implementation at NASA contractors, subcontractors, and vendors in accordance with NSTS 60538, NSTS 5300.4(1D-2), and NPR 8735.2.

2.2.7. SSP Flight Readiness (WBS 1.3.3.7)

Assesses and evaluate data and documentation in accordance with NT-ADM-014 and make recommendations for flight readiness of GFE projects. Specific tasks include, but are not limited to:

- a. Data – Records Management
 - Evaluate CCB Change Requests (CR's) and other Program documents to identify flight GFE that has been manifested for flight.
 - Review mission hardware certification length/missions to ensure certification is current for the mission duration.
 - Support GFE engineers in collection and management of data that supports S&MA CoFR evaluation and status reporting in this task order.
 - Implement and manage centralized CoFR endorsement status collection and reporting capability to the frequency defined in NT-ADM-014

- Evaluate and update NT-ADM-014 to remain current with Program unique CoFR reporting requirements.
- Track requirements verification and certification status.
- Assess the configuration and utilization plans against flight certifications.
- Prepare Certification of Flight Readiness (CoFR) presentations and support to CoFR meetings to discuss status and issues related to MRB's, system acceptance, open items status (1027), data trends, and audit reports.
- Identify data and information required for accomplishment of S&MA responsibilities and functions leading to flight readiness assessments and CoFR endorsements. Assess adequacy of data and information to support flight readiness activities.
- Provide status of all open CoFR endorsements, including PRACA and GCAR items, and track the open status through closure to support CoFR presentations.
- Assess QARC documentation on flight item manufacturing and test results in order to report on the status of these items in support of Flight Readiness.
- Perform engineering review of flight GFE for its intended application, including launch, landing and on-orbit operations.
- GFE Records Management in Support of Flight Readiness
- Staff satellite record centers to maintain configuration, status accounting and accessibility to work authorizing and shipping records and data created by engineering according to NASA records requirements

2.3 Deliverables:

Audit Reports

Technical and surveillance metric analyses DRAFT Letters of Delegation

Master Audit Schedule

PBS Surveillance Reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 -April 30, 2009

1. Order No. 06-09	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525		4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:		6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p> 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696

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 terms and conditions of contract number: NNJ06JE86C.

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name: Signature: _____ Date: _____	Signature: <i>Alice Jean Pursell</i> Date: <i>9/30/08</i> CONTRACTING OFFICER

11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: _____ Reissue To: _____	13. Total <p style="text-align: center;">\$2,201,688</p>
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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 _____

Task Order 06-09

1.0 TITLE OF EFFORT: Space Shuttle GFE Projects and CFE Quality Support

2.0 TASK DESCRIPTION:

Coordinate and conduct S&MA activities for authorized Space Shuttle Program quality and flight equipment projects (which may include GFE, GSE, CFE, and payloads). Identify and discuss S&MA topics and issues. Participate in all S&MA activities associated with the GFE life-cycle, as defined in EA-WI-023 and EA-WI-025. Provide support to pre and post flight activities as well as to on-orbit operations, including integrated operations assessments. Review proposals and change requests for system designs and design modifications in order to assess S&MA impacts and identify S&MA issues.

2.1 STATEMENT OF WORK REFERENCE Section 6.0 JSC Project Support; Section 5 Program Support

2.2 REQUIREMENTS

2.2.1. SSP GFE Safety and Reliability

Provide Safety and Reliability support for GFE and Orbiter payloads.

- a. Participate in development and modification of GFE to identify and discuss criticality assessments and define S&MA requirements. Identify design problems and provide design solutions or improvements.
- b. Participate in design reviews, review provided data and documentation, and provide RID's on S&MA-related issues and deficiencies.
- c. Identify potential hazards, evaluate proposed hazard controls, and evaluate methods for verification of hazard controls.
- d. Identify potential critical items list failure modes, causes, effects, methods of verification, and acceptance rationale.
- e. Track and provide status on requirements verification, system qualification, and design certification activities.
- f. Identify missing or non-compliant S&MA requirements as well as performance requirements that cannot be verified. Assess waiver details to assure adequate and appropriate acceptance rationale is performed.
- g. Conduct S&MA assessments, prepare presentations, and present results of those assessments to S&MA management, project management, and the Space Shuttle Program for discussion.
- h. Assure that operational uses, operating limits, hazard controls, and fault tolerance are verified prior to flight.
- i. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are appropriately documented; adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective action (if taken) is appropriate and effective; closure documentation

(including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

- j. Support operational use of flight GFE. Participate in development of CHIT's that ensure compliance with hazard report and performance requirements.
- k. Submit operational constraints for flight equipment projects, assure the operational constraints are officially approved for each flight in the Operational Control Agreement Database (OCAD), and verify proper implementation.
- l. Supply special assessments (e.g., PRA and trade studies) and involve subject matter experts, as required.
- m. Provide for operational support to the MER and the SPIT as needed to resolve issues.
- n. In accordance with NT-CWI-004, conduct a risk assessment for shipments with open issues requiring NT management concurrence.

2.2.2 SSP GFE Quality Assurance

2.2.2.1 Provide In-Line Quality Assurance support for SSP GFE/GSE:

- a. Perform non-RITF related in-line hardware inspection, verification, and documentation tasks associated with receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE/GSE at JSC facilities.
- b. Oversee facility maintenance in testing labs, and support fit-checks, installation, test readiness, test, and checkout of hardware at JSC and other NASA and contractor facilities.
- c. Perform in-line support of the Bond Rooms for shipping and receiving of flight hardware.
- d. Perform designated Mandatory Inspection Points (MIP's) on SSP hardware/projects at other NASA Centers.
- e. Maintain NT QAS ISO work instructions
- f. Develop and submit Weekly Activity Report to the NASA Monitor of all activities completed or in process.

2.2.2.2 Provide surveillance Quality Assurance for SSP projects/hardware:

- a. Perform and assign as required designated Government Mandatory Inspection Points (GMIP's).
- b. Conduct surveillance of flight systems handling and processing as well as ground facilities with regard to receiving, inspecting, fabricating, assembling, testing, processing, and shipping of GFE/GSE at JSC facilities per the surveillance plan.
- c. Participate as team members or team leaders of process and requirements implementation audits conducted at JSC and contractor facilities.
- d. Perform surveillance of the Bond Rooms which are responsible for ESCG hardware.
- e. Perform, prepare and enter into the appropriate database Surveillance Reports of the ESCG and/or USA in-line activities.
- f. Assist QE in analyzing surveillance data including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.

2.2.3. SSP GFE Quality Engineering

2.2.3.1 Provide Quality Engineering surveillance support for SSP GFE developed at JSC.

- a. Review and approve GFE requirements with respect to SSP requirements and JSC standards and processes.
- b. Implement surveillance of GFE design and development process as defined in EA-WI-023.
- c. Provide surveillance of JSC processes and products with respect to applicable SLP's, including manufacturing, assembling and testing of hardware and associated Work Authorizing Documents (WAD's).
- d. Develop GMIP Plans and assign GMIP's to Criticality 1 or 2 WAD's as applicable in accordance with JSC 63335.
- e. Provide surveillance of acceptance for flight (readiness for shipment) process.
- f. In accordance with SN-D-0007 and SN-S-0008, review acceptance data packages (ADP's) to verify completeness and compliance.
- g. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- h. Provide surveillance of receiving, inspection, processing, and shipment of GFE at JSC facilities.
- i. Submit surveillance data to PBS, participate in the analysis of the data and generation of the surveillance report. Provide monthly metrics and associated report, including recommendations for necessary audits and level of surveillance for each area of interest based upon surveillance findings.
- j. Maintain NT QE ISO work instructions.
- k. Provide administrative function for Quality Systems Technical Review (QSTR) Board and associated secure workgroup website.
- l. Support weekly staff meetings with respect to significant accomplishments, issues, and schedules.
- m. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Review (ORR's), and other appropriate reviews/boards when Criticality 1 or 2 Class I equipment is involved.

2.2.3.2 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA) Bioastronautics Contract SSP GFE.

- a. Review and approve flight hardware and GSE documents and specifications with respect to all facets of quality engineering; e.g., manufacturability, appropriate sequence of events, key characteristics, and appropriate standards. Review and approve GFE requirements with respect to SSP requirements and JSC standards and processes.
- b. Review and approve plans, drawings, procedures, processes, controls and inspection requirements.
- c. Evaluate inspection/test methods, tools, instruments, and processes.
- d. In accordance with NT-PQE-007, identify mandatory inspection points (MIP's).
- e. In accordance with NT-CWI-003, investigate nonconformances that have occurred at JSC fabrication and test facilities to understand the cause and effects; determine the appropriate disposition for the nonconforming item(s); determine if the nonconformance meets the criteria for a Reportable Problem in accordance to JSC

28035; and, when appropriate, initiate FIAR's. Review the history of similar nonconformance occurrences.

- f. Participate in discussions and meetings with JSC design groups and technical divisions.
- g. Provide review and assistance in the development of critical items lists (CIL's) as a derivative of the failure modes and effects analysis (FMEA).
- h. Provide quality engineering coverage in selected onsite facilities and test area.
- i. Review rejections and/or nonconformances of delivered or manufactured articles. Considerations will include materials, processes, manufacturing methods, inspection and test techniques, handling, and storage.
- j. Prepare and/or provide recommendations for revisions to quality assurance plans for selected onsite facilities and tests.
- k. Evaluate GFE engineering change requests for quality engineering impact. Provide recommendations for acceptance, rejection, or modification to the changes.
- l. Participate in Test Readiness Review Boards (TRRB's), User Readiness Reviews (URR's), Operational Readiness Review (ORR's), and other appropriate readiness reviews/boards.
- m. Maintain a current status of work progress and problems and prepare technical briefings to include previous test problems and open items on test articles and facilities that might affect test planning and operation.
- n. Review the FCE CCB agenda, identify key issues, and prepare necessary IS&QD inputs to the S&MA board member.
- o. Perform in-depth reviews of test plans and procedures.
- p. In accordance with NT-CWI-004, participate in Pre-Shipment Readiness Reviews.
- q. Review and assess GFE readiness for government acceptance. Provide status of readiness in support of System Acceptance Review (SAR).
- r. In accordance with JSC 28035, participate in problem/anomaly investigations during all phases of a project to assure that the problems are properly documented. When appropriate, initiate FIAR's. Assure that adequate and appropriate investigation is planned and conducted to identify both proximate and root causes; interim and final closure rationale is acceptable; corrective actions (if taken) are appropriate and effective; closure documentation (including trend coding) is thorough and complete; and visibility of the problem/anomaly is elevated to the appropriate S&MA management level.

2.2.3.3 Provide Quality Engineering in-line support for Space Life Sciences Directorate (SA) Food Laboratory SSP GFE.

- a. Participate on PRT.
- b. Initiate and close FIAR's/ISOD's.
- c. Review all space food TPS's and DR's for content accuracy and validity for Space Shuttle.
- d. Review Form 1027's and resolve open items.
- e. Review all food lab related drawings for accuracy.
- f. Review all space food specifications, as needed.
- g. Participate in the Space Food systems sensory panel.
- h. Provide disposal of Class 3 food items, as needed.

2.2.4. SSP GFE Software Assurance

Provide Software Assurance, including software safety, software reliability, software quality engineering, software quality assurance, and software verification and validation for GFE flight and ground systems performed at JSC.

- a. Define Software Assurance requirements.
- b. Ensure the conformance of software life-cycle processes and products to Software Assurance requirements, standards, and procedures.
- c. Perform process and product assessment throughout the life-cycle to provide objective insight into the maturity and quality of the software processes and products.
- d. Provide support to boards and panels.
- e. Ensure that the software safety requirements are clearly identified, documented, traced and controlled throughout the software life-cycle.
- f. Perform analysis of the consistency, completeness, correctness and testability of software safety requirements.
- g. Ensure the testing of software safety critical components are sufficiently implemented and that applicable controls are in place to verify all safety conditions.
- h. Conduct analysis of proposed changes on software safety.
- i. Evaluate the reliability of the software products created throughout the life-cycle.
- j. Ensure that the software being developed or maintained satisfies the functional and performance requirements.
- k. Ensure that each phase of the development process yields the right software products.
- l. Participate in major milestone reviews and certification/acceptance of the software.
- m. Conduct surveillance of GFE software life-cycle activities.

2.2.5 SSP CFE S&MA

2.2.5.1. SSP CFE Quality Engineering

Perform Program-level Quality Engineering (QE) functions.

- a. Perform Program directed analysis of quality assurance related requirements.
- b. Perform Change Requests analysis for SSP related directives and requirements per Program Office direction.
- c. Develop Program related directives/requirements/change requests dealing with quality and provide tracking and support to Program representatives.
- d. Perform facility certifications/surveillance as directed by the Program Office.
- e. Perform Program directed investigations of anomalies.
- f. Provide support to the SSP Quality Panel.

2.2.5.2. SSP GFE/CFE Procurement Quality Assurance

Perform PQA functions at contractors and subcontractors:

- a. Review purchase orders to verify proper inclusion of quality requirements and supplier qualifications. Utilize DCMA Quality Leading Indicator Reports to perform

- risk assessments for product quality requirements flow down with the DCMA letters of delegation.
- b. Review purchase orders to determine if Government Source Inspection (GSI) is required. Develop GMIP plans in accordance with NPR 8735.2 and coordinate with DCMA.
 - c. Review purchase orders to determine appropriate quality instructions.
 - d. Assure consistency of contractor and subcontractor activities with Federal Acquisition Regulation (FAR) requirements and requirements of NPR 8735.2.
 - e. Prepare Draft DCMA letters of delegations in accordance with NPR 8735.2
 - f. Review JSC Purchase Card procurements to verify inclusion of Quality requirement.
 - g. Manage and support the Procurement Quality Assurance Database.

2.2.6. SSP GFE and CFE Audits

Support NASA-sponsored audits.

- a. Provide historical data as to previous SSP audits (audit reports, audit checklists, etc.) to assure consistency of approach by the Audit Management Office and Glenn Research Center.
- b. Provide Space Shuttle Program Master Audit Schedule utilizing SAS. This includes support of the Joint Audit Planning Committee in providing Master Audit Schedule information and determining contractor/subcontractor changes.
- c. Perform process assessments and audits, and prepare reports documenting results.
- d. Perform technical analyses, and present results.
- e. Participate in joint audits with other NASA Centers or government entities to verify S&MA requirements and implementation at NASA contractors, subcontractors, and vendors in accordance with NSTS 60538, NSTS 5300.4(1D-2), and NPR 8735.2.

2.2.7. SSP Flight Readiness

Assesses and evaluate data and documentation in accordance with NT-ADM-014 and make recommendations for flight readiness of GFE projects. Specific tasks include, but are not limited to:

- a. Evaluate CCB Change Requests (CR's) and other Program documents to identify flight GFE that has been manifested for flight.
- b. Track requirements verification and certification status.
- c. Assess the configuration and utilization plans against flight certifications.
- d. Prepare Certification of Flight Readiness (CoFR) presentations and support to CoFR meetings to discuss status and issues related to MRB's, system acceptance, open items status (1027), data trends, and audit reports.
- e. Identify data and information required for accomplishment of S&MA responsibilities and functions leading to flight readiness assessments and CoFR endorsements. Assess adequacy of data and information to support flight readiness activities.
- f. Provide status of all open CoFR endorsements, including PRACA and GCAR items, and track the open status through closure to support CoFR presentations.
- g. Assess QARC documentation on flight item manufacturing and test results in order to report on the status of these items in support of Flight Readiness.

- h. Perform engineering review of flight GFE for its intended application, including launch, landing and on-orbit operations.

2.3 DELIVERABLES

Audit Reports
Technical and surveillance metric analyses
DRAFT Letters of Delegation
Master Audit Schedule
PBS Surveillance Reports

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 03-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: April 30, 2009
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name:	Signature: <i>Alice Jean Pursell</i> Date: <i>12/23/08</i>
Signature:	CONTRACTING OFFICER

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total \$83,111
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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

Task Order 03-09 Rev. 1

1.0 TITLE OF EFFORT: S&MA Risk Management

2.0 TASK DESCRIPTION: Provide expert support to the S&MA Directorate risk management activities.

2.1 SOW Reference: 8.2.2b

2.2 Support to S&MA Directorate: The contractor shall provide expertise to support S&MA Directorate risk management activities including documenting and tracking risks, developing presentation packages plus developing and tracking of metrics. The contractor will interface with the spaceflight programs assigned to JSC (Space Shuttle, Space Station and Constellation) and the projects and organizations supporting them to continue emphasis to improve project efficiency, reduce cost, and improve performance through rigorous continuous risk management.

- 1) Facilitate implementation of risk management within S&MA
 - a. Assist in the development and maintenance of risk management processes
 - b. Maintain the risk content within the S&MA risk management database
 - c. Support the S&MA risk reviews, include capture of minutes and tracking of actions
 - d. Seek enhancements to the S&MA risk management process and recommend updates
 - e. Provide Risk Management Training to S&MA Directorate personnel
- 2) Maintain the S&MA Risk Management Plan

2.2.1. Deliverables:

- 1) Bi-monthly S&MA Risk Advisory Board Risk Review Package
- 2) Monthly S&MA Director Risk Review Package

The contractor will provide these product deliverables/schedules/milestones to the assigned Point of Contact / COTR for each task.

Monthly reports on the status of assigned sub-tasks to include progress against schedule, any problems encountered in performing the assigned task and any significant interim findings

3.0 PERIOD OF PERFORMANCE: October 1, 2008 - April 30, 2009

4.0 ESTIMATED COST:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">03-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total <p style="text-align:center">\$83,102</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT,
ACCEPTANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Task Order 03-09

1.0 TITLE OF EFFORT: S&MA Risk Management

2.0 TASK DESCRIPTION: Provide expert support to the S&MA Directorate risk management activities.

2.1 SOW Reference: 8.2.2b

2.2 Support to S&MA Directorate: The contractor shall provide expertise to support S&MA Directorate risk management activities including documenting and tracking risks, developing presentation packages plus developing and tracking of metrics. The contractor will interface with the spaceflight programs assigned to JSC (Space Shuttle, Space Station and Constellation) and the projects and organizations supporting them to continue emphasis to improve project efficiency, reduce cost, and improve performance through rigorous continuous risk management.

- 1) Facilitate implementation of risk management within S&MA
 - a. Assist in the development and maintenance of risk management processes
 - b. Maintain the risk content within the S&MA risk management database
 - c. Support the S&MA risk reviews, include capture of minutes and tracking of actions
 - d. Seek enhancements to the S&MA risk management process and recommend updates
 - e. Provide Risk Management Training to S&MA Directorate personnel
- 2) Maintain the S&MA Risk Management Plan

2.2.1. Deliverables:

- 1) Bi-monthly S&MA Risk Advisory Board Risk Review Package
- 2) Monthly S&MA Director Risk Review Package

The contractor will provide these product deliverables/schedules/milestones to the assigned Point of Contact / COTR for each task.

Monthly reports on the status of assigned sub-tasks to include progress against schedule, any problems encountered in performing the assigned task and any significant interim findings

3.0 PERIOD OF PERFORMANCE: October 1, 2008 – April 30, 2009

4.0 ESTIMATED COST:

ORDER FOR SUPPLIES OR SERVICES

1. Order No. 02-09 Rev. 1	2. Date Of Order See Block 10	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p> 7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696
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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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: _____ Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <i>Alice Jean Pursell</i> Date: <i>1/10/09</i> CONTRACTING OFFICER
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11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To: _____	13. Total <p style="text-align: center;">\$752,137</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT.
 ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____

Authorized U.S. Government Representative _____ Date _____

Originator: Learnon Comeaux (BJ)

TMR: David Thelen (NA13)

1. Title of Effort: S&MA Special Assessments

2. Date of Request:

3. Statement of Work / Task Description

- a. S&MA Special Assessments and Evaluations (SOW References: 7.1.1, 7.1.2.a-c)

Maintain programmatic, technical and process expertise within each S&MA discipline for conducting Special Assessments and Evaluations to support the program-level CSOs. Perform Assessments and Evaluations per DRD 18 , Evaluation Reports and DRD 19, Assessment Plans and Reports to provide CSOs with a holistic, comprehensive and integrated perspective of any and all issues required to support the risk-based decision making process. Implement a consolidated data repository to support the tasks above and provide a historical archive of primary and secondary data.

- b. Safety & Mission Success Review (SMSR) Support (SOW References: 7.1.2.b-c)

Provide technical and administrative support to the NASA Headquarters Office of Safety and Mission Assurance (OSMA) for the Safety and Mission Success Review process for Shuttle and Soyuz flights. Provide technical and administrative services to facilitate the Safety & Mission Success Review process of the JSC S&MA Directorate for unmanned International Partner launches to the ISS.

- c. Other OSMA Support (SOW References: 7.1.2.b-c)

Provide administrative support (meeting coordination, minutes, postings and distribution of material) to the Human Rating Independent Review Team (HRIRT).

4. Period of Performance

The period of performance does not commence until the CO has granted authorization to proceed.

This task order period of performance ends on 04/30/2009.

1. Order No. <p style="text-align:center">02-09</p>	2. Date Of Order <p style="text-align:center">See Block 10</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer. Name: _____ Signature: _____ Date: _____	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>9/30/08</u> CONTRACTING OFFICER
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11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: _____ <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: _____ Reissue To: _____	13. Total <p style="text-align:center">\$751,878</p>
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14. Quantities In "Quantity Accepted" Column Have Been:

INSPECTED ACCEPTED RECEIVED

TO CONFROM TO THE CONTRACT, ACCPETANCE WILL BE AT JSC UNLESS OTHERWISE NOTED. BY: _____ Date: _____

Authorized U.S. Government Representative

Date

Originator: Learnon Comeaux (BJ)

TMR: David Thelen (NA13)

1. Title of Effort: S&MA Special Assessments

~~2. Date of Request:~~ The date of request will be assigned upon TMR approval. *ajp*

3. Statement of Work / Task Description

- a. S&MA Special Assessments and Evaluations (SOW References: 7.1.1, 7.1.2.a-c)

Maintain programmatic, technical and process expertise within each S&MA discipline for conducting Special Assessments and Evaluations to support the program-level CSOs. Perform Assessments and Evaluations per DRD 18 , Evaluation Reports and DRD 19, Assessment Plans and Reports to provide CSOs with a holistic, comprehensive and integrated perspective of any and all issues required to support the risk-based decision making process. Implement a consolidated data repository to support the tasks above and provide a historical archive of primary and secondary data.

- b. Safety & Mission Success Review (SMSR) Support (SOW References: 7.1.2.b-c)

Provide technical and administrative support to the NASA Headquarters Office of Safety and Mission Assurance (OSMA) for the Safety and Mission Success Review process for Shuttle and Soyuz flights. Provide technical and administrative services to facilitate the Safety & Mission Success Review process of the JSC S&MA Directorate for unmanned International Partner launches to the ISS.

- c. Other OSMA Support (SOW References: 7.1.2.b-c)

Provide administrative support (meeting coordination, minutes, postings and distribution of material) to the Human Rating Independent Review Team (HRIRT).

4. Period of Performance

The period of performance does not commence until the CO has granted authorization to proceed.

This task order period of performance ends on 04/30/2009.

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align: center;">01-09 Rev 1</p>	2. Date Of Order <p style="text-align: center;">See Block</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4/Learon Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learon.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align: center;">April 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell
Name:	Signature: Date: 11/21/08
Signature:	CONTRACTING OFFICER
Date:	

11. SCHEDULE						
ITEM NO.	DESCRIPTION	QUANTITY ORDERED	Unit	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED

2. For Jsc Internal Use Only: Requisition No: <input type="checkbox"/> COMP <input type="checkbox"/> PART <input type="checkbox"/> PPC Reissue To:	13. Total <p style="text-align: center;">\$530,560</p>
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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: _____

Task Order 01-09 Rev 1

1.0 TITLE OF EFFORT: NASA ISS ADVISORY COMMITTEE SUPPORT

2.0 TASK DESCRIPTION:

This NASA Charter establishes the NASA ISS Advisory Committee (NISSAC). The NISSAC is chartered to provide advice and recommendations to the Associate Administrator for Space Operations Mission Directorate on all aspects related to the safety and operational readiness of the International Space Station (ISS). Specific areas for review by the NISSAC may include space flight safety, including space flight safety and mission assurance strategies; space flight operations, including rendezvous, proximity operations, and docking procedures; crew controller, and supporting training; aerospace systems test and verification procedures; aerospace structures, loads and materials; aerospace medicine, including crew health, program and project management, and readiness of significant launches. The NISSAC shall address additional issues and/or areas of interest as identified by the Associate Administrator for Space Operations Mission Directorate.

The NISSAC is further chartered to conduct ISS safety and operational readiness assessments with counterpart international advisory review groups, including the Russian Space Agency's Advisory Expert Council.

2.1 STATEMENT OF WORK REFERENCE: Sections – 5.0 Program Support; 7.0 Independent Assessment and Assurance Activities; 8.0 Advanced Programs, Assurance Methodologies and Special Processes

2.2 REQUIREMENTS

The Contractor provides both technical and administrative support for the NISSAC. The support shall consist of coordinating periodic reviews of the preparations and operations of the ISS both in the U.S. at NASA facilities and in Russia at Roscosmos facilities or other facilities as appropriate. Given the Technical content of these reviews, it is necessary to provide sufficient technical experts dedicated to the review effort. These experts provide the research analysis and evaluation essential for the findings of the NISSAC to be considered comprehensive and credible. As required, the Contractor shall provide additional technical support for projects requiring specialized independent systems engineering evaluation, flight configuration or crewstation development and assessments

The contractor shall provide the following NISSAC support via:

- Special Independent Assessments – The NISSAC provides the Associate Administrator for Space Operations Mission Directorate an outside of the agency assessment using the expertise of its members for evaluating safety and operational readiness of the ISS
- Open meetings of Committee – Required by the Federal Advisory Committee Act (FACA)
- Fact-finding meetings – The NISSAC provides the Associate Administrator of Space Operations mission Directorate and outside of the agency assessment using the expertise of its members for evaluating specific issues of interest. Generally the Committee will meet as a whole body or in subject matter groups for these types of taskings.
- Joint meetings with Anfimov Advisory Expert Council – The NISSAC has a strong relationship with its counterpart Russian ISS advisory group, the Advisory Expert Council (AEC). The close and effective working relationship developed between the NISSAC and the Advisory Expert Council provides NASA with a unique insight into its ISS partnership with Russia, which has proven very valuable during NASA's dependence on Russia for access to the ISS.

2.3 DELIVERABLES

At a minimum, each of these will be performed / provided three times per year and will coincide with the ISS crew changeover. Depending on the launch schedule and other operational considerations this may increase as required by the Associate Administrator for Space Operations mission Directorate through COTR direction.

- Committee assessments and/or reports
- Open meeting minutes/reports
- Federal Register notices/Memoranda for the Record
- Quarterly and annual travel expense reports for Special Government Employees (SGE's)

3.0 PERIOD OF PERFORMANCE: October 3, 2008 – April 30, 2009

4.0 ESTIMATED COSTS

TO 1-09R1

Labor and Non-Labor Resources:

Labor	October		November		December		January		February		March		April		GFY09 Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Manager																
Supervisor																
Engineer 1																
Engineer 2																
Engineer 3																
Engineer 4																
Engineer 5																
Technician 1																
Technician 2																
Technician 3																
Technician 4																
Administration 1																
Administration 2																
Engineering Aide																
Junior Intern																
Senior Intern																
Total Labor																
Non-Labor Resources																
Travel																
Training																
Facilities																
Other																
NLR Subtotal																
NLR Burden																
Materials																
Minor Subcontractor																
Total NLR																
Sub-total																
Fee																
Total Estimated Cost		\$82,629		\$72,377		\$72,377		\$76,649		\$74,086		\$74,086		\$78,357		\$530,560

ORDER FOR SUPPLIES OR SERVICES

1. Order No. <p style="text-align:center">01-09</p>	2. Date Of Order <p style="text-align:center">See Block</p>	NOTE: MARK ALL PACKAGES AND PAPERS WITH ORDER Certified for National Defense under DPAS (15 CFR 700) DO-C9
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3. Issuing Office NASA Johnson Space Center Attn: BJ4\Learn Comeaux Houston, TX 77058-3696 Tel. No.: (281) 483-6525 E-Mail learn.j.comeaux@nasa.gov	4. Ship To: Transportation Officer, Building 421 NASA Johnson Space Center Houston, TX 77058 Mark For: Accountable Property
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5. Contractor Science Application International Corporation Attn: Will Blumentritt 2450 NASA Parkway Houston, TX 77058 Phone: (281) 335-2006 CAGE CODE:	6. Deliver On Or Before: <p style="text-align:center">November 30, 2009</p>
7. BILLING ADDRESS: NASA Johnson Space Center Attn: LF231/Accounts Payable Group Houston, TX 77058-3696	

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 terms and conditions of contract number: NNJ06JE86C

9. Written acceptance of this order by contractor <input type="checkbox"/> is, <input checked="" type="checkbox"/> is not required. Sign below if required and return to contracting officer.	10. Name: Alice Jean Pursell Signature: <u><i>Alice Jean Pursell</i></u> Date: <u>10/3/09</u> CONTRACTING OFFICER
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11. SCHEDULE

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

2. For Jsc Internal Use Only: Requisition No.: <input type="checkbox"/> COMP. <input type="checkbox"/> PART. PPC: Reissue To:	13. Total <p style="text-align:center">\$154,989</p>
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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: _____ Date _____

Authorized U.S. Government Representative

Task Order 01-09

1.0 TITLE OF EFFORT: NASA ISS ADVISORY COMMITTEE SUPPORT

2.0 TASK DESCRIPTION:

This NASA Charter establishes the NASA ISS Advisory Committee (NISSAC). The NISSAC is chartered to provide advice and recommendations to the Associate Administrator for Space Operations Mission Directorate on all aspects related to the safety and operational readiness of the International Space Station (ISS). Specific areas for review by the NISSAC may include space flight safety, including space flight safety and mission assurance strategies; space flight operations, including rendezvous, proximity operations, and docking procedures; crew controller, and supporting training; aerospace systems test and verification procedures; aerospace structures, loads and materials; aerospace medicine, including crew health, program and project management, and readiness of significant launches. The NISSAC shall address additional issues and/or areas of interest as identified by the Associate Administrator for Space Operations Mission Directorate.

The NISSAC is further chartered to conduct ISS safety and operational readiness assessments with counterpart international advisory review groups, including the Russian Space Agency's Advisory Expert Council.

2.1 STATEMENT OF WORK REFERENCE: Sections – 5.0 Program Support; 7.0 Independent Assessment and Assurance Activities; 8.0 Advanced Programs, Assurance Methodologies and Special Processes

2.2 REQUIREMENTS

The Contractor provides both technical and administrative support for the NISSAC. The support shall consist of coordinating periodic reviews of the preparations and operations of the ISS both in the U.S. at NASA facilities and in Russia at Roscosmos facilities or other facilities as appropriate. Given the Technical content of these reviews, it is necessary to provide sufficient technical experts dedicated to the review effort. These experts provide the research analysis and evaluation essential for the findings of the NISSAC to be considered comprehensive and credible. As required, the Contractor shall provide additional technical support for projects requiring specialized independent systems engineering evaluation, flight configuration or crewstation development and assessments

The contractor shall provide the following NISSAC support via:

Special Independent Assessments – The NISSAC provides the Associate Administrator for Space Operations Mission Directorate an outside of the agency assessment using the expertise of its members for evaluating safety and operational readiness of the ISS
Open meetings of Committee – Required by the Federal Advisory Committee Act (FACA)
Fact-finding meetings – The NISSAC provides the Associate Administrator of Space Operations mission Directorate and outside of the agency assessment using the expertise of its members for evaluating specific issues of interest. Generally the Committee will meet as a whole body or in subject matter groups for these types of taskings.
Joint meetings with Anfimov Advisory Expert Council – The NISSAC has a strong relationship with its counterpart Russian ISS advisory group, the Advisory Expert Council (AEC). The close and effective working relationship developed between the NISSAC and the Advisory Expert Council provides NASA with a unique insight into its ISS partnership with Russia, which has proven very valuable during NASA's dependence on Russia for access to the ISS.

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Committee assessments and/or reports

Open meeting minutes/reports

Federal Register notices/Memoranda for the Record

Quarterly and annual travel expense reports for Special Government Employees (SGE's)

3.0 PERIOD OF PERFORMANCE: October 3, 2008 – November 30, 2008

4.0 ESTIMATED COSTS