AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE		PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
[illegible]	04/27/2010	N/A	

6. ISSUED BY — CODE GSFC

[illegible]/Goddard Space Flight Center
[illegible] Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) — CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra R. [illegible]
Greenbelt MD [illegible]

8. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, state and ZIP Code)

[illegible] CORP
[illegible] BLDG 201
[illegible] CA 90304-[illegible]

CODE [illegible] FACILITY CODE

9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO. (X)
[illegible]40C

10B. DATED (SEE ITEM 13)
09/[illegible]/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [ ] is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
BNC: 040

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE
- A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
- B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
- C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
- D. OTHER (Specify type of modification and authority)
- X Basic Contract Agreement

E. IMPORTANT: Contractor [ ] is not [ ] is required to sign this document and return _____1_____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to add a no cost extension from April 30, 2010 to June 1, 2010 for continued contract support.

Accordingly,

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
S. Varaitch. Contracts Negotiator		[illegible] K. [illegible]	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature)	4/29/10	(Signature of Contracting Officer)	4/30/10

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (Rev. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Clause B.1, Deliverable Requirements, Item 29, is hereby revised to reflect the new delivery date/period of performance as follows:

B.1 DELIVERABLE REQUIREMENTS SCHEDULE

The contractor shall perform and/or deliver the following:

ITEM	Description	Reference(s)	Due Date
1	Weekly Reports	Attachment A, Section 3.1.11	As required
2	Monthly Progress Reports	Attachment A, Section 3.1.11	Monthly
3	Financial Management Reports	Clause G.3& G.6	Monthly/Quarterly
4	New Technology Reports	Clause G.2	As required
5	Small Business Subcontracting Reports	Clauses H.5 & H.12	As required
6	Foreign Travel Request and Reports	Clause G.9	As required
7	Safety & Health Reporting	Clause H.2 1852.223-70 & Clause H.8	As required
8	Requests for Government Property	Clause G.5	G.5
9	New Technology /Patent Reportable Items	Clause G.2 and G.8	As required
10	IT Security Plan, Risk Assessment Plan, & FIPS 199 Assessment Plan	Clause I.95	Thirty (30) calendar days after contract award
11	Updates to Work Breakdown Structure and Associated Dictionary	Attachment A, Section 3.1.1	As required
12	Schedule including Critical Path Analysis	Attachment A, Section 3.1.2	As required
13	Mission Implementation Plan	Attachment A, Section 3.1.3	Draft at SRR Final at Confirmation
14	Performance Assurance Implementation Plan	Attachment A, Section 3.1.6	Draft at SRR Final At PDR
15	Descope Plan	Attachment A, Section 3.1.7	Draft at SRR Final at PDR
16	Systems Requirements Review (SRR)	Attachment A, Section 3.1.10	Jan-10

17	Mission PDR Presentation/Package	Attachment A, Section 3.1.10	1 week before PDR
18	Preliminary Design Review (PDR)	Attachment A, Section 3.1.10	5/18/2010
19	Operational Hazard Analysis	Attachment H, Section 3.1	Draft at PDR, Final at TBD
20	Mission Requirements, Traceability & Verification Doc - includes system test and verification requirements	Attachment A, Section 3.2	Draft at SRR, Final at Confirmation
21	IRIS observatory (or payload) to LV Interface Requirements Document (IRD)	Attachment A, Section 3.5	Preliminary 10/28/2009, Updates as required
22	Software Requirements Assurance, Test, and Verification Plan	Attachment A, Section 3.6	Draft at PDR
23	Concept of Operations Document	Attachment A, Section 3.9	Draft at SRR Final at PDR
24	Science Requirements Document	Attachment A, Section 3.4.2	Draft at SRR Final at PDR
25	Worst Case Analysis	Attachment H, Section 4.2.4	PDR
26	Contamination Control Plan	Attachment H, Section 4.13	PDR
27	Parts List (Instrument & S/C)	Attachment H, Section 11	Preliminary at PDR, As built at TBD
28	Materials List (Instrument & S/C)	Attachment H, Section 12	Preliminary at PDR, As built at TDB
29	Final Report (Phase B)	C.2	01-June-10

2.All other terms and conditions remain unchanged.

(End of Modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 / 4

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
000002	See Block 16C	420033695	160

6. ISSUED BY CODE GSFC	7. ADMINISTERED BY (If other than Item 6) CODE GSFC
NASA/Goddard Space Flight Center Procurement Operations Division Greenbelt MD 20771	NASA/Goddard Space Flight Center Procurement Operations Division Attn: Cassandra K. Moore Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	
LOCKHEED MARTIN 3251 HANOVER ST BLDG 201 PALO ALTO CA 94304-1191	(x) 9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNG15EA10C 10B. DATED (SEE ITEM 13) 09/30/2009
CODE 05113 FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended. is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $5,477,000.00
BUL: 9AB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)
X	Bilateral - 52.232-22 - Limitations of Funds & 52.216-25 - Contract Definitization (Oct 1997)

E. IMPORTANT: Contractor is not, is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to definitize Phase B of the Interface Region Imaging Spectrograph (IRIS) Mission and provide incremental funding for continued contract support.

See Page 2

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		James K. Jones	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	

5/21/10 5/28/10

1.) Clause B.1, **DELIVERABLE REQUIREMENTS** is hereby revised to reflect the new delivery date for Item 29, Final Report (Phase B). The delivery date for Item 29 is being changed from June 1, 2010 to June 30, 2010.

2.) Clause B.2, 1852.216-74 Estimated Cost and Fixed Fee (DEC 1991) is hereby replaced with a newly titled clause as follows:

B.2 ESTIMATED COST, FIXED FEE and ON-ORBIT PERFORMANCE INCENTIVE FEE

a. The estimated cost of this contract is exclusive of the fixed fee of . The total estimated cost and fixed fee is $19,373,288 .

b. Total estimated cost, fixed fee, and on-orbit performance incentive is . The on-orbit performance incentive fee pool allocation is . The on-orbit performance incentive fee is not billable for payment until after determination that the performance requirement has been met (performance requirements to be determined in Phase C-E). In the event that Phase C-E is not executed the incentive fee allocation will convert to fixed fee.

(End of clause)

3.) B.4 **1852.232-81 CONTRACT FUNDING (JUN 1990)** is revised as follows:

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Funds clause, the total amount allotted by the Government to this contract is $18,631,434. This allotment is for the work required under the cover and covers the following estimated period of performance: Contract award through June 30, 2010.

(b) An additional amount of is obligated under this contract for payment of fee.

Purchase Request No. 4200336959. Amount: $5,477,000.00

FROM	BY	TO
$14,076,763	$5,477,000	$19,553,763

(End of clause)

4.) Clause G.6, **FINANCIAL MANAGEMENT REPORTING (GSFC 52.242-90) (DEC 2007)** is revised to correct the following:

FROM:	TO:
Resources Analyst, Code 460	Resources Analyst, Code 460
E-Mail: tina.l.wood@nasa.gov	E-Mail: valerie.y.mackritis@nasa.gov

(End of clause)

5.) Clause I. 29, **52.222-2 PAYMENTS FOR OVERTIME PREMIUMS (JUL 1990)** is incorporated by full text as follows:

PAYMENT FOR OVERTIME PREMIUMS (JULY 1990)

(a) The use of overtime is authorized under this contract if the overtime premium does not exceed *$100,000 or the overtime premium is paid for work—

(1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdowns of production equipment, or occasional production bottlenecks of a sporadic nature;

(2) By indirect-labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;

(3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or

(4) That will result in lower overall costs to the Government.

(b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall—

(1) Identify the work unit; *e.g.*, department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;

(2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;

(3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and

(4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.

* Insert either "zero" or the dollar amount agreed to during negotiations. The inserted figure does not apply to the exceptions in paragraph (a)(1) through (a)(4) of the clause. (End of clause)

6.) Clause I. 86, **52.216.24 LIMITATION OF GOVERNMENT LIABILITY (APR 1984)** is hereby deleted in its entirety and marked reserved.

In consideration of the modification agreed to herein as complete equitable adjustment for the Contractor's proposal number LMSSC P090206P for Phase B dated October 22, 2009, LMSSC-P080167P-1 for Phase B Augmentation dated October 22, 2009 and LMSSC-P080167P-FNP for revised Phase B dated March 17, 2010 and LMSSC-P090240-FNP for revised Phase B Augmentation dated March 23, 2010, in support of the Interface Region Imaging Spectrograph (IRIS), the Contractor hereby releases the Government from any and all liability under this contract for further equitable adjustments attributable to such facts or circumstances giving rise to the aforementioned proposal for adjustment.

All other terms and conditions of the contract are unchanged.

(End of Modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 / 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
000002	See Block 16C	120[illegible]490	160

6. ISSUED BY	CODE
NASA/Goddard Space Flight Center Procurement Operations Division Greenbelt MD 20771	GSFC

7. ADMINISTERED BY (If other than Item 6)	CODE
NASA/Goddard Space Flight Center Procurement Operations Division Attn: Cassandra K. Moore Greenbelt MD 20771	GSFC

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1191

CODE 05115 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

(x) 10A. MODIFICATION OF CONTRACT/ORDER NO.
NNG09EA40C

10B. DATED (SEE ITEM 13)
06/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
BNC: GAE Net Increase: $17,200,000.00

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)
X	Bilateral - 52.232.22 - Limitations of Funds

E. IMPORTANT: Contractor ☐ is not. ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to provisionally fund this contract to allow continuance of contract support.

All other terms and conditions remain unchanged.

See page 2

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		James K. Jones	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	6/30/10

1. Section B.1 DELIVERABLE REQUIREMENTS is hereby revised to reflect the new delivery date for Item 29, Final Report. The delivery date for Item 29 is being changed from June 30, 2010 to October 31, 2010.

2. Section B.3 ESTIMATED COST is revised to read as follows:

The total estimated cost for performance of this contract is $36,753,763.

	FROM	BY	TO
Cost			
Fixed Fee			
On-Orbit			
Provisional Cost	$0	$17,200,000	$17,200,000
Total Cost	$20,115,142		$37,315,142

3. Section B.4, CONTRACT FUNDING, is revised to reflect additional funding as follows:

FROM	BY	TO
$19,553,763	$17,200,000	$36,753,763

As evidenced by the contractor's e-mail message dated June 23, 2010, it is anticipated that this allotment of funds will cover contract performance through October 31, 2010.

Accounting and Appropriation Data is revised to include the following information:

PR 4200346492	Amount
	$17,2000,000

End of Modification

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE OF PAGES: 1 | 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
000001	07/27/2010	1200314000	460

6. ISSUED BY CODE GSFC	7. ADMINISTERED BY (If other than Item 6) CODE GSFC
NASA/Goddard Space Flight Center Procurement Operations Division Greenbelt MD 20771	NASA/Goddard Space Flight Center Procurement Operations Division ATTN: Cassandra N. Moore Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1191

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNG10PA01C

10B. DATED (SEE ITEM 13) 06/30/2010

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $561,379.00
INC: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) Bilateral - 52.232.22 - Limitations of Funds

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to fully fund Phase B of this contract. All other terms and conditions remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		James K. Jones	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED 7/27/10

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Section B.4, CONTRACT FUNDING, is revised to reflect additional funding as follows:

FROM	BY	TO
$36,753,763	$561,379	$37,315,142

2. Accounting and Appropriation Data is revised to include the following information:

PR 4200348009	Amount
	$561,379

End of Modification

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE		PAGE 1 OF PAGES 1	
2. AMENDMENT/MODIFICATION NO. 000001	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO. N200308694	5. PROJECT NO. (If applicable) 460
6. ISSUED BY CODE GSFC		7. ADMINISTERED BY (If other than Item 6) CODE GSFC	

6. ISSUED BY:
NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY:
NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO. NNG09FA40C

10B. DATED (SEE ITEM 13) 09/30/2009

CODE 60111 FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $5,500,000.00

NOT: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE:

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

X Bilateral - 52.232-22 - Limitations of Funds

E. IMPORTANT: Contractor ☐ is not ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to provisionally fund this contract to allow continuance of contract support.

All other terms and conditions remain unchanged.

See page 2
FOB: Destination

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remain unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
S.Varaitch, Contracts	James K. Jones
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED 9-30-10
16B. UNITED STATES OF AMERICA	16C. DATE SIGNED 10/01/2010

NSN 7540-01-152-8070
PREVIOUS EDITION UNUSABLE

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Section B.1 DELIVERABLE REQUIREMENTS is hereby revised to reflect the new delivery date for Item 29, Final Report. The delivery date for Item 29 is being changed from October 31, 2010 to December 17, 2010.

2. Section B.3 ESTIMATED COST is revised to read as follows:

The total estimated cost for performance of this contract is $42,253,763.

	FROM	BY	TO
Cost			
Fixed Fee			
On-Orbit			
Provisional Cost	$17,200,000	$5,500,000	$22,700,000
Total Cost	$20,115,142		$42,815,142

3. Section B.4, CONTRACT FUNDING, is revised to reflect additional funding as follows:

FROM	BY	TO
$37,315,142	$5,500,000	$42,815,142

As evidenced by the contractor's e-mail message dated September 24 2010, it is anticipated that this allotment of funds will cover contract performance through December 17, 2010.

Accounting and Appropriation Data is revised to include the following information:

PR 4200358694	Amount
	$5,500,000.00

End of Modification

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF 12 PAGES

2. AMENDMENT/MODIFICATION NO. 000006

3. EFFECTIVE DATE See Block 16C

4. REQUISITION/PURCHASE REQ. NO

5. PROJECT NO. (If applicable) 460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

CODE 66113 FACILITY CODE

(X) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNG09DA11C

10B. DATED (SEE ITEM 13) 09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended. is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
BNC: GAD $230,000

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

X SNEX Announcement of Opportunity - NNH07ZDA0030

E. IMPORTANT: Contractor is not, is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to definitize Phase C-F of Interface Region Imaging Spectrograph (IRIS) contract, incorporate a revised Statement of Work and provide incremental funding.

All other terms and conditions remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remain unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)
S. Varaitch Contracts

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED 12/16/2010

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
Janus K. Jones

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED 12/16/2010

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1.) Clause B.1, **DELIVERABLE REQUIREMENTS** are incorporated as follows:

Item	Description	Reference(s)	Due Date	
30	IRIS Flight Observatory (Instrument and Spacecraft), delivery on-orbit	Note #1 and SOW 8.3, Level 1 Requirements	Launch Plus 1 month	
31	Observatory GSE – for support of launch site and launch operations	Note #2 and SOW 10.0	Launch Minus 1 month	
32	Science Operations Center – Science Data Processing	SOW 11.2	Launch Minus 1 month	
33	Monthly EVMS Data	SOW 3.14	Monthly	
34	Shipment of Observatory to Launch Site	Project Master Schedule	September 24, 2012	
35	Documentation as defined in the CDRL	SOW 2.3	See Attachment J	
36	Final Report	Clause C.2	December 31, 2014 (end of Phase E)	

1. Fully tested, qualified, and complete 30 day on-orbit check out of IRIS Observatory consisting of the integrated Instrument and Spacecraft. Includes all flight hardware, flight spares, and flight software.
2. Provide mechanical GSE and electrical GSE for shipping, handling, integration, and checkout of the observatory at the launch site including any GSE required for testing during LV integration and launch operations.
3. Mission Operations Center and Ground Data System: NASA Ames Research Center is responsible for the development, test, and deployment of the IRIS mission operations center and the ground data system. LM will manage the effort and coordinate the ground data network support provided by the Norwegian Space Agency.

2.) Clause B.2, 1852.216-74 Estimated Cost and Fixed Fee (DEC 1991) is hereby replaced with a newly titled clause as follows:

B.2 ESTIMATED COST, FIXED FEE and ON-ORBIT PERFORMANCE INCENTIVE FEE

a. The estimated cost for Phases C-F is exclusive of the fixed fee of . The total estimated cost and fixed fee for Phase C-F is $83,182,422.

b. Total estimated cost, fixed fee, and on-orbit performance incentive for Phases C-F is . The on-orbit performance incentive fee pool allocation is . The on-orbit performance incentive fee is not billable for payment until after determination that the performance requirement has been met.

c. The total value of this contract with definitization of Phases C-F is as follows:

	FROM	BY	TO
Cost			
Fixed Fee			
On-Orbit			
Provisional Cost	$22,700,000	($-22,700,000)	$0
Total Cost	$42,815,142	$63,663,788	$106,478,930

(End of clause)

3.) B.4 **1852.232-81 CONTRACT FUNDING (JUN 1990)** is revised as follows:

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Funds clause, the total amount allotted by the Government to this contract is $230,000. This allotment is for the work required under the cover and covers the following estimated period of performance: Contract award through February 28, 2011.

(b) An additional amount of is obligated under this contract for payment of fee.

Purchase Request No. 4200367408. Amount: $230,000

FROM	BY	TO
$42,815,142	$230,000	$43,045,142

(End of clause)

4.) Clause B.6, entitled **PERFORMANCE INCENTIVE (1852.216-88) (JAN 1997)** is hereby incorporated as part of this contract in full text and reads as follows:

B.6 PERFORMANCE INCENTIVE (1852.216-88) (JAN 1997)

a. Introduction

The Contractor shall have the opportunity to earn or lose additional fee based upon the on-orbit performance of the IRIS Flight Instrument for up to 24 months following commissioning. The Contractor shall earn an incentive based upon the performance evaluation of the IRIS Flight Instrument above the standard level of performance for Image Set Completeness, Spectral Set Completeness, Functionality, and Operational Life. The total maximum amount of Performance Incentive earned shall not exceed . Likewise, the Contractor shall receive a reduction in incentive fee if the IRIS Flight Instrument fails to achieve the Standard Level of Performance at commissioning or degrades below the standard level not to exceed

the total Performance Incentive earned.
Level 1 requirements referred to in this plan are documented in "Program-Level Requirements, Interface Region Imaging Spectrograph (IRIS) Project" Version 1.0, 31 August 2010. This is archived as document A101-RQ-08-0160 on the IRIS team website: http://www.lmsal.com/iris.

b. Standard Level of Performance

At the standard level of performance, the Contractor shall have met the minimally acceptable contract requirements based on the evaluation of the IRIS Flight Instrument's performance at completion of the on-orbit commissioning phase. The on-orbit commissioning phase consists of a complete functional, operational and performance checkout of the instrument following launch, nominally completed 30 days after launch. The standard level of performance for each performance requirement is defined in Table 1. There is no Performance Incentive earned when the Standard Level of Performance has been achieved, but not exceeded.

Table 1 – Definition of Standard Level of Performance[1]

ID #	Performance Requirement (PR)	Standard Level of Performance
1.	Image Set Completeness	Slit Jaw Images in either the FUV or NUV
2.	Spectral Set Completeness [2]	Spectra in either the FUV or NUV
3.	Functionality [3]	FULL
4.	Operational Life (months) [4]	5 months

Notes:
1. The Standard Level of Performance is known as the Mission Success Criteria. The Mission Success Criteria are defined in Section 4.1.4 in Appendix SMEX-12 to the Explorers Program Plan, Program-Level Requirements, Interface Region Imaging Spectrograph (IRIS) Project, Version 1.0, dated August 31, 2010, SMD NASA HQ. This document is also known as the IRIS Level 1 Requirements Document.
2. For FUV spectra, refers to selected strong lines in the range bounded by 1332 to 1406 Å and for NUV spectra, selected band-passes in the range from 2785 to 2835 Å.
3. Functionality is defined as the ability to acquire data to meet Level 1 threshold requirements without regard to whether redundant or workaround features are used or not.
4. Includes one-month commissioning phase.

c. Performance Incentive

(1) The Contractor earns a separate performance incentive amount for each Performance Requirement listed in paragraph (b) of this provision when the Standard Level of Performance for that requirement is exceeded. The amount earned for each Performance Requirement may vary with the

units of measurement achieved up to the Maximum Performance Level and is prorated up to the total maximum amount of Performance Incentive earned as specified in paragraph (a). The units of measurement and incentive amounts associated with achieving Maximum Performance Level of each Performance Requirement are shown in Table 2.

Table 2 – Definition of Maximum Performance Level and Allocated Portion of Performance Incentive Fee Pool

ID #	Performance Requirement (PR)	Units of Measurement & Maximum Performance Level	Portion of Incentive Fee Pool	Amount
1.	Image Set Completeness	Slit Jaw Images in both the FUV & NUV		
2.	Spectral Set Completeness	Spectra in both the FUV & NUV		
3.	Functionality	FULL		
4.	Operational Life (months) [1]	25 Months		

Note:

1. Includes one-month commissioning phase.

(2) The Performance Incentive (PI) fee will be paid based on the evaluation of the IRIS Flight Instrument's performance (up to 75% based on an evaluation of items [1], [2], and [3] in Table 3) at the completion of the on-orbit commissioning phase. The on-orbit commissioning phase consists of a complete functional, operational and performance checkout of the instrument following launch, nominally completed 30 days after launch. The Performance Incentive associated with this initial performance evaluation will be determined based on the prorated criteria of Performance Requirements 1 through 4 as shown in Table 3.

Table 3 – Positive Incentive Payout Schedule		
ID#	**Performance Requirement**	**Positive Incentive Payout Formula**
1	Image Set Completeness[1]	PI1 = 0.25 * PI * k where: PI1 = Image Set Completeness PI Earned PI= Total Performance Incentive Pool = 1 if both NUV and FUV images are recorded, *k* = 0 if less than two bands are recorded.
2	Spectral Set Completeness[1]	PI2 = 0.25 * PI * *w* where: PI2 = Spectral Set Completeness PI Earned PI= Total Performance Incentive Pool = 1 of both NUV and FUV spectra are recorded, *w* = 0 if less than two bands are recorded.
3	Functionality	PI3 = 0.25*PI*FNC where: PI3 = Functionality PI Earned PI= Total Performance Incentive Pool FNC = 1 if IRIS can downlink and process 50% of nominal data volume, 0 otherwise
4	Operational Life	PI4 = 0.25*PI*(MET/25) where: PI4 = Operational Life PI Earned PI = Total Performance Incentive Pool Mission Elapsed Time measured in whole months since launch (1 <= m <= 25);

Note:

1. For Image Set Completeness and Spectral Set Completeness, the requirements for these data are specified in Appendix SMEX-12 to the Explorers Program Plan, Program-Level Requirements, Interface Region Imaging Spectrograph (IRIS) Project, Version 1.0, dated August 31, 2010, SMD NASA HQ, in Section 4.1.1, titled "Baseline Science Requirements; except for the cadence requirement, use Section 4.1.2, titled "Threshold Science Requirements."

(3) Following commissioning, ongoing reassessments of on-orbit performance will be regularly conducted to determine that the performance condition of the instrument remains above the Standard Level of Performance. Recognizing that the instrument performance level could be improved following an analysis of instrument on-orbit operational conditions and the determination of effective corrective action operations, an additional formal assessment will be performed 9 months after commissioning to provide an opportunity for the Contractor to be given credit for the improved performance level of the instrument and achieve a higher Performance Incentive fee on Performance Requirements 1 through 3. With regard to Performance Requirement 4, Operational Life, the evaluation of operational lifetime is completed 24 months following commissioning or at the time in whole months at which instrument performance falls below the Standard level of Performance on any Performance Requirement 1 through 3, whichever occurs earliest. As indicated in Table 3, a prorated portion of the Positive Performance Incentive fee for the Operational Life criteria will be paid beginning with the first month after successful completion of the on-orbit commissioning phase.

(4) If, as a result of the regularly ongoing assessments of the on-orbit performance, the evaluation determines that the instrument's on-orbit operational conditions have degraded to below the Standard Level of Performance for Performance Requirements 1 and 2, the Performance Incentive earned shall be reduced by a prorated amount up to, but not exceeding, the total Performance Incentive earned and shall be paid by the Contractor to the Government. The reduction to the incentive amount will be evaluated only on the following factors 1) Image Set Completeness, 2) Spectral Set Completeness, and 3) achieved Operational Life in accordance with the following Incentive Reduction Schedule in Table 4.

Table 4 – Incentive Reduction Schedule

ID#	Performance Requirement	Incentive Reduction Formula Incurred by Not Satisfying the Standard Level of Performance
1	Image Set Completeness	NI1 = 0.50*NI*(1-MET/25)*(1-k/2) where: 1 = Substandard Image Set Completeness Incentive Reduction = Performance Incentive Fee Earned = 2 if NUV and FUV images are both recorded, 1 if NUV or FUV images are recorded and both were recorded at the post-commission formal assessment, 0 if none are recorded.

		ET = Mission Elapsed Time achieved in whole months, (1 <= n <=25)
2	Spectral Set Completeness	NI2 = 0.50*NI*(1-MET/25)*(1-k/2) where: 2 = Substandard Spectral Set Completeness Incentive Reduction = Performance Incentive Fee Earned = 2 if NUV or FUV spectra are both recorded, 1 if NUV or FUV spectra are recorded and both were recorded at the post-commission formal assessment, 0 if none are recorded. ET = Mission Elapsed Time achieved in whole months, (1 <= n <=25)

(5) The final calculation of the performance incentive amounts shall be done when performance (as defined by the unit of measurement) ceases or when the maximum positive incentive is reached.

(6) When the Contracting Officer determines that the performance level achieved fell below the standard performance level, the Contractor will either pay the amount due the Government or credit the next payment voucher for the amount due, as directed by the Contracting Officer.

In the event the IRIS Flight Instrument does not successfully complete the on-orbit commissioning phase, and it is determined that the Standard Level of Performance for the Image Set Completeness, Spectral Set Completeness, and Functionality requirements cannot be achieved, then the total negative incentive amount to be repaid to the Government shall be equal to the total fee earned on the contract.

(7) When the performance level exceeds the standard level, the Contractor may request payment of the incentive amount associated with a given level of performance, provided that such payments shall not be more frequent than monthly. When performance ceases or the maximum positive incentive is reached, the Government shall calculate the final performance incentive earned and unpaid and promptly remit it to the contractor.

(8) If performance cannot be demonstrated, through no fault of the Contractor, within twelve (12) months after the date of hardware acceptance (defined as delivery to the launch site and closure of all acceptance/pre-ship actions) or after on-orbit checkout, the Contractor shall be paid Seventy – Five (75%) of the maximum performance incentive.

(9) The provisions contained herein shall be subject to the Disputes clause of this contract.

d. Examples of Performance Incentive Computations

The formulas presented in Table 3 can be used to compute the amount of Performance Incentive Earned (NI), the performance incentive earned and the formulas in Table 4 can be used to compute the amount of Performance Incentive Reduced (NR), the reduction in performance incentive. Table 5 illustrates a number of cases. In the two columns under "At Commissioning" are given the number of FUV and NUV spectra or images that are recorded at the end of commissioning phase. We assume that NI and NR are given as a percentage of the total performance incentive pool (i.e., max = 100%). For case 1, we assume that the mission did not function at all, and thus NI = 0. For Case 2, we assume that only 1 spectral band and 1 imaging band works at commissioning. In this case, mission success is met, but since standard performance is not exceeded, no performance incentive is earned, and NI = 0.

Cases 4 through 10 consider a fully functioning mission at commissioning, but some degradation occurs after a number of months as specified by MET (mission elapsed time). The degraded condition of the mission is shown under the columns marked "Degraded State." For example, Case 7 assumes that the mission works perfectly for 13 months and then fails completely. In this case, the earned fee during the first 13 months is NI=88%, and the amount of reduction is NR=42.2%, and so the total earned fee is calculated as NI-NR=45.8%.

Cases 11 through 17 consider examples of where standard performance is exceeded at commissioning, but the mission does not have full functionality.

Table 5 – Example Scenarios

	At commissioning					Degraded State			
Case	# Image Types	Spectra Types	MET	Label	NI (%)	# Image Types	Spectral Types	NR (%)	NI-NR (%)
1	0	0	n/a	Sub-standard	0.0	0	0	0.0	0.0
2	1	1	n/a	Standard	0.0	1	1	0.0	0.0
3	2	2	25	Full	100.0	2	2	0.0	100.0
4	2	2	13	Partial	88.0	2	1	10.6	77.4
5	2	2	13	Partial	88.0	1	1	21.1	66.9
6	2	2	13	Partial	88.0	1	0	31.7	56.3
7	2	2	13	Partial	88.0	0	0	42.2	45.8
8	2	2	9	Partial	84.0	2	1	13.4	70.6
9	2	2	9	Partial	84.0	1	0	40.3	43.7
10	2	2	9	Partial	84.0	0	0	53.8	30.2
11	2	1	25	Partial	75	2	1	0.0	75.0
12	2	1	13	Partial	63	1	1	7.6	55.4
13	2	1	13	Partial	63	1	0	15.1	47.9
14	2	1	13	Partial	63	0	0	22.7	40.3
15	2	1	9	Partial	59	1	1	9.4	49.6
16	2	1	9	Partial	59	1	0	18.9	40.1
17	2	1	9	Partial	59	0	0	28.3	30.7

Notes:

1. NI = Performance Incentive Earned
2. NR = Performance Incentive Reduced

5) Clause E.4, **ACCEPTANCE-LOCATION (52.246-93) (ARR 2008)** is hereby revised as follows:

The Contracting Officer or authorized representative will accomplish acceptance at the following location(s):

NASA/Goddard Space Flight Center, Greenbelt, MD, 20771 for all items under this contract except the following deliverables

Deliverable(s)	Acceptance
30	30 days after on orbit checkout
31	At the launch site
32	Lockheed Martin, Advanced Technology Center, Palo Alto

The Contracting Officer reserves the right to designate other Government agents as authorized representatives. The Contractor will be notified by a written notice or by a copy of the delegation letter if other agents are authorized.

(End of clause)

6) Clause G.12, **IDENTIFICATION AND MARKING OF GOVERNMENT EQUIPMENT (1852.245-74) (SEPTEMBER 2007)** is hereby updated to insert the GFE as follows:

The Government shall provide the following Government Furnished Equipment (GFE), Government Furnished Property (GFI), Government Furnished Property (GFP) or Government Furnished Services (GFS):

- NASA will provide the Launch Vehicle and launch site services
- NASA will transfer the flight spare SDO Camera Electronics Boxes (CEBs) to the IRIS program. IRIS will procure two development unit CEBs and transfer them to the AIA program.
- NASA will transfer flight spare EEE parts from the AIA and HMI programs to the IRIS program.
- NASA will provide launch vehicle interface cart
- NASA Ames Research Center is responsible for the development, test, and deployment of the IRIS mission operations center and the ground data system.

(End of Clause)

7) Add Clause H.15 **Advance Understanding Regarding NFS Clause 1852.234-2, Earned Value Management System**

The parties agree that the estimated cost of this contract was established on the basis of implementing modified EVMS procedures that are tailored to meet the specific circumstances of the IRIS Small Explorers (SMEX) mission. This modified implementation is consistent with the SMEX Class D EVM Waiver to NPR 7120.5 requirements. As of the date of execution of this contract modification to incorporate Phases C through F of the IRIS mission, all necessary Government internal approvals for the use of modified EVMS procedures for IRIS are still being processed. In the event that these approvals are not obtained, the Contractor will be required to comply with the full requirements of NFS Clause 1852.234-2, and the Contractor shall receive an equitable adjustment upon submission and negotiation of a properly justified cost proposal in support of such adjustment. The Government anticipates that all internal requests for approval for use of modified EVMS procedures to be completed not later than 90 days after execution of this contract modification.

8.) Clause H.10, **LAUNCH DELAYS (GSFC 52.243-91) (FEB 1991)** is hereby incorporated as part of this contract in full text as follows:

The delivery schedule and/or period of performance of this contract is based upon a spacecraft launch date of December 2012. In the event of a Government directed delay of the launch date, the Contracting Officer may inform the Contractor, in writing, of the revised launch date, and allow the Contractor to submit a proposal for the effect of this delay on the cost, delivery schedule, or other terms of the contract. This may result in an equitable adjustment to the estimated cost, fee(s), if any, and delivery schedule or period of performance. Failure to agree to an adjustment shall be considered as a dispute under the Disputes clause. However, nothing in this clause shall excuse the Contractor from proceeding with the contract as extended.

(End of Clause)

9.) Clause I. 96, **1852.215-84 OMBUDSMAN (OCT 2003)** is changed as follows:

FROM: JUDITH BRUNER	**TO:** NANCY ABELL
BLDG 8, ROOM 624	BLDG. 8, ROOM 620
TELEPHONE: 301-286-7679	TELEPHONE: 301-286-5867
FAX: 301-286-1714	FAX: 301-286-1714
EMAIL: JUDITH.N.BRUNER@NASA.GOV	EMAIL: NANCY.A.ABELL@NASA.GOV

(END OF CLAUSE)

10.) Section J - List of Attachments, is hereby revised to include Attachment I as follows:

Attachment	Description	Dated	Pages
I	Statement of Work for the Phases C-F	11/12/2010	21
J	Contract Deliverables Requirements List	12/12/2010	6

(End of Modification)

NASA GSFC Explorers Office

Statement of Work
For
Interface Region Imaging Spectrograph (IRIS)

For
PHASES
C/D/E/F

EXP-IRIS-SOW-0002

November 12, 2010

Goddard Space Flight Center

National Aeronautics and Space Administration

TABLE OF CONTENTS

1.0 INTRODUCTION, BACKGROUND AND SCOPE

This Statement of Work (SOW) details the work to be performed by the Contractor and its team members for the detailed design and development Phase (Phase C), flight unit manufacturing, verification and spacecraft integration phase through launch and on-orbit commissioning (Phase D), the science operations phase following spacecraft commissioning (Phase E), and program closure and data archiving (Phase F). The detailed design and development phase includes a successful- Critical Design Review; the flight production, spacecraft integration and early on-orbit operational phase includes a successful Launch Readiness Review, launch and on-orbit commissioning; and the science operations phase ends with the decommissioning of the spacecraft and the termination of routine science data processing, and archiving of the data in the appropriate NASA repository.

1.1 Background

The Interface Region Imaging Spectrograph (IRIS) mission opens a window of discovery onto a crucial gap in our current observational capabilities: IRIS is designed to measure the flow of energy and plasma through the foundation of the Sun's atmosphere and heliosphere formed by the solar chromosphere and transition region.

IRIS is the 12th mission in the Small Explorers Program managed by the Explorers office at NASA Goddard Space Flight Center under the auspices of the NASA Science Mission Directorate. The NASA Announcement of Opportunity (AO) was issued on September 28, 2007 and the IRIS proposal was submitted on January 15 2008. In June 2008, six missions were selected for a Phase A study and the preparation of a Concept Study Report (CSR) and cost proposal. IRIS submitted the CSR and cost proposal on December 15, 2008. Phase B was started on October 1, 2009 with the System Requirements Review (SRR) successfully completed on January 28, 2010 and the Preliminary Design Review (PDR) successfully completed on May 20, 2010. In preparation for Key Decision Point C (KDP-C), a management baseline review was held on June 7, 2010 with the SRB and a pre-confirmation review held on July 7, 2010 with the GSFC CMC. The confirmation review was successfully held on July 28th, 2010.

IRIS will be implemented as Category 3 (per NPR 7120.5D) enhanced Class D (per NPR 8705.4). This risk classification has been approved by the SMD AA (ref: Approval of the Reclassification of Small Explorer (SMEX) Mission, 7-10-07).

1.2 Scope

The contractor shall provide personnel, materials, equipment, facilities and resources necessary for design, analysis, development, fabrication, assembly, integration, testing, calibration, qualification and delivery of the complete observatory and will include the mission operations center and ground data system and science data processing systems. Following launch, the contractor shall provide the necessary engineering and science resources to perform initial on-orbit checkout and characterization of the observatory and shall conduct science operations for the remaining duration of the mission. The principal hardware deliverables of this effort are the flight hardware and software consisting of the flight instrument package, the spacecraft package, the mission operations center and ground data system, ~~and the~~and the necessary science processing and science operations ground systems and software required to

analyze, process, distribute and archive the science measurements performed by the instrument.

1.3 Relationship to Contractor's WBS

The organization of this SOW does not imply a default organization for the Contractor's Work Breakdown Structure (WBS). The contractor shall define and employ a WBS that provides a clear and traceable linkage between performed work and measurable task accomplishment. Specific requirements are defined elsewhere in this SOW.

2.0 APPLICABLE REQUIREMENTS, DOCUMENTS AND CONTRACT DATA REQUIREMENTS

The Contractor shall comply with the following requirements.

2.1 Applicable Documents

The following documents are applicable to this SOW to the extent specified herein:

Document No.	Title
410-Plan-0001, Rev A	Explorers Program Plan, 8/5/2008
Appendix SMEX-12	Program Level Requirements, IRIS Project, Version 1.0, August 31, 2010
GSFC STD 1000	GSFC Gold Rules
NPR 7120.5D NID	NASA Space flight program and project management requirements
NPR 7150.2A	NASA Software Engineering Requirements, November 19, 2009
NPR 7123.1A	NASA Systems Engineering Processes and Requirements w/Change 1 (11/04/09). March 26, 2007
A101-PN-09-0314 Rev-	IRIS Project Plan/Mission Implementation Plan, August 31, 2010
A101-PN-09-03-59	IRIS Product Assurance Implementation Plan (PAIP)

Unless a specific issue or revision is listed, the referenced documents shall be the latest revision in effect on the date of award of the contract. When requirements conflicts exist between this SOW and these applicable documents, the Contractor shall notify the Government that there is such a conflict and request direction from the Government as to how to proceed.

The primary mission requirements document is the Level 1 science and program documents which are signed by NASA HQs, NASA EXP, and the IRIS PI. The IRIS Project has developed and released the Level II document, the MDRA, which defines the requirements for the mission elements including the Observatory and the ground data system.

2.2 Reference Documents

The Phase A Concept Study Report (CSR) submitted by the Contractor at the end of the Phase A efforts shall be the reference basis, augmented by the material provided for the detailed Phase C-F cost proposal and the Management Baseline Review for the Contractor's intended plan and approach to the Phase C, D, E efforts. However, the requirements of this SOW shall govern.

2.3 Documentation and Contract Data Requirement List

The Contractor shall develop, produce, deliver and maintain all documentation required by the Contract Data Requirements List (CDRL). In addition, all other routine documentation, data and analyses generated for, or applicable to, the Contractor's efforts under this SOW, whether formal or informal, shall be preserved by the Contractor to maintain a traceable record of engineering and programmatic decisions and hardware characteristics and performance. The Government reserves the right to review this documentation upon request at the Contractor's facility.

3.0 MANAGEMENT

The Contractor shall provide the necessary personnel, resources and materials to manage the disparate administrative, business, logistics, science, engineering, manufacturing and operations elements of this project. The Contractor shall institute and employ the necessary methods and procedures required for the effective planning, execution, communication, monitoring, control and reporting of the Contractor's efforts. This includes plans and procedures for configuration and change control management; quality assurance; financial methodology for cost estimating, recording, analysis, reporting, and control; risk management; systems management and control; schedule performance monitoring and measurement; progress reporting; document control and distribution; reserves management; and management review processes.

3.1 Contractor Project Office

The Contractor shall provide a dedicated project office to manage the project effort. A dedicated project manager shall direct this office. The Project Manager shall have the responsibility for overall technical and programmatic performance, including resource management of the contractor and all subcontractors. The Project Office shall be the key focal point of contact with the government, particularly for the coordination of all contractual, financial and programmatic matters.

Although technical dialogue may regularly occur at lower levels between the Contractor's team and the Government's Project team, the Contractor's Project Office shall assure that such discussions are compliant with the contract and within the scope of this statement of work. Likewise, the ~~Explorers Office~~Explorers Office and its representatives shall take similar care. The Contractor's Project Office

shall provide the support staff required for schedule control and reporting, financial control and reporting, contract management, subcontract management, configuration management, risk management and progress reporting.

3.2 Work Breakdown Structure

The Contractor shall prepare and use a Work Breakdown Structure (WBS) to parse the project effort into manageable tasks and subtasks, providing a clear structure for the organization of work and the correlation of Project costs and schedules. The WBS structure will be compliant with NPR 7120.5D. The Contractor shall have previously (Phase A/B) submitted the WBS and associated task dictionary for EXP review. During the life of this contract, the WBS diagram and supporting summary task descriptions shall be updated by the contractor to reflect negotiations, new work, modification/changes, changes in work element distribution, and configuration changes.

3.3 Financial Administration

The contractor shall use an effective financial management, control, and reporting system, which will apply to all resources allocated to this program. The Contractor shall institute the necessary procedures and controls to establish a financial methodology for budget planning and revision, budget and account control, account authorization, accurate cost accrual recording, routine management monitoring, up-to-date performance analysis, status reporting and, as necessary, timely intercession and correction.

Comment [G1]: See section on EVM

Financial status shall be reported to the Government on a monthly and quarterly basis in accordance with the requirements of standard NASA Forms 533M and 533Q.

3.4 Schedule Management

The Contractor shall develop, maintain, evaluate, control, adjust and status report Contractor Project schedules. The contractor shall generate and maintain an Integrated Master Schedule (IMS), which incorporates tasks and effort for all program elements and provides a top level summary of key Project events across the span of the Project. The integrated master schedule- shall include and highlight the critical path. In addition, the Contractor will prepare and maintain a one page Project Summary Master Schedule (PSMS) showing the major reviews, the major milestones, high level linkage of tasks, and the critical path. NASA EXP may provide the PSMS with inputs from the Contractor.

The Contractor shall include the ~~also prepare~~ lower level detailed schedules, consistent with the structure of the Project's WBS, in the IMS. The density of milestones incorporated into the task schedules shall ensure a minimum of two milestones per month at the rolled-up top level of the schedule. Task linkages shall be established and incorporated into these schedules to support what-if analyses and critical path analysis. The task schedules shall also incorporate work progress indicators.

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Changes to the schedule baselines shall be rigorously controlled to preserve the accuracy of the budget planning. An updated master schedule shall be provided in a GANTT format with the monthly report (CDRL #5). Critical milestones and schedule reserve tracking will also be provided in the Contractor's monthly report. The Contractor shall use Microsoft Project 2007 or later for schedule system compatibility with the EXP program Office.

3.5 Change Control

In accordance with the released and approved PAIP, the Contractor shall develop, document and

maintain a configuration management system to manage and control requirements change, programmatic resources and constraints change, and contract change. Class 1 changes encompassing changes to the contract SOW, specifications, interfaces, pricing or delivery schedules shall require the review and approval of the Explorers Program office prior to implementation. All other changes shall be properly recorded and archived, and the change history shall be provided in the Contractor's monthly progress report. The Contractor shall submit a Configuration Management Plan to the EXP Project for review and approval (CDRL #8).

3.6 Risk Management

The Contractor shall institute and maintain a risk management process to identify, document, control, coordinate, mitigate and report significant, credible risks. The Contractor risk methodology shall provide for regularly scheduled, periodic risk reassessment. The Contractor shall provide a risk summary in their monthly progress report.

3.7 Descope Plans

The Contractor shall maintain and update descope plans which identify pre-defined prioritized actions to recover substantial cost or schedule savings through a prudent reduction or deletion of requirements, science objectives, technical content or other effort. The descope plans shall stipulate the specific descope actions, specify the schedule decision points for the effective execution of the descope and shall estimate the projected cost and schedule savings associated with the action. Any activation of a descope option shall be coordinated with and approved by the Explorers program Office. The Contractor shall include a descope plan in the Project Plan (CDRL #1).

3.8 Programmatic Reserves Management

The contractor shall ~~incorporate schedule~~incorporate schedule reserve into the IMS and will report on the available schedule reserves in the monthly report. Any planned use of more than 2 weeks of schedule reserve, or if the use of schedule reserve will drop below the NASA guidelines (defined as 1 month of reserve per year of work) shall be reported to the EXP.

The IRIS Project has cost reserves as defined in the budget accepted at KDP-C. The Contractor will report on management reserves and any liens and encumbrances in the monthly report. It should be noted that depletion, or expected depletion of management cost and schedule reserves could lead to a termination review with NASA HQs.

3.9 Foreign Commitments

The contractor shall effectively manage and coordinate the efforts of contributing foreign partners in their program. The Contractor shall impose monthly reporting requirements on their foreign partners and incorporate the foreign partner status reports into the monthly progress report.

3.10 External Reviews and Meetings

The Contractor shall participate in and support a variety of external formal and informal reviews with the NASA EXP office and the launch vehicle provider, including coordination and information exchange meetings. The Contractor shall provide the necessary resources to prepare technical and programmatic data packages for distribution and presentation at meetings and reviews in which the Contractor will make a presentation.

For formal reviews and in accordance with the CDRL requirements, advance draft copies of the presentation package shall be submitted to the NASA EXP for review prior to the presentation. Meeting notes and actions shall be documented and distributed by the organization sponsoring the meeting. Responses to action items shall be compiled and distributed in accordance with the assigned action item due date.

3.10.1 Formal Contractor Reviews

The Contractor shall prepare and conduct required formal technical reviews at the Contractor's facilities as defined in the IRIS Project Plan. Having completed the Mission Preliminary Design Review (PDR) prior to the execution of this SOW, the Contractor shall conduct the following formal presentations: the Critical Design Review (CDR), the System Integration Review (SIR)/ Pre-Environmental Review (PER), the Pre-Ship Review (PSR), and the Mission Operations Review (MOR)/Flight Operations Review (FOR). There are no requirements to conduct separate equivalent reviews for flight software. The flight software considerations shall be incorporated into the Contractor's formal reviews. Additional formal reviews are listed in the Project Plan.

A GSFC Systems Review Office designated chairperson shall chair these reviews. Independent technical experts and other specialists from GSFC and the Aerospace industry will populate the review panel. Detailed review agendas shall be coordinated among the panel chairman, the Contractor and the EXP office. The Contractor shall prepare and provide presentation data packages for these reviews in accordance with CDRL's #25, 26, 28, 30, 32, 34, and 35.

3.10.2 Contractor Participation in Formal NASA led Project Reviews

The Contractor shall participate and make selected presentations in the formal NASA ~~led mission~~led mission reviews. These reviews include the MRR, FRR, SMSR, ~~LRR~~and LRR as defined in CDRLs #36, 37, 38, and 39).

3.10.3 Other Meetings and Reviews

In addition, there will be numerous meetings routinely required by both the Contractor and the Explorers Office to provide real-time and periodic forums for dialogue, coordination and clarification. Many of these meetings shall be supported as teleconferences. However, several face-to-face meetings will be required over the course of the contract. A monthly Project Coordination meeting shall be established between the Contractor and the Explorers Office to routinely review and status funding, schedule performance, risk assessments, issues, concerns and other items of mutual management interest. This monthly meeting will consider all aspects of the contract performance including science efforts, mission operations, ground system development and instrument development, Spacecraft development, and financial reporting.

For planning purposes, the Contractor shall plan on an average of three (3) trips per year to visit with the Explorers Office at the GSFC facility. These may be programmatic coordination meetings, technical interchange meetings, formal reviews or any combination thereof. Likewise, the EXP ~~Office shall~~Office shall routinely travel to the Contractor's facilities to maintain effective communication and coordination with the Contractor team.

3.11 Monthly Progress Report

The Contractor shall prepare and submit a monthly progress report (presentation) in accordance with

CDRL #5 requirements. As a minimum, the report shall describe the previous month's accomplishments, compare planning versus accomplished activities, list the expected accomplishments for the next month, as well as make note of any issues impacting Project performance. Accomplishments shall correlate with the Contractor published schedules and milestones. Particular attention shall be directed toward scheduling and cost problems or trends, including:

(a) The nature and reason for the problem.
(b) The effects on the overall schedule, the critical path, and/or end item deliveries.
(c) Trade-offs and workarounds to minimize schedule and cost impact.
(d) Corrective action regarding cost and schedule variance.
(e) Trending of budget and schedule reserve

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The report shall also contain the Contractor's updated risk list highlighting newly identified risks, changed status of risk including retired risks, and status updates of associated mitigation plans.

3.12 ITAR Considerations

The requirements and regulations of the US law enforcing the International Trade in Arms Regulation are a serious obligation for all US participants in the IRIS program. The regulation is explicit and requires the existence of State Department approved authorization to engage in restricted technical dialogue and exchange of hardware and software. To this end, the Contractor shall acquire, as appropriate, the necessary legal application for licensing with foreign partners or foreign commercial entities as required under US law.

3.13 Earned Value Management System Implementation Procedures

The IRIS Project will prepare ~~an Earned~~an Earned Value Management System (EVMS) implementation plan and submit the plan for review and acceptance prior to definitization of the Phase C-F contract. The IRIS EVM plan will outline the methods and reporting levels for the EVM system that is appropriate for the scope of a NASA SMEX mission. The EVMS Implementation Plan shall clearly document the integrated project management processes for the project. This plan shall include but not be limited to the areas of organizing work, planning, budgeting, scheduling, work authorization, cost accumulation, measurement and reporting of cost and schedule performance, materials and subcontract handling, variance analysis and baseline control. For the IRIS Program, Contractor will comply with Earned Value Management guidelines using Lockheed Martin Program Performance Management Directive (PPMD) -02.

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3.14 Monthly Earned Value Management System Cost Performance Reports

The Cost Performance Report (CPR) data will be used by NASA systems managers to: a) integrate cost and schedule performance data with technical performance measures, b) identify the magnitude and impact of actual and potential problem areas causing significant cost and schedule variances, and c) provide valid, timely project status information to higher management. The Contractor shall refer to clause 1852.~~242~~234-~~75~~2, Earned Value Measurement System (~~Mar 1999~~Nov 2006). The DD Form 2734/1 (~~Aug 96~~Mar 2005) shall be used in accordance with DoD Data Item Description DI-MGMT-81466A. The CPR shall provide Formats 1 and ~~5 down~~5 down to WBS Level 3 for those Contractor elements that contain discrete tasks, as outlined in the EVM plan. NASA will retain oversight of the EVM process; DCMA will not be delegated EVM oversight.

3.15 Management Baseline Review (MBR) Package

The Management Baseline Review (MBR) is a review of the Project Cost and Schedule to ensure the Performance Measurement ~~Baseline captures~~Baseline captures the entire technical scope, schedule requirements, and has adequate resources. The Management Baseline Review was held prior to the KDP-C. At this review, the program schedule and budget were baselined along with the management budget and schedule reserve.

4.0 SYSTEMS ENGINEERING AND SYSTEMS MANAGEMENT

The Contractor shall conduct systems engineering and systems management efforts to manage and verify requirements, perform risk assessment, conduct systems analyses and trade studies, sponsor peer reviews, manage interface control documentation, manage systems budgets, and guide an integrated design and test process. Where subcontracting relationships exist, the Contractor shall assure proper flowdown, integration, and systems management of related subcontractor efforts. The Contractor shall document systems analyses performed during the execution of these efforts.

Comment [G2]: ICDS and Parts control boards

4.1 Requirements Development, Analysis, Documentation, Verification and Control

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The Contractor shall identify, develop, derive, analyze, consolidate, document and control all relevant performance and engineering requirements. NASA HQ and EXP are responsible for the Level I requirements with input from the Contractor. The Contractor is responsible for development of the Level II and lower level requirements. The Level II requirements document will be approved by NASA EXP. Specification documents will be prepared to capture the Level III requirements; lower level requirements documents will be prepared for subsystems as required.

This effort shall account for all interrelated design, interface, test and operational considerations including electrical, structural, mechanical, thermal, optical, calibration, test, mission operations and data subsystems, as well as interfaces within the instrument, between the instrument and the spacecraft, between the observatory and LV, and between the observatory and ground systems. As necessary, the Contractor systems engineering and systems management personnel shall formulate and conduct trade studies to objectively compare and optimize key requirements options.

Consistent with the Contractor's Performance Assurance Implementation Plan (PAIP), as approved by the EXP Office, the Contractor shall generate a traceability matrix (or other equivalent documentation) to capture the flowdown and hierarchal relationships of requirements from Level I to Level II and from Level II to level III. Similarly, based on the traceability matrix and the PAIP, the Contractor shall generate a verification matrix (or other equivalent documentation) to document the plan and method of verifying all controlled technical requirements (CDRLs #10, 11, 12 and 13). A variety of verification methods may be employed including inspection, analysis and test.

Configuration management of these technical requirements shall be consistent with the Contractor's configuration management practices.

4.2 Systems Budgets

The Contractor shall generate, maintain and control systems budgets for critical technical resources and critical performance margins. These shall include, as a minimum, the mass, power, alignment, pointing and data capture (acceptable data loss). The Contractor shall adhere to GSFC STD 1000 (Gold Rules)

contingency guidelines for these budgets and shall provide monthly budget updates with the Contractor's monthly progress report.

4.3 Risk Management Support and Lessons Learned

The program management risk management process described in section 3.0 shall include the technical risk inherent in the technical development of the instrument and its supporting systems. This process shall include -design, technology readiness, manufacturing, assembly, integration, test and operational risks. The Contractor's process will ensure timely identification and reporting of risk and shall marshal the necessary resources to develop and implement appropriate risk mitigation(s) or a risk offset action plan.

As part of these efforts, and consistent with the requirements of the MAR, the Contractor shall support fault analyses to determine and evaluate risk severity inherent in identified single fault conditions. NASA EXP will provide the fault analysis with the Contractor providing the necessary data required for the analysis. The contract shall perform Worse Case Analyses per the PAIP (Section 4.2.4)~~MAR~~.

Comment [J3]: This section of the PAIP states that GSFC will perform the WCA, even though LM will perform

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The Contractor shall capture and document lessons learned throughout the conduct of this work effort.

4.4 Contractor's Internal Technical Review Process

The Contractor shall implement a routine systems review process to ensure ongoing insight by systems managers and systems engineers into the evolving design of the investigation and instrument. In addition, the Contractor shall institute an engineering technical ~~review process~~review process, which shall serve as an objective systems review forum at lower levels. The purpose of the technical review is to provide a timely and independent critique of the technical soundness of the approach being pursued and to ensure relevant lessons learned and experience are brought to bear to ward off unnecessary mistakes or complications, thus minimizing technical risk and the threat of schedule slips and cost increases. Further details of technical reviews are provided in the IRIS Project Plan.

5.0 INFORMATION AND DATA TO THE EXPLORERS OFFICE

The Contractor shall prepare the information and data required for the Explorers Project to complete a Probabilistic Risk Assessment (PRA), a Preliminary Failure Modes and Effects Analysis (FMEA), and a Fault Tree Analysis (FTA). The FTA will identify only the mission critical single point failures. The Contractor shall provide the inputs to support these analyses prior to CDR and the input shall comply with MAR DID 4.1D, 4.2D, 4.3D, and 4.6D.

The Contractor shall prepare the information and data required for the Explorers Project to complete an Orbital Debris Analysis. The Contractor shall provide the inputs to support a preliminary analysis completed for SRR, and PDR and the final analysis at CDR.

The Contractor shall prepare a Mission System Pre-Launch Safety Data Package (MSPSP) that includes "tailored" Range Safety Requirements in response to EWR127 Chapter 3. A revised draft is due at one month prior to CDR and shall comply with MAR DID 3.2D and 3.5D.

The Contractor shall prepare the information and data required for the Explorers Project to complete the spacecraft to ground system/radio frequency (S/C to GS/RF) ICD, the Project Service level agreement (PSLA), and the Spectrum Applications as necessary.

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6.0 MISSION ASSURANCE

The contractor shall provide the personnel, materials, and facilities necessary to develop, implement, and maintain a Performance Assurance System. This system shall be consistent with the requirements of the SMEX Mission Assurance Requirements (MAR) as reflected in the Contractor's Performance Assurance Implementation Plan (PAIP) and as approved by the EXP office. The PAIP shall document the Contractor's performance assurance program for the planning, execution, monitoring and control of reliability, quality assurance, workmanship, safety, parts and materials, software development, contamination control and failure investigation and reporting.

The Contractor's performance assurance program shall apply to all phases of the Contractor's efforts, including requirements definition and verification, design and development, procurement, manufacturing and fabrication, assembly, integration and test. This program shall encompass ancillary support functions such as handling and shipping; test certification, test record keeping and associated documentation of test data analyses; and all aspects of configured flight article control. A Performance Assurance Manager shall be assigned to the project from the Contractor's independent Performance Assurance organization.

The Contractor shall prepare and deliver the set of ~~MAR-associated~~ CDRL's defined in the PAIP, Appendix A, "MAR Related Deliverables," ~~410-RQMT-0036, dated September 2007~~ and in the CDRL's listed in Contract Attachment H.

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7.0 CMMI IMPLEMENTATION

The contractor shall provide software engineering management and control to ensure all software activities in instrument spacecraft, ground support equipment, verification software, modeling, and simulation, are conducted in accordance with the contractor Software Development Plan (SDP) and NPR 7150.2A (requirements in 7150.2A are as agreed with the EXP CSO).

Capability Maturity Model Integration (CMMI) level certification is not required for this contract.

8.0 HARDWARE

The contractor shall provide the personnel, parts, materials, equipment and facilities necessary to:

a. Design, develop, build, verify, qualify, document and deliver the IRIS observatory consisting of the instrument and spacecraft.
b. Oversight of the design and development of the Mission Operations Center and the Ground Data System
c. Support data processing and archiving of the science data at the SOC
d. Manage and support the observatory integration and test program, delivery to the launch site, and integration and test with the launch vehicle.

The conduct of this effort shall involve all necessary detailed design, development testing, analyses, procurement, manufacturing, assembly, integration, test and environmental qualification efforts to

produce a flight worthy observatory. This work shall be done consistent with the approved PAIP and with the Project Management and the Systems Engineering/Systems Management responsibilities defined previously in this SOW.

Following delivery of the flight observatory to the launch site, the Contractor shall provide all the personnel and resources necessary to support the Launch Vehicle integration and test flow. The Contractor shall also ~~conduct the~~conduct the initial post launch flight operations activities through instrument and spacecraft on-orbit checkout and commissioning.

The work under this task shall cease following on-orbit commissioning, and all subsequent Contractor efforts shall be to support the science operations flight phase which are defined in later sections of this SOW.

8.1 Design Development, Analysis and Documentation

The Contractor shall conduct the necessary conceptual, preliminary and final designs and associated design analyses efforts required to assure the designed flight instrument, spacecraft, and MOC/GDS meets the requirements of all applicable performance and functional specifications. This includes involvement of all engineering disciplines required to address the various physical and functional design elements of the flight instrument components and subsystems.

This effort also includes all design efforts required for the manufacture, assembly, integration, test and evaluation of demonstration hardware used to confirm the predicted performance, production feasibility or environmental suitability of selected, critical or non-flight heritage designs or hardware. This work does not include the flight software design or the engineering design effort for mechanical and electrical ground support equipment (MGSE/EGSE). These are defined in later subsections.

In addition, this effort shall produce the necessary drawings, schematics, part selections, procurement specifications, printed circuit artwork, FPGA VHDL and other design instructions required for the manufacture, fabrication and assembly of the flight components, flight instrument, and flight spacecraft. Sufficient design analysis shall be performed to derive lower-tiered requirements, resolve requirements conflicts, confirm predicted performance, evaluate operational margins and assess design compatibility with expected launch and on-orbit environmental conditions.

The Contractor shall institute configuration and version control of design documentation, including document archival.

8.2 Development Hardware

As necessary to reduce development risk and to mature the candidate technology for the flight application, the Contractor shall employ a selected variety of mechanical, electrical, electro-mechanical and optical bread boards, brassboards, mechanical/structural test models, engineering test units, engineering development units, engineering models and/or other flight-like test hardware at the component or subsystem levels. This hardware shall be used to characterize expected flight performance and behavior and to assess the suitability of the design for flight.

The initial set of mental hardware baselined for this effort shall be as defined in the Contractor's Phase A/B Concept Study Report. ~~.~~The updated designs, performance and test results will be presented at

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the ~~Mission CDR~~Mission CDR. It is important that the development hardware and evaluation scenarios represent the flight hardware, environmental and operational regimes with sufficient fidelity to confidently and reliably transfer observed performance and behavior to the eventual flight hardware. In the performance of this work, the Contractor shall:

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a. Procure and/or fabricate all required parts, components and subassemblies for the selected set of development hardware.
b. Assemble and test the development hardware.
c. Record and document test objectives, test scenarios, test setups and test results, including analysis of test data.
d. Advise the EXP Project of the design suitability of results, and, if the results are unsuitable, identify a recommended course of action.

The Contractor will determine the appropriate level of development hardware and will include the development effort in the schedule and budgets. Progress of the developmental hardware and tests will be provided at CDR.

8.3 Flight Hardware

The Contractor shall build and qualify a flight Observatory satisfying all stipulated performance, functional and mission assurance requirements. The Contractor shall deliver the flight observatory to the launch integration facility for integration with the launch vehicle. The contractor shall specifically:

a. Procure and/or fabricate all required flight-grade parts, components, and subassemblies, including required thermal blanketing.
b. Perform all required subsystem-level alignment, functional, performance, calibration, and qualification tests.
c. Perform system-level assembly, integration, alignment, test, calibration and environmental qualification.
d. Implement and conduct a verification and test program that verifies and demonstrates the flight observatory's full compliance with governing functional, performance and environmental requirements.
e. Control, record and archive build records, including photographic records (CDRLs #58 and #59).
f. Prepare and document the required integration and test plans, including test objectives, test scenarios and objective success criteria.
g. Prepare, document and archive the as-run test procedures and test reports including associated data analysis.
h. Capture and archive all relevant test data.
i. Conduct a Pre-ship review prior to delivery.

8.3.1 Observatory Integration and Test

The Contractor shall conduct an integration and test program which completes the integration and flight dress-out of the observatory and ~~validates observatory~~validates observatory behavior and performance under ambient test and simulated environmental conditions. The test program shall encompass system level functional testing, comprehensive performance characterization, radiometric calibration and environmental qualification. The Contractor shall prepare the Integration and Test (I&T) Plan outlining the integration flow, test flow, calibration sequence and environmental test sequence (CDRL #12). The

I&T Plan shall identify all handling and work environment constraints, particularly noting contamination control and cleanliness requirements.

8.3.1.1 Test Plans and Procedures

The Contractor shall prepare all necessary test plans and procedures required for controlled and witnessed testing of the observatory. As-run test procedures will be annotated to record the actual conduct of the tests. The contractor shall prepare test reports documenting the conduct and results of major tests. The test reports shall include test data analysis results and shall note the pass/fail results for all success criteria (CDRL #13). To safeguard the test history of the observatory, the Contractor shall archive all test data captured during test.

The Contractor shall establish a subset of ~~observatory parameters~~observatory parameters that will be used to generate health and welfare and performance trend data throughout the test program of the instrument, spacecraft, and observatory.

8.3.1.2 Baseline Functional Test

The Contractor shall define and implement an ambient functional test that will be repeated periodically throughout the test program to confirm functional operation and to confirm that no faults, errors or suspicious parameter deviations have occurred since the last test run. This functional baseline test shall be conducted immediately before and after environmental exposures to confirm that no failures or changes to the baseline have occurred.

8.3.1.3 Retest

In the event of a failure during test, the contractor shall be required to conduct a certain amount of retest ranging from a workmanship exposure to a complete re-run of the test. The exact nature of the retest shall be determined jointly by the Explorers office and the Contractor.

8.3.2 Flight Spares

Consistent with the requirements of ~~the PAIP~~the PAIP and the Project Plan, the Contractor shall implement a spare parts program for critical flight spares. The Contractor shall judiciously define, procure and stock a set of these critical spares to help minimize potential schedule impact created by subsystem failures, by contamination, or by other plausible events or conditions. The spares may be retained as fully assembled, partially assembled or piece part spares. Since the need to use a spare may be a failure condition in the instrument and, depending on the specifics of the fault, the spare itself may need rework or repair, simple substitution of a spare may not be a viable approach. With this consideration in mind, the judgment of the Contractor shall establish the assembly level of sparing.

In defining the spare parts program, the contractor shall consider the reliability, handling, and environment conditions of subsystems, components, and parts under consideration for sparing, including the likelihood that these items would need to be replaced. The spare parts shall be qualified, tested, and calibrated to the same standards as the flight instrument articles consistent with their spared level of assembly.

8.3.3 Life Testing

The Contractor shall identify those components and/or assemblies that should be life tested to insure confidence in their operation for the instrument life. Any mechanism requiring life testing shall have

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that testing completed by CDR or have sufficient life demonstration completed to establish confidence in the mechanism's design for flight. The life test article shall be flight-like in all relevant aspects and shall be tested in flight equivalent operational and environmental regimes, including accelerated regimes, to demonstrate suitability for flight.

8.4 Observatory Integration and Test Support

The Contractor shall provide the personnel, ground support equipment and resources necessary for performing observatory level integration and test activities at the contractor's facility. These efforts are multifaceted and include planning and coordination efforts, integration procedure development (CDRL #10, 11, 12 and 13), test conduct and evaluation, troubleshooting and failure diagnoses support, and repair and retest as necessary.

The Contractor shall conduct the Observatory test and environmental qualification efforts. The contractor shall ~~generate the~~generate the Observatory test planning, test procedure development (CDRL #10, 11, 12 and 13), test setup, test conduct, real-time performance monitoring and analysis, and post-test success evaluation. During these tests the Contractor shall routinely monitor Observatory health and safety and shall collect and analyze instrument science data.

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8.5 Launch Support

After successful completion of the Observatory Pre-ship Review, the Contractor shall manage and coordinate with NASA and the LV provider for the Observatory launch processing, including on-site and off-site support, as necessary. This effort will include shipment of the observatory to the launch site, post shipment testing, mission simulations, integration and testing with the launch vehicle, launch simulation and dry runs, and all launch preparations and operations. This effort will continue through launch and through the on-orbit checkout of the Observatory subsystems and instruments. This effort shall include all required safety, integration and engineering support to process the Observatory through the launch processing facilities, launch facility and the launch vehicle. The Contractor shall:

a. Support launch processing and launch operations planning
b. Conduct and/or oversee final flight preparations of the observatory
c. Provide an Observatory Operations Manual describing the operation and operational management of the observatory. The operational management includes the command and telemetry lists, telemetry red/yellow limits, operational constraints and restrictions, contingency procedures and operational philosophy, emergency response procedures, pre-canned safing sequences, command load build and authentication, etc. (CDRL #45, 46, 47, 48, and 49)
d. Participate in launch readiness testing, rehearsals and simulations including associated test review and analyses
e. Monitor Observatory health and welfare through the launch and subsequent Observatory on-orbit initializations
f. Conduct the on-orbit checkout and characterization.

9.0 SOFTWARE

The Contractor shall design, code and test all required flight and ground support software required for the functional operation of the flight instrument, flight spacecraft, mission operations center, ground data system, and EGSE required to test out the flight and ground systems.

9.1 Flight Software

The Contractor shall develop and certify the flight software in accordance with the Software Development and Management Plan and as stipulated in the Contractor's PAIP. ~~in conformance with 7150.2A.~~ The Contractor shall use modern, structured design methodologies to ensure reliable, low maintenance, well documented, error minimized, and version controlled flight software. For the purposes of configuration control, any embedded firmware shall be considered flight software and shall be managed and configuration controlled accordingly. The contractor shall identify, derive, document, control and maintain all flight software functional requirements in a Software Requirements Specification. These requirements will be the basis for software verification testing.

9.2 Ground Support Software

The Contractor shall design and provide all ground support software necessary to operate, monitor, test, and calibrate the observatory using Contractor-supplied EGSE. The EGSE software shall provide an effective operator interface for the operation and control of the instrument, provide algorithms and other computational means to analyze and interpret instrument housekeeping and science telemetry, and provide means for capture and archival of all relevant test data.

9.3 Software Test Plan and Test Readiness Review

The Contractor shall implement and document a software test plan consistent with the software test requirements defined in the Contractor provided PAIP (CDRL #9 and #7).

9.4 Software Test Bed

The Contractor shall establish and maintain a software test bed that will be used to verify and validate flight code revisions prior to uploading to the observatory, including during the flight phase. The extent and scope of the test bed shall be left to the judgment of the Contractor. However, the Contractor shall maintain some capability to test and certify new code prior to installation in the observatory. This requirement does not apply to all pieces of flight code but applies, as a minimum, to commanding and performance critical software.

9.5 Independent Verification and Validation (IV&V)

Formal IV&V is not required on the IRIS Program. The contractor will use internal tools, or may accept external support from NASA, to run code check and verification and validation on the flight software. The data will be used by the contractor for code review and code improvement.

10.0 GROUND SUPPORT EQUIPMENT

The Contractor shall design, build, assemble and validate mechanical and electrical Ground Support Equipment (MGSE, EGSE and GSE) required for handling, operating, testing, checking, calibrating, storing, and shipping the flight observatory. This includes handling and alignment fixtures, test fixtures, calibration targets and other stimulus and their controllers, electrical GSE required to operate and test the instrument and spacecraft, interface simulators, purge equipments and shipping containers. Any GSE directly interfacing with flight interfaces shall satisfy the constraints of the PAIP.

Specifically, the contractor shall provide the personnel, materials, and facilities necessary to accomplish the following tasks:

a. Design, procure, fabricate and assemble all required GSE parts, components, and assemblies.

b. Validate, certify and maintain suitability of GSE for use with flight hardware.
c. Effectively train personnel in the operation and use of the GSE and in the applicable constraints and restrictions related to that use.
d. Prepare, document and configuration control operational procedures for use of the MGSE and EGSE with flight hardware.

11.0 SCIENCE

The Principal Investigator (PI) will oversee and direct the science elements of the investigation. The PI and his supporting science team shall define and control science requirements and science data products; determine and control essential observatory performance requirements needed to achieve the required science measurements; define and implement a flight calibration program; define and manage the required science data processing center including embedded operations software, science algorithms and other related computational software; manage and guide the affiliated Co-Investigator team; and manage the IRIS Science Working Group forum.

The Contractor's Project Management and Systems Engineering teams shall work closely with the PI, and his science support team, to assure proper integration of science requirements into the Contractor's hardware and science operations development efforts. In concert with the PI, the Contractor shall provide the manpower and resources necessary for the implementation of the investigation's science program, the design and development of the science operations and data processing center, design and development of the mission operations and ground data system ~~and the~~and the formulation and execution of an Education and Public Outreach program to foster community and public awareness of the benefits of the PI's science program.

11.1 Science Working Group

The IRIS Science Team is led by the IRIS Principle Investigator, and, together, they form the Science Working Group (SWG). The purpose of the IRIS SWG is to provide a working forum for the IRIS scientists with the common goal of maximizing the scientific return of the mission within the existing resources.

The Contractor shall provide support argument, evidence and other scientific input to reconcile and resolve IRIS science priorities, Level 1 requirements, coordinated on-orbit operations and integrated IRIS data plans and policies.

The IRIS SWG provides a forum to address open issues and conflicts resulting from ongoing mission analyses and trade studies. The Contractor shall hold and chair periodic meetings with the SWG, and shall define and develop the working agendas for this group.

11.2 Science Requirements

The Contractor shall generate, maintain and document a complete set of science requirements for the investigation (CDRL #10). These requirements shall address key instrument performance requirements and science data product requirements, and shall expand on the Level 1 full and minimum mission science requirements defined during the Phase A effort.

11.3 Science Operations

The Contractor shall refine and implement the flight operations concepts, including but not limited to the acquisition and routing of the raw science data stream and any temporary buffering of this data in order to minimize the risk of data loss once on the ground.

The Contractor shall also refine and implement the conversion of the raw data into valid research quality data and data products.

The Contractor shall develop and implement the acquisition, validation, data processing and eventual data distribution and archiving of the investigation's science data including public access concepts in the Science Operations Center (SOC). The Contractor shall provide the personnel, facilities, hardware, and software required to conduct the science operations and interfaces with the Ames MOC.

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11.4 Flight Operations

The conduct of observatory on-orbit flight operations shall be performed by the NASA Ames developed and managed MOC and its associated Flight Operations Team (FOT), with oversight provided by the Contractor. Along with NASA Ames, the Contractor shall support initial on orbit operations and checkout and shall be responsible for the command planning and the health and safety monitoring of the observatory. The MOC and IOC shall provide all the required operator interfaces to display, monitor and analyze the observatory's operating state, operating condition and trended behavior; support the mission operation and observation planning and the build of associated commands and command loads; and provide effective communication means for contact and coordination between the MOC and IOC.

11.5 Instrument Calibration Program

The Contactor shall implement and document an instrument calibration program to calibrate the instrument during ground testing and to monitor and analyze the on-orbit calibration of the flight instrument. The Contractor shall provide or utilize calibration targets or other stimulus during ground testing and shall utilize an appropriate combination of on-orbit calibration maneuvers, on-orbit calibration sources, calibration under-flights or other ground-based calibration proxies to determine instrument calibration changes or degradation through the duration of the flight.

11.6 Phase E Guidelines

As directed in the SMEX Announcement of Opportunity, the Contractor shall conduct the Phase E flight and science analysis efforts for the first two years after launch and on orbit commissioning. The contractor shall continue to submit technical and financial monthly reports in Phase E; as done in Phases B-D except EVM reports are not required in Phase E. These reports shall clearly show the instrument performance against the requirements established in the Performance Incentive Plan.

12.0 EDUCATION AND PUBLIC OUTREACH (E/PO)

The Contractor shall implement and conduct a program of Education and Public Outreach consistent with the scope and intent of the E/PO program outlined in the Contractor's CSR.

13.0 GOVT. FURNISHED EQUIPMENT, ITEMS, PROPERTY OR SERVICES

The Government shall provide the following Government Furnished Equipment (GFE), Government Furnished Property (GFI), Government Furnished Property (GFP) or Government Furnished Services (GFS):

- NASA will provide the Launch Vehicle and launch site services
- NASA will transfer the flight spare SDO Camera Electronics Boxes (CEBs) to the IRIS program. IRIS will procure two development unit CEBs and transfer them to the AIA program.
- NASA will transfer flight spare EEE parts from the AIA and HMI programs to the IRIS program.

NASA will provide launch vehicle interface cart

14.0 SCIENCE DATA PROCESSING

The contractor shall provide the facilities to provide for the receipt and subsequent processing, storage, and archive of the instrument science data that is forwarded to the SOC from the Ames MOC The Contractor shall prepare the plan for the architecture, data flow, processing, archival and distribution of the science data through the SOC (Science Data Management Plan CDRL SD326).

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Contracts Requirements Deliverable List - Attachment J (12/12/2010)

#	Description	FOR	When	MAR DID	EXP Office Project Plan	Other References
1	Signed Mission Implementation Plan between PI and the Explorer Program Office (AKA Project Plan)	A	Draft at SRR Final at Confirmation		1.1	
2	Inputs to Level 1 Science agreement; signed by NASA HQ, Office of Space Science (OSS) and the Principal Investigator (PI)	AFR	Confirmation			NASA HQ SMD Management Handbook, Appendix C.4
3	Updates to WBS and Associated Dictionary	I	Start of Phase B		2.2	
4	Weekly Progress reports and Telecom (informal)	I	Start of Bridge Phase		1.4	
5	Monthly Progress Presentations (Monthly Management Meeting), including Monthly Schedule with Critical Path Analysis	I	Start of Phase B		1.4	
6	Financial Management Reports (533s and CPRs)	I	Start of Phase B			**NPR9501.1, "NASA Contractor Financial Management Reporting System." and** **NPR 9501.2D, "NASA Contractor Financial Management Reporting (Revalidated w/Change 1 02/16/2006).**
7	Performance Assurance Implementation Plan (PAIP)	A	Final at PDR	2.1D	3.0	
8	Configuration Management Plan	I	PDR	2.1D	3.0	

9	Software Requirements Assurance, Test, and Verification Plan	R	PDR	5.1D, 5.2D	3.7	
10	Mission Requirements, Traceability & Verification Doc	R	SRR	9.1D	2.1	
11	Mission System Test and Verification Plan	R	PDR			A101PN090311_Verification_Plan_for_the_IRIS
12	Observatory Integration and Test Plan and Procedure Document Plan	AFR	PER			A101PN090311_Verification_Plan_for_the_IRIS
13	Test and Verification Procedures	AFR	14 Days Before Use	9.1D		
14	Operational Hazard Analysis	I	Draft at PDR, Final at CDR + 6 Mo	3.4D		
15	Inputs to Probabilistic Risk Assessment (PRA)	AFR	6 Mo prior to PDR	4.1D, 4.6D	3.1	
16	Inputs to Preliminary Failure Modes and Effects Analysis (FMEA)	AFR	6 Mo prior to PDR	4.2D	3.1	
17	Inputs to Fault Tree Analysis	AFR	6 Mo prior to PDR	4.3D	3.1	
18	Worst Case Analysis	R	CDR + 2mos	4.4D		
19	Contamination Control Plan	I	PDR	13.1D		
21	Inputs to NTIA Spectrum Application	AFR	PDR + 2 mos			NASA Code 450 Application form
22	Inputs to S/C to L/V ICD	AFR	CDR + 6mos			OSC Pegasus User's Guide
23	Failure Notification and Failure Analysis Re	AFR	**Notification immediate, report 1 week after FRB**	12.6D		
24	Inputs Orbital Debris Analysis	AFR	**Preliminary at SRR, Final at CDR**	3.7D	3.16	
25	Systems Requirements Review (SRR) Presentation/Package	R	1/26/2010		3.8	

26	Mission PDR Presentation/Package	R	2 weeks before review			Per GSFC Std-1001, requirements for reviews
27	Confirmation Assessment Review (CAR) Package	A	KDP-C			NASA HQ SMD Management Handbook
28	Mission CDR Presentation/Package	R	2 weeks before review			Per GSFC Std-1001, requirements for reviews
30	Mission System Integration Review/Pre-Environmental Review (SIR/PER) Presentation/Package	R	2 weeks before review	8.6D		
32	Observatory Pre-Ship Review (PSR) Presentation/Package	R	2 weeks before review			Per GSFC Std-1001, requirements for reviews
34	Mission Operations Review (MOR) Present	R	2 weeks before review	8.5D		
35	Flight Operations Review (FOR) Presentati	R	2 weeks before review	8.7D		
36	Inputs to Mission Readiness Review (MRR) Presentations/Packages	AFR	2 weeks before each review	8.10D		
37	Inputs to Safety and Mission success review (SMSR)	AFR	1 mos before review	8.2D to 8.10D		
38	Inputs to Flight Readiness Review (FRR) Presentations/Packages	AFR	2 weeks before review			Per KSC criteria
39	Inputs to Launch Readiness Review (LRR) Presentations/Packages	AFR	2 weeks before review			Per KSC criteria
	Decommisioning Review	R	2 weeks before review			Per NPR 7123.1A, "NASA Systems Engineering Processes and Requirements w/Change 1 (11/04/09)."

	Post-Launch Assessment Review					Per NPR 7123.1A, "NASA Systems Engineering Processes and Requirements w/Change 1 (11/04/09)."
40	Inputs to S/C to GS/RF ICD	R	PDR + 2 mos			N/A
41	Inputs to Project Service Level Agreement (PSLA)	AFR	PDR + 2 mos			per Code 450 PSLA agreement form
42	Science Data System ICD	AFR	MOR			Internal Project Document
43	Ground System ICD	AFR	MOR			Internal Project Document
44	Ground System Test Plan	AFR	MOR			Internal Project Document
45	Launch and Early Orbit Operations Plan an	AFR	Launch - 6 months			Internal Project Document
46	FOT Training and Simulation Plans	AFR	MOR			Internal Project Document
47	Contingency Operations Plan	AFR	Preliminary at MOR Final at FOR			Internal Project Document
48	Instrument and Spacecraft Bus Activiation and Acceptance Plans	AFR	Preliminary at MOR Final at FOR			
49	Instruments, S/C bus and MOC user guides/handbooks	AFR	FOR			Internal Project Document
50	On-orbit Anomaly Report	AFR	Notification within 24 hours, report 1 week after FRB			Per mishap reporting NASA NPR 8621.1B, "NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping w/Change 5 (03/15/2010)."
51	Mission System Pre-Launch Safety Data Package (MSPSP)	A	Preliminary at PDR, update at CDR, Final at PER	3.5D		

52	Hazardous Procedures to Range	AFR	Launch -4 Months	3.5D		
53	Launch Site Ground Operations Procedures	AFR	Launch - 4 Months	3.5D		
54	Range Safety Requirements "Tailoring"—EWR127 Chapter 3	R	PDR (-2) months	3.1D		
55	Parts list (Instrument & S/C)	R/I	Preliminary at PDR, As built at PER	11.2D to 11.4D		
56	Materials list (Instrument & S/C)	R/I	Preliminary at PDR, As built at PER	12.3D		
57	GIDEP Alert/NASA Advisory Disposition	AFR	As Released			PER MAR
58	Closeout photos of flight printed wiring boards, mechanisms, instruments, bus, observatory, and integration/closeout with L/V	AFR	As Closeout occurs			PER IRIS SOW, Section 8.3(e)
59	Design documentation (dwgs, schematics, design notes, etc) archive until mission decomissioning (not disposal)	AFR	As documentation is released			PER IRIS SOW, Section 8.3(e),(f),(g),(h)
61	Concept of Operations Document	R	Draft at PDR Final at CDR			A101PN100638_-_IRIS_Concept_of_Operations_11-16-2010 Internal Project Document
62	IRIS Science Requirements Document (Level 2 or MRDA)	I	Draft at SRR Final at PDR			A101RQ080159_A_Mission_Definition_Requiremen_IRIS_Req_012010(1) Internal Project Document
63	IRIS Descope Plan	AFR	Draft at SRR Final at PDR			A101PN090314_IRIS_Project_Plan Mission_Imp_

64	Final Report	R	End of Phase E			Guidelines for this report found in NPR 7120.5, NASA Space Flight Program and Project Management Handbook (February 2010), in Section 5.3.D.d, titled "Contract Closeout," paragraph titled "Final Report"
65	Failure Notification and Failure Analysis rep	AFR	Notification within 24 hours, report 1 week after FRB	12.6D		Guidelines found in mishap reporting NASA NPR 8621.1B, "NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping w/Change 5 (03/15/2010)."
66	IT Security Plan, Risk Assesment Plan and FIPS 199 Assessment Plan	AFR	60 days after contract defin			A101-PN-09-0431 Guidelines found in NPR 2810.1A, "Security of Information Technology."
67	New Technology/Patent Reportable Items	R	As required			Contract G.2 & G.8
68	Requests for Government Property	R	As required			Contract I.68
69	Foreign Travel Request and Reports	R	As required			Contract G.9
70	Small Business Subcontracting Reports	AFR	As required			Contract H.4 & H.11
71	Safety and Health Reporting	AFR	As required			Contract H.8

Request Notification of Change

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAGES 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
C00007	See Block 16C	4200372061	460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1191

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

(x) 10A. MODIFICATION OF CONTRACT/ORDER NO.
NNG09WA60C

10B. DATED (SEE ITEM 13)
09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $12,000,000.00
BNC: GSB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) 52.232-22 - Limitations of funds clause

E. IMPORTANT: Contractor ☒ is not. ☐ is required to sign this document and return: 0 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to provide incremental funding for continued contract support and revise # 36 deliverable due date.

All other terms and conditions remain unchanged.
FOB: Destination

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
	Dean S. Patterson

15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	2/28/11

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Clause B.1 – Deliverable Requirement – revises deliverable # 36 from December 31, 2014 (end of Phase E) to June 30, 2015 (end of Phase F).

2. Clause B.4 – Contract Funding – is revised to reflect additional funding as follows:

FROM	BY	TO
$43,045,142	$12,000,000	$55,045,142

As evidenced by the contractor's email message dated February 25, 2011 it is anticipated that this allotment of funds will cover contract performance through June 24, 2011.

3. Accounting and Appropriation Data is revised to include the following information:

Purchase Request(s)	Amount:
4200372861	$12,000,000

4. All other Terms and Conditions remain unchanged.

(End of modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAGES 2

2. AMENDMENT/MODIFICATION NO.: 000008

3. EFFECTIVE DATE: See Block 16C

4. REQUISITION/PURCHASE REQ. NO.:

5. PROJECT NO. (If applicable): 460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNG09FA40C

10B. DATED (SEE ITEM 13) 09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

BNC: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) Mutual agreeement of both parties

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return 0 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modificaiton is to revise Clause H.15, Advance Understanding Regarding NFS Clause 1852.234-2, Earned Value Management System.

See page 2

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) James K. Jones

15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)

16C. DATE SIGNED 03/16/2011

1. Clause H.15 – **Advance Understanding Regarding NFS Clause 1852.234-2, Earned Value Management System** is hereby revised to extend the completion date through May 16, 2011 to allow all internal requests for approval for use of modified EVMS procedures.

2. All other terms and conditions remain unchanged.

(End of modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 / 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
000009	See Block 16C	6200390711	460

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than Item 6)	CODE
NASA/Goddard Space Flight Center Procurement Operations Division Greenbelt MD 20771	GSFC	NASA/Goddard Space Flight Center Procurement Operations Division Attn: Cassandra K. Moore Greenbelt MD 20771	GSFC

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1191

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

X 10A. MODIFICATION OF CONTRACT/ORDER NO.
NNG09F240C

10B. DATED (SEE ITEM 13)
09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $14,700,000.00
BNC: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) 52.232-22 - Limitations of funds clause

E. IMPORTANT: Contractor X is not. ☐ is required to sign this document and return 0 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is provide incremental funding for continued contract support.

All other terms and conditions remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		James K. Jones	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED 6/21/11

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Clause B.4 – Contract Funding – is revised to reflect additional funding as follows:

FROM	BY	TO
$55,045,142	$14,700,000	$69,745,142

As evidenced by the contractor's email message dated June 15, 2011 it is anticipated that this allotment of funds will cover contract performance through October 31, 2011.

2. Accounting and Appropriation Data is revised to include the following information:

Purchase Request(s)	Amount
4200390711	$14,700,000

3. All other Terms and Conditions remain unchanged.

(End of modification)

Memorandum for the Record

NASA Space Sciences Procurement, Code 210.9, Bldg. 22, Room C377

DATE: August 3, 2011
SUBJECT: Modification 000010
PROJECT: SMEX/IRIS Mission
VENDOR: Lockheed Martin Space Systems Company
PR/AMT: PR 4200401332, Funded Amount of $18,000,000
POP: June 30, 2015 (end of Phase F)

Current Contract Value is $106,478,931

Current Obligation is $87,745,142

Pursuant to the authority contained in FAR 52.232-22, Limitation of Funds (APR 1984), the following applies:

Section B.4, Contract Funding, of Contract NNG09FA40C is revised to reflect additional funding as follows:

FROM	BY	TO
$69,745,142	$18,000,000	$87,745,142

Accounting and Appropriation Data is revised to include the following information:

Purchase Request	Amount:
4200401332	$18,000,000

All other Terms and Conditions under this contract remain unchanged.

Cassandra K. Moore
Contracting Specialist

1. Clause B.4 – Contract Funding – is revised to reflect additional funding as follows:

FROM	BY	TO
$69,745,142	$18,000,000	$87,745,142

As evidenced by the contractor's email message dated June 27, 2011 it is anticipated that this allotment of funds will cover contract performance through September 30, 2012.

2. Accounting and Appropriation Data is revised to include the following information:

Purchase Request(s)	Amount:
4200401332	$18,000,000

3. All other Terms and Conditions remain unchanged.

(End of modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAGES 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
000011	See Block 16C		460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

(x) 10A. MODIFICATION OF CONTRACT/ORDER NO. NNG09FA40C

10B. DATED (SEE ITEM 13) 09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
BNC: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) Mutual agreement between both parties

E. IMPORTANT: Contractor X is not. ☐ is required to sign this document and return 0 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to revise Attachment C - FINANCIAL MANAGEMENT REPORTING REQUIREMENTS of the basic contract.

All other terms and conditions remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		Monica Allen	DEAN S. PATERSON CONTRACTING OFFICER
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED 9/19/11

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Clause G.7 – Financial Management Reporting Requirements per Attachment C is revised to reflect a new due date for consistency purposes with the quarterly report requirement as follows:

   The Contractor shall distribute 533 reports to each addressee indicated in the Basic Contract Clause G.7 FINANCIAL MANAGEMENT REPORTING. These reports shall be distributed no later than the ***fifteenth (15)*** calendar day following the month being reported.

2. All other Terms and Conditions remain unchanged.

(End of modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAGES 3

2. AMENDMENT/MODIFICATION NO: 000012

3. EFFECTIVE DATE: See Block 16C

4. REQUISITION/PURCHASE REQ. NO:

5. PROJECT NO. (If applicable): 460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO:

9B. DATED (SEE ITEM 11):

X 10A. MODIFICATION OF CONTRACT/ORDER NO: NNG09FA40C

10B. DATED (SEE ITEM 13): 09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
ENC: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE

☐ A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

☐ B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

☐ C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

☐ D. OTHER (Specify type of modification and authority)

X Mututal agreement between both parties

E. IMPORTANT: Contractor ☐ is not X is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to incorporate the NFS Earned Value Management clause and revise Section 3.13 of the Statement of Work accordingly.

All other terms and conditions remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print): S. Varaitch, Contracts

15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)

15C. DATE SIGNED: 10/31/2011

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print): Dawn S. Patterson for

16B. UNITED STATES OF AMERICA (Signature of Contracting Officer): Amy Alquecle

16C. DATE SIGNED: 11/02/2011

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1.) Clause I. 98, **EARNED VALUE MANAGEMENT (1852.234-2) (Nov 2006)** is hereby incorporated as part of this contract as follows:

(a) In the performance of this contract, the Contractor shall use—

(1) An Earned Value Management System (EVMS) that has been determined by the Cognizant Federal Agency to be compliant with the EVMS guidelines specified in the American National Standards Institute (ANSI)/Electronic Industries Alliance (EIA) – 748 Standard, Industry Guidelines for Earned Value Management Systems (current version at the time of award) to manage this contract; and

(2) Earned Value Management procedures that provide for generation of timely, accurate, reliable, and traceable information for the Contract Performance Report (CPR) required by the contract.

(b) If, at the time of award, the Contractor's EVMS has not been determined by the Cognizant Federal Agency to be compliant with the EVMS guidelines, or the Contractor does not have an existing cost/schedule control system that is compliant with the guidelines in the ANSI/EIA-748 Standard (current version at the time of award), the Contractor shall apply the system to the contract and shall take timely action to implement its plan to obtain compliance/validation. The Contractor shall follow and implement the approved compliance/validation plan in a timely fashion. The Government will conduct a Compliance Review to assess the contactor's compliance with its plan, and if the Contractor does not follow the approved implementation schedule or correct all resulting system deficiencies identified as a result of the compliance review within a reasonable time, the Contracting Officer may take remedial action, that may include, but is not limited to, a reduction in fee.

(c) The Government will conduct Integrated Baseline Reviews (IBRs). Such reviews shall be scheduled and conducted as early as practicable, and if a pre-award IBR has not been conducted, a post-award IBR should be conducted within 180 calendar days after contract award, or the exercise of significant contract options, or within 60 calendar days after distribution of a supplemental agreement that implements a significant funding realignment or effects a significant change in contractual requirements (e.g., incorporation of major modifications). The objective of IBRs is for the Government and the Contractor to jointly assess the Contractor's baseline to be used for performance measurement to ensure complete coverage of the statement of work, logical scheduling of the work activities, adequate resourcing, and identification of inherent risks.

(d) Unless a waiver is granted by the Cognizant Federal Agency, Contractor proposed EVMS changes require approval of the Cognizant Federal Agency prior to implementation. The Cognizant Federal Agency shall advise the Contractor of the acceptability of such changes within 30 calendar days after receipt of the notice of proposed changes from the Contractor. If the advance approval requirements are waived by the Cognizant Federal Agency, the Contractor shall disclose EVMS changes to the Cognizant Federal Agency at least 14 calendar days prior to the effective date of implementation.

(e) The Contractor agrees to provide access to all pertinent records and data requested by the Contracting Officer or a duly authorized representative. Access is to permit Government surveillance to ensure that the Contractor's EVMS complies, and continues to comply, with the EVMS guidelines referenced in paragraph (a) of this clause, and to demonstrate—

(1) Proper implementation of the procedures generating the cost and schedule information being used to satisfy the contract data requirements;

(2) Continuing application of the accepted company procedures in satisfying the CPR required by the

contract through recurring program/project and contract surveillance; and

(3) Implementation of any corrective actions identified during the surveillance process.

(f) The Contractor shall be responsible for ensuring that its subcontractors, identified below, comply with the EVMS requirements of this clause as follows:

(1) For subcontracts with an estimated dollar value of $50M or more, the following subcontractors shall comply with the requirements of this clause.

(Contracting Officer to insert names of subcontractors or subcontracted effort).

---

(2) For subcontracts with an estimated dollar value of less than $50M, the following subcontractors shall comply with the requirements of this clause except for the requirement in paragraph (b), if applicable, to obtain compliance/validation.

(Contracting Officer to insert names of subcontractors or subcontracted effort.)

(g) If the contractor identifies a need to deviate from the agreed baseline by working against an Over Target Baseline (OTB) or Over Target Schedule (OTS), the contractor shall submit to the Contracting Officer a request for approval to begin implementation of an OTB or OTS. This request shall include a top-level projection of cost and/or schedule growth, whether or not performance variances will be retained, and a schedule of implementation for the reprogramming adjustment. The Government will approve or deny the request within 30 calendar days after receipt of the request. Failure of the Government to respond within this 30-day period constitutes approval of the request. Approval of the deviation request does not constitute a change, or the basis for a change, to the negotiated cost or price of this contract, or the estimated cost of any undefinitized contract actions.

(End of Clause)

2) Section J - List of Attachments, is hereby revised to incorporate the revised Statement of Work.

Attachment	Description	Date	Pages
I	Statement of Work for the Phases C-F (Rev A)	October 2011	21

3) ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED

(End of Modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE		PAGE 1 OF PAGES 2	
2. AMENDMENT/MODIFICATION NO. 000013	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO. [illegible]	5. PROJECT NO. (If applicable) 160
6. ISSUED BY CODE GSFC NASA/Goddard Space Flight Center Procurement Operations Division Greenbelt MD 20771		7. ADMINISTERED BY (If other than Item 6) CODE GSFC NASA/Goddard Space Flight Center Procurement Operations Division Attn: Cassandra K. Moore Greenbelt MD 20771	

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) LOCKHEED MARTIN 3251 HANOVER ST BLDG 201 PALO ALTO CA 94304-1191	(x)	9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
	X	10A. MODIFICATION OF CONTRACT/ORDER NO. NNG05DA17C
		10B. DATED (SEE ITEM 13) 09/30/2009
CODE 60113 FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $2,000,000.00
BNC: GA5

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) 52.232-22 - Limitations to Funds

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to provide incremental funding for continued contract support.

All other terms and conditions remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Monica Allen	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA Monica Allen (Signature of Contracting Officer)	16C. DATE SIGNED 2/24/10

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Clause B.4 – Contract Funding – is revised to reflect additional funding as follows:

FROM	BY	TO
$87,745,142	$5,000,000	$92,745,142

As evidenced by the contractor's email message, it is anticipated that this allotment of funds will continue to cover contract performance through September 20, 2012.

2. Accounting and Appropriation Data is revised to include the following information:

Purchase Request(s)	Amount
4200425767	$5,000,000

3. All other Terms and Conditions remain unchanged.

(End of modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE OF PAGES 1 2

2. AMENDMENT/MODIFICATION NO. 000014

3. EFFECTIVE DATE See Block 16C

4. REQUISITION/PURCHASE REQ. NO.

5. PROJECT NO. (If applicable) 460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO. NNG09FA40C

10B. DATED (SEE ITEM 13) 09/30/2009

CODE 65113 FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $5,500,000.00

FOB: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

☐ A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

☐ B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

☐ C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

☐ D. OTHER (Specify type of modification and authority)

X 52.232-22 - Limitations of Funds

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to provide an equitable adjustment for overrun cost incurred on the contract and provide additional funding.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remain unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

S. Varaitch, Contracts

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

Dean S. Patterson

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED 7/12/2012

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED 7/13/12

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. The contract clause B.4 entitled 'CONTRACT FUNDING' is revised to increase funding as follows:

FROM	BY	TO
$92,745,142	$5,500,000	$98,245,142

2. The contract clause B.5 entitled 'ESTIMATED COST' is revised to increase the ***contract value*** due to a cost overrun as follows:

FROM	BY	TO
$106,478,930	$3,711,962	$110,190,892

	FROM	BY	TO
COST			
FEE			
TOTAL	$106,478,930	$3,711,962	$110,190,892

Accounting and Appropriation Data is revised to include the following information:

PR 4200433711	Amount
	$5,500,000

In consideration of the modification agreed to herein as complete equitable adjustment for the Contractor's cost overrun proposal LMSSC-P110246P dated December 11, 2011 and LMSSC-P110246P-1 dated May 3, 2012 in support of the Interface Region Imaging Spectrograph (IRIS) Mission effort, the Contractor hereby releases the Government from any and all liability under this contract for further equitable adjustments attributable to such facts or circumstances giving rise to the addition of the requirements described above.

All other terms and condition remain unchanged.

(End of Modification)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 / 9

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
000015	See Block 16C		460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

x 10A. MODIFICATION OF CONTRACT/ORDER NO. NNG09FA40C

10B. DATED (SEE ITEM 13) 09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[ ] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [ ] is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)
X	Mutual Agreement of both parties

E. IMPORTANT: Contractor [ ] is not, [X] is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to revise clause H.9, I.91 and I.92, Accordingly.

See Page 2

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
S. Varaitch, Contracts		Cassandra K. Moore	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED 8/2/2012	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED 8/2/12

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. Clause H.9 **RIGHTS IN DATA (GSFC 52.227-99)(MAR 2008)** is revised to 1) add ALT IV to the RIGHTS IN DATA-GENERAL clause 52.227-14 and 2) delete the RIGHTS IN DATA--SPECIAL WORKS 52.227-17 clause.

2. Clause I.91 – **RIGHTS IN DATA GENERAL** is being revised to replace the previous clause RIGHTS IN DATA-GENERAL (52.227-14)(DEC 2007) as modified by NASA FAR Supplement 1852.227-14—ALTERNATE II (DEC 2007) AND ALTERNATE III (DEC 2007) with the revised clause below which includes ALT IV and constitutes as part of this contract as follows:

RIGHTS IN DATA-GENERAL (52.227-14)(DEC 2007) as modified by NASA FAR Supplement 1852.227-14—ALTERNATE II (DEC 2007) and ALTERNATE III (DEC 2007) and ALTERNATE IV (DEC 2007)

(a) *Definitions.* As used in this clause-

"Computer database" or "database means" a collection of recorded information in a form capable of, and for the purpose of, being stored in, processed, and operated on by a computer. The term does not include computer software.

"Computer software"-

(1) Means

(i) Computer programs that comprise a series of instructions, rules, routines, or statements, regardless of the media in which recorded, that allow or cause a computer to perform a specific operation or series of operations; and

(ii) Recorded information comprising source code listings, design details, algorithms, processes, flow charts, formulas, and related material that would enable the computer program to be produced, created, or compiled.

(2) Does not include computer databases or computer software documentation.

"Computer software documentation" means owner's manuals, user's manuals, installation instructions, operating instructions, and other similar items, regardless of storage medium, that explain the capabilities of the computer software or provide instructions for using the software.

"Data" means recorded information, regardless of form or the media on which it may be recorded. The term includes technical data and computer software. The term does not include information incidental to contract administration, such as financial, administrative, cost or pricing, or management information.

"Form, fit, and function data" means data relating to items, components, or processes that are sufficient to enable physical and functional interchangeability, and data identifying source, size, configuration, mating and attachment characteristics, functional characteristics, and performance requirements. For computer software it means data identifying source, functional characteristics, and performance requirements but specifically excludes the source code, algorithms, processes, formulas, and flow charts of the software.

"Limited rights" means the rights of the Government in limited rights data as set forth in the Limited Rights Notice of paragraph (g)(3) if included in this clause.

"Limited rights data" means data, other than computer software, that embody trade secrets or are commercial or financial and confidential or privileged, to the extent that such data pertain to items, components, or processes developed at private expense, including minor modifications.

"Restricted computer software" means computer software developed at private expense and that is a trade secret, is commercial or financial and confidential or privileged, or is copyrighted computer software, including minor modifications of the computer software.

"Restricted rights," as used in this clause, means the rights of the Government in restricted computer software, as set forth in a Restricted Rights Notice of paragraph (g) if included in this clause, or as otherwise may be provided in a collateral agreement incorporated in and made part of this contract, including minor modifications of such computer software.

"Technical data" means recorded information (regardless of the form or method of the recording) of a scientific or technical nature (including computer databases and computer software documentation). This term does not include computer software or financial, administrative, cost or pricing, or management data or other information incidental to contract administration. The term includes recorded information of a scientific or technical nature that is included in computer databases (See 41 U.S.C. 403(8)).

"Unlimited rights" means the rights of the Government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so.

(b) Allocation of rights.

(1) Except as provided in paragraph (c) of this clause, the Government shall have unlimited rights in-

(i) Data first produced in the performance of this contract;

(ii) Form, fit, and function data delivered under this contract;

(iii) Data delivered under this contract (except for restricted computer software) that constitute manuals or instructional and training material for installation, operation, or routine maintenance and repair of items, components, or processes delivered or furnished for use under this contract; and

(iv) All other data delivered under this contract unless provided otherwise for limited rights data or restricted computer software in accordance with paragraph (g) of this clause.

(2) The Contractor shall have the right to-

(i) Assert copyright in data first produced in the performance of this contract to the extent provided in paragraph (c)(1) of this clause;

(ii) Use, release to others, reproduce, distribute, or publish any data first produced or specifically used by the Contractor in the performance of this contract, unless provided otherwise in paragraph (d) of this clause;

(iii) Substantiate the use of, add, or correct limited rights, restricted rights, or copyright notices and to take other appropriate action, in accordance with paragraphs (e) and (f) of this clause; and

(iv) Protect from unauthorized disclosure and use those data that are limited rights data or restricted computer software to the extent provided in paragraph (g) of this clause.

(c) *Copyright*

(1) *Data first produced in the performance of the contract.* Except as otherwise specifically provided in this contract, the Contractor may assert copyright in any data first produced in the performance of this contract. When asserting copyright, the Contractor shall affix the applicable copyright notice of 17 U.S.C. 401 or 402, and an acknowledgment of Government sponsorship (including contract number), to the data when such data are delivered to the Government, as well as when the data are published or deposited for registration as a published work in the U.S. Copyright Office. For data other than computer software, the Contractor grants to the Government, and others acting on its behalf, a paid-up, nonexclusive, irrevocable, worldwide license for all such data to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government. For computer software, the Contractor grants to the Government and others acting on its behalf, a paid-up, nonexclusive, irrevocable, worldwide license for all such computer software to reproduce, prepare derivative works, and perform publicly and display publicly (but not to distribute copies to the public), by or on behalf of the Government.

(2) *Data not first produced in the performance of this contract.* The Contractor shall not, without the prior written permission of the Contracting Officer, incorporate in data delivered under this contract any data not first produced in the performance of this contract unless the Contractor-

(i) Identifies the data; and

(ii) Grants to the Government, or acquires on its behalf, a license of the same scope as set forth in paragraph (c)(1) of this clause or, if such data are restricted computer software, the Government shall acquire a copyright license as set forth in paragraph (g)(4) of this clause (if included in this contract) or as otherwise provided in a collateral agreement incorporated in or made part of this contract.

(3) *Removal of copyright notices.* The Government will not remove any authorized copyright notices placed on data pursuant to this paragraph (c), and will include such notices on all reproductions of the data.

(d) *Release, publication, and use of data.* The Contractor shall have the right to use, release to others, reproduce, distribute, or publish any data first produced or specifically used by the Contractor in the performance of this contract, except-

(1) As prohibited by Federal law or regulation (*e.g.*, export control or national security laws or regulations);

(2) As expressly set forth in this contract; or

(3) If the Contractor receives or is given access to data necessary for the performance of this contract that contain restrictive markings, the Contractor shall treat the data in accordance with such markings unless specifically authorized otherwise in writing by the Contracting Officer.

(i) The Contractor agrees not to establish claim to copyright, publish or release to others any computer software first produced in the performance of this contract without the Contracting Officer's prior written permission.

(ii) If the Government desires to obtain copyright in computer software first produced in the performance of this contract and permission has not been granted as set forth in paragraph (d)(3)(i) of this clause, the Contracting Officer may direct the contractor to assert, or authorize the assertion of, claim to copyright in such data and to assign, or obtain the assignment of, such copyright to the Government or its designated assignee.

(iii) Whenever the word "establish" is used in this clause, with reference to a claim to copyright, it shall be construed to mean "assert".

(e) Unauthorized marking of data.

(1) Notwithstanding any other provisions of this contract concerning inspection or acceptance, if any data delivered under this contract are marked with the notices specified in paragraph (g)(3) or (g) (4) if included in this clause, and use of the notices is not authorized by this clause, or if the data bears any other restrictive or limiting markings not authorized by this contract, the Contracting Officer may at any time either return the data to the Contractor, or cancel or ignore the markings. However, pursuant to 41 U.S.C. 253d, the following procedures shall apply prior to canceling or ignoring the markings.

(i) The Contracting Officer will make written inquiry to the Contractor affording the Contractor 60 days from receipt of the inquiry to provide written justification to substantiate the propriety of the markings;

(ii) If the Contractor fails to respond or fails to provide written justification to substantiate the propriety of the markings within the 60-day period (or a longer time approved in writing by the Contracting Officer for good cause shown), the Government shall have the right to cancel or ignore the markings at any time after said period and the data will no longer be made subject to any disclosure prohibitions.

(iii) If the Contractor provides written justification to substantiate the propriety of the markings within the period set in paragraph (e)(1)(i) of this clause, the Contracting Officer will consider such written justification and determine whether or not the markings are to be cancelled or ignored. If the Contracting Officer determines that the markings are authorized, the Contractor will be so notified in writing. If the Contracting Officer determines, with concurrence of the head of the contracting activity, that the markings are not authorized, the Contracting Officer will furnish the Contractor a written determination, which determination will become the final agency decision regarding the appropriateness of the markings unless the Contractor files suit in a court of competent jurisdiction within 90 days of receipt of the Contracting Officer's decision. The

Government will continue to abide by the markings under this paragraph (e)(1)(iii) until final resolution of the matter either by the Contracting Officer's determination becoming final (in which instance the Government will thereafter have the right to cancel or ignore the markings at any time and the data will no longer be made subject to any disclosure prohibitions), or by final disposition of the matter by court decision if suit is filed.

(2) The time limits in the procedures set forth in paragraph (e)(1) of this clause may be modified in accordance with agency regulations implementing the Freedom of Information Act (5 U.S.C. 552) if necessary to respond to a request thereunder.

(3) Except to the extent the Government's action occurs as the result of final disposition of the matter by a court of competent jurisdiction, the Contractor is not precluded by paragraph (e) of the clause from bringing a claim, in accordance with the Disputes clause of this contract, that may arise as the result of the Government removing or ignoring authorized markings on data delivered under this contract.

(f) Omitted or incorrect markings.

(1) Data delivered to the Government without any restrictive markings shall be deemed to have been furnished with unlimited rights. The Government is not liable for the disclosure, use, or reproduction of such data.

(2) If the unmarked data has not been disclosed without restriction outside the Government, the Contractor may request, within 6 months (or a longer time approved by the Contracting Officer in writing for good cause shown) after delivery of the data, permission to have authorized notices placed on the data at the Contractor's expense. The Contracting Officer may agree to do so if the Contractor-

(i) Identifies the data to which the omitted notice is to be applied;

(ii) Demonstrates that the omission of the notice was inadvertent;

(iii) Establishes that the proposed notice is authorized; and

(iv) Acknowledges that the Government has no liability for the disclosure, use, or reproduction of any data made prior to the addition of the notice or resulting from the omission of the notice.

(3) If data has been marked with an incorrect notice, the Contracting Officer may-

(i) Permit correction of the notice at the Contractor's expense if the Contractor identifies the data and demonstrates that the correct notice is authorized; or

(ii) Correct any incorrect notices.

(g) Protection of limited rights data and restricted computer software.

(1) The Contractor may withhold from delivery qualifying limited rights data or restricted computer software that are not data identified in paragraphs (b)(1)(i), (ii), and (iii) of this clause. As a condition to this withholding, the Contractor shall-

(i) Identify the data being withheld; and

(ii) Furnish form, fit, and function data instead.

(2) Limited rights data that are formatted as a computer database for delivery to the Government shall be treated as limited rights data and not restricted computer software.

(3) Notwithstanding paragraph (g)(1) of this clause, the contract may identify and specify the delivery of limited rights data, or the Contracting Officer may require by written request the delivery of limited rights data that has been withheld or would otherwise be entitled to be withheld. If delivery of that data is required, the Contractor shall affix the following "Limited Rights Notice" to the data and the Government will treat the data, subject to the provisions of paragraphs (e) and (f) of this clause, in accordance with the notice:

Limited Rights Notice (Dec 2007)

(a) These data are submitted with limited rights under Government Contract No. NNG09FA40C. These data may be reproduced and used by the Government with the express limitation that they will not, without written permission of the Contractor, be used for purposes of manufacture nor disclosed outside the Government; except that the Government may disclose these data outside the Government for the following purposes, if any; provided that the Government makes such disclosure subject to prohibition against further use and disclosure:

(i) Use (except for manufacture) by support service contractors.

(ii) Evaluation by nongovernment evaluators.

(iii) Use (except for manufacture) by other contractors participating in the Government's program of which the specific contract is a part.

(iv) Emergency repair or overhaul work.

(v) Release to a foreign government, or its instrumentalities, if required to serve the interests of the U.S. Government, for information or evaluation, or for emergency repair or overhaul work by the foreign government.

(vi) or any other legitimate government use

(b) This notice shall be marked on any reproduction of these data, in whole or in part.

(End of notice)

(4)(i) Notwithstanding paragraph (g)(1) of this clause, the contract may identify and specify the delivery of restricted computer software, or the Contracting Officer may require by written request the delivery of restricted computer software that has been withheld or would otherwise be entitled to be withheld. If delivery of that computer software is required, the Contractor shall affix the following "Restricted Rights Notice" to the computer software and the Government will treat the computer software, subject to paragraphs (e) and (f) of this clause, in accordance with the notice:

Restricted Rights Notice (Dec 2007)

(a) This computer software is submitted with restricted rights under Government Contract No. NNG09FA40C. It may not be used, reproduced, or disclosed by the Government except as provided in paragraph (b) of this notice or as otherwise expressly stated in the contract.

(b) This computer software may be-

(1) Used or copied for use with the computer(s) for which it was acquired, including use at any Government installation to which the computer(s) may be transferred;

(2) Used or copied for use with a backup computer if any computer for which it was acquired is inoperative;

(3) Reproduced for safekeeping (archives) or backup purposes;

(4) Modified, adapted, or combined with other computer software, *provided* that the modified, adapted, or combined portions of the derivative software incorporating any of the delivered, restricted computer software shall be subject to the same restricted rights;

(5) Disclosed to and reproduced for use by support service Contractors or their subcontractors in accordance with paragraphs (b)(1) through (4) of this notice; and

(6) Used or copied for use with a replacement computer and other legitimate government use.

(c) Notwithstanding the foregoing, if this computer software is copyrighted computer software, it is licensed to the Government with the minimum rights set forth in paragraph (b) of this notice.

(d) Any other rights or limitations regarding the use, duplication, or disclosure of this computer software are to be expressly stated in, or incorporated in, the contract.

(e) This notice shall be marked on any reproduction of this computer software, in whole or in part.

(End of notice)

(ii) Where it is impractical to include the Restricted Rights Notice on restricted computer software, the following short-form notice may be used instead:

Restricted Rights Notice Short Form (Jun 1987)

Use, reproduction, or disclosure is subject to restrictions set forth in Contract No. NNG09FA40C.

(End of notice)

(iii) If restricted computer software is delivered with the copyright notice of 17 U.S.C. 401, it will be presumed to be licensed to the Government without disclosure prohibitions, with the minimum rights set forth in paragraph (b) of this clause.

(h) *Subcontracting.* The Contractor shall obtain from its subcontractors all data and rights therein necessary to fulfill the Contractor's obligations to the Government under this contract. If a subcontractor refuses to accept terms affording the Government those rights, the Contractor shall promptly notify the Contracting Officer of the refusal and shall not proceed with the subcontract award without authorization in writing from the Contracting Officer.

(i) *Relationship to patents or other rights.* Nothing contained in this clause shall imply a license to the Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Government.

(End of clause)

3. Clause I.92 RIGHTS IN DATA—SPECIAL WORKS (52.227-17) (DEC 2007) as modified by NASA FAR Supplement 1852.227-17 is deleted in its entirety.

4. All other terms and conditions remain unchanged.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAGES 2

2. AMENDMENT/MODIFICATION NO. 000016

3. EFFECTIVE DATE 09/19/2012

4. REQUISITION/PURCHASE REQ. NO. 4200447750

5. PROJECT NO. (If applicable) 460

6. ISSUED BY CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Greenbelt MD 20771

7. ADMINISTERED BY (If other than Item 6) CODE GSFC

NASA/Goddard Space Flight Center
Procurement Operations Division
Attn: Cassandra K. Moore
Greenbelt MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

LOCKHEED MARTIN
3251 HANOVER ST BLDG 201
PALO ALTO CA 94304-1121

CODE 65113 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNG09FA40C

10B. DATED (SEE ITEM 13) 09/30/2009

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: $11,945,750.00

BNC: GAB

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) 52.232-22 - Limitations of funds

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to provide funding which will fully fund this contract. All terms and other conditions remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

15B. CONTRACTOR/OFFEROR

(Signature of person authorized to sign)

15C. DATE SIGNED

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Claudia Canales

16B. UNITED STATES OF AMERICA Claudia Canales

(Signature of Contracting Officer)

16C. DATE SIGNED 09/19/12

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

1. The contract clause B.4 entitled 'CONTRACT FUNDING' is revised to increase and fully fund as follows:

FROM	BY	TO
$98,245,142	$11,945,750	$110,190,892

Accounting and Appropriation Data is revised to include the following information:

PR 4200447750	Amount:
	$11,945,750

All other terms and condition remain unchanged.

(End of Modification)