

**ORDER FOR SUPPLIES OR SERVICES**

PAGE OF PAGES

1 6

**IMPORTANT: Mark all packages and papers with contract and/or order numbers.**

1. DATE OF ORDER 12/19/2007	2. CONTRACT NO. (if any) NNL05AA01B	6. SHIP TO:		
3. ORDER NO. NNL08AA37T		4. REQUISITION/REFERENCE NO. 4200229620		
5. ISSUING OFFICE (Address correspondence to) NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199		a. NAME OF CONSIGNEE  NASA/ Langley Research Center		
7. TO: <span style="background-color: black; color: black;">XXXXXXXXXX</span>		b. STREET ADDRESS		
8. NAME OF CONTRACTOR SCIENCE APPLICATIONS INTL CORP		c. CITY Hampton		
b. COMPANY NAME		d. STATE VA		
c. STREET ADDRESS 10260 CAMPUS POINT DR		e. ZIP CODE 23681-2199		
d. CITY SAN DIEGO		f. SHIP VIA		
e. STATE CA		g. TYPE OF ORDER		
f. ZIP CODE 92121-1522		<input type="checkbox"/> a. PURCHASE <input checked="" type="checkbox"/> b. DELIVERY REFERENCE YOUR:		
9. ACCOUNTING AND APPROPRIATION DATA PR 4200229620		Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.  Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.		
11. BUSINESS CLASSIFICATION (Check appropriate box(es))		10. REQUISITIONING OFFICE NASA/Langley Research Center		
<input type="checkbox"/> a. SMALL <input type="checkbox"/> b. OTHER THAN SMALL <input type="checkbox"/> c. DISADVANTAGED <input type="checkbox"/> d. WOMEN-OWNED <input type="checkbox"/> e. HUBZone <input type="checkbox"/> f. EMERGING SMALL BUSINESS		<input type="checkbox"/> g. SERVICE-DISABLED VETERAN-OWNED 12. F.O.B. POINT Destination		
13. PLACE OF		14. GOVERNMENT B/L NO.		15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date) 06/30/2008
a. INSPECTION Destination	b. ACCEPTANCE Destination			16. DISCOUNT TERMS nt30

17. SCHEDULE (See reverse for Rejections)

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
001	INCO TERMS 1: FOB INCO TERMS 2: DESTINATION  ESD Campaign Analysis  Continued ...				347,711.00	

18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	
21. MAIL INVOICE TO:			
a. NAME NASA/Langley Research Center			17(h) TOTAL (Cont. pages) \$0.00
b. STREET ADDRESS (or P.O. Box) Financial Management Division M/S 175			
c. CITY Hampton			
d. STATE VA		e. ZIP CODE 23681-2199	17(i) GRAND TOTAL \$347,711.00
22. UNITED STATES OF AMERICA BY (Signature)			23. NAME (Typed) Anthony Kram TITLE: CONTRACTING/ORDERING OFFICER

**ORDER FOR SUPPLIES OR SERVICES  
SCHEDULE - CONTINUATION**

PAGE OF PAGES  
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**IMPORTANT:** Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER  
12/19/2007

CONTRACT NO.  
NNL05AA01B

ORDER NO.  
NNL08AA37T

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY ORDERED (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)	QUANTITY ACCEPTED (G)
	<p>Task Order entitled "Earth Science Division (ESD) Campaign Analysis" in accordance with the attached task summary and the contractor's proposal dated 12/14/2007. *NOTE: This Task Order is subject to FAR 52.232-22, Limitation of Funds.</p> <p>ESTIMATED COST: ██████████ ESTIMATED FEE: ██████████ *TOTAL COST-PLUS-FIXED FEE: \$347,711.00</p> <p>Acknowledge receipt and acceptance of subject Task Order by signing below and returning to the address in Block 5:</p> <p><u>Robin Amburn Grob, Contracts Mgr.</u> (Printed Name) (Title)</p> <p><u>Robin Amburn Grob</u> 12/19/07 (Signature) (Date)</p>					

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

**TASK ORDER SUMMARY**

1. In accordance with Paragraph B.4, of the Basic Contract (NNL05AA01B), FAR 52.232-22 applies at the Task Order level. In accordance with this clause, NFS 1852.232-81 is incorporated as follows:

**"CONTRACT FUNDING, (NFS 1852.232-81) (JUN 1990)**

(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 Task Order is [REDACTED]. This allotment is for this task order and covers the following estimated period of performance: 19 December 2007 through 30 June 2008.

(b) An additional amount of [REDACTED] is obligated under this Task Order for payment of fee.

(End of Clause)"

2. Perform tasks in accordance with the statement of work titled "Science Mission Directorate (SMD) Earth Science Division (ESD) Campaign Analysis."

**SUMMARY OF TASK ORDER VALUE / FUNDING**

TASK ORDER DOCUMENT	TASK VALUE SUMMARY			TASK FUNDING SUMMARY		
	ESTIMATED COST	FIXED FEE	TOTAL CPFF	ESTIMATED COST	FIXED FEE	TOTAL CPFF
BASE	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711

NOTE: Period of performance for this task order is 19 December 2007 through 30 June 2008.

Contract NNL05AA01B  
Task Order Statement of Work

Task Order Number: RFP #

Requesting Organization: NASA Langley Research Center (LaRC) Systems Analysis and Concepts Directorate (SACD) Space Mission Analysis Branch (SMAB), Organization Code E402

1. Task Order Title:

1.1 Science Mission Directorate (SMD) Earth Science Division (ESD) Campaign Analysis

2. Contractual References:

2.1 Statement of Work Reference: This requirement is pursuant to contract NNL05AA01B, between NASA Langley Research Center and [REDACTED] Refer to Paragraphs 4.0 Assessments and 5.0 Studies.

2.2 Limitation of Future Contracting Reference: In support of this task order, the contractor:

- may have access to proprietary information and various other types of non-public data

As described in NASA Clause 1852.209-71 (Clause H.11, Limitation of Future Contracting, contained in contract NNL05AA01B), this work may give rise to a potential conflict of interest. Therefore, the contractor shall comply with Clause H.17, Handling of Data, and Exhibit D. Organizational Conflict of Interest Avoidance Plan, contained in contract NNL05AA01B.

3. Purpose, Objective, and Background of Work to be Performed:

3.1 The Space Mission Analysis Branch (SMAB) of the Systems Analysis and Concepts Directorate (SACD) of NASA Langley Research Center (LaRC) has been tasked by the Science Mission Directorate (SMD) Earth Science Division (ESD) Director Dr. Michael Freilich to provide a Campaign Analysis based assessment of the National Research Council (NRC) Earth Science and Applications Decadal Survey (DS) missions, with an immediate focus on the first four (SMAP, CLARREO, ICESat-II, and DESDynI). The Campaign Analysis methodology will enable detailed assessments of future missions for use in the development of candidate architecture options, incorporating probabilistic methods to address science value, technology, mission performance, schedule, and cost risks.

The Campaign Analyses of the DS missions will utilize the skills and capabilities of LaRC (SACD, Science Directorate, and Systems Engineering Directorate, and Science Support Office), other NASA centers, other Government agencies, and contractors to conduct the appropriate mission studies.

The contractor shall provide Reliability Estimates and Integrated Schedule and Cost Studies of the first [REDACTED] DS missions.

4. Description of the Work to be Performed: The Contractor shall perform the following task requirements:

4.1 Spacecraft Reliability Estimates: The contractor shall provide estimates of on-orbit spacecraft reliability for the [REDACTED] DS missions. These estimates shall leverage capabilities demonstrated on Science Support Office (SSO) led Concept Study Report (CSR) Evaluations, with probabilistic considerations where feasible.

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products.

- 4.2 **Integrated Schedule and Cost Uncertainty Studies:** The contractor shall perform Integrated Schedule and Cost Uncertainty Studies of the [REDACTED] DS missions. Each study shall encompass probabilistic assessments of mission schedule and cost, including the following elements:

- Schedule estimates by project phases
- Quantifications of uncertainty
- Technology considerations
- Qualification of feedback and synergy between missions
- Characterization of threats
- Recommended hedging strategies

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products. The functional model will integrate real world data where possible, but may contain clearly defined notional data for the purposes of demonstrating functionality.

- 4.3 The contractor shall prepare completion documents for task closeout purposes.

5. **Deliverables:**

- 5.1. Spacecraft Reliability Estimator functional models.
- 5.2. Integrated Schedule and Cost Uncertainty functional models.
- 5.3. Demonstration of functional models.
- 5.4. Draft Reliability Estimates and Integrated Schedule and Cost Uncertainty study results, with relevant analysis models.
- 5.5. Presentation of Reliability Estimates and Integrated Schedule and Cost Uncertainty Study results for the [REDACTED] NRC Decadal Survey Missions.

6. **Government Furnished Items:** The contractor will be provided with supporting data, implementation support, and interface requirements.

7. **Other Information Needed for Task Performance:** TBD.

8. Period of Performance/Schedule:

No.	SOW Para	Milestone	Dates	Deliverables
1	N/A	Task Order Start	[REDACTED]	None
2	5.1	Spacecraft Reliability Estimator model	[REDACTED]	Initial version, via secure electronic transfer
3	5.2	Integrated Schedule and Cost Uncertainty model	[REDACTED]	Initial version, via secure electronic transfer
4	5.1	Spacecraft Reliability Estimator model	[REDACTED]	Interim version, via secure electronic transfer
5	5.2	Integrated Schedule and Cost Uncertainty model	[REDACTED]	Interim version, via secure electronic transfer
6	5.3	Demonstration of models	[REDACTED]	Presentation at NASA HQ
7	5.4	Draft analysis results, with relevant models	[REDACTED]	Draft results and models, via secure electronic transfer
8	5.5	Final analysis results	[REDACTED]	Presentation at NASA HQ
9	N/A	Complete Task Order	[REDACTED]	Final Memo Summary Report; Task Order Completion Approval Form

9. NASA Task Monitor  
 NASA TM: Washito A. Sasamoto  
 Mail Stop (M/S): 462  
 Phone Number: (757)864-1923 / Fax Number: (757)864-1975  
 E-Mail Address: Washito.A.Sasamoto@nasa.gov

10. Concurrences and Approval

Concurrence: Washito A. Sasamoto Date 12/03/2007  
 Name: NASA/LARC/SACD SMAB TM

Approval: \_\_\_\_\_ Date \_\_\_\_\_  
 Jennings B. Cherry, NASA/LARC/SSO COTR

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NO. 000001		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO. N/A	
5. ISSUED BY NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199		6. PROJECT NO. (if applicable)		7. ADMINISTERED BY (If other than Item 6) NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and ZIP Code) SCIENCE APPLICATIONS INTL CORP Attn: <span style="background-color: black; color: black;">XXXXXXXXXX</span> 10260 CAMPUS POINT DR SAN DIEGO CA 92121-1522		9A. AMENDMENT OF SOLICITATION NO. (X)		9B. DATED (SEE ITEM 11)	
CODE		FACILITY CODE		10A. MODIFICATION OF CONTRACT/ORDER NO. NNL05AA01B NNL08AA37T	
				10B. DATED (SEE ITEM 13) 12/19/2007	

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)

N/A

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

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 extend the period of performance until 31 July 2008 in accordance with the summary of changes.

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) Robin Amburn Grob, Contracts Manager		15A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Anthony Kram	
15B. CONTRACT/ORDER NO. Robin Amburn Grob (Signature of person authorized to sign)		15C. DATE SIGNED 6/30/08	
16B. UNITED STATES OF AMERICA		16C. DATE SIGNED 06/30/2008	
		(Signature of Contracting Officer)	

**SUMMARY OF CHANGES**

1. The period of performance is extended from 30 June 2008 to 31 July 2008 at no additional cost to the Government in order for the Contractor to complete analysis of requested work. Consideration is not applicable.
2. In accordance with Paragraph B.4, of the Basic Contract (NNL05AA01B), FAR 52.232-22 applies at the Task Order level. In accordance with this clause, NFS 1852.232-81 is incorporated as follows:

**"CONTRACT FUNDING, (NFS 1852.232-81) (JUN 1990)**

(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 Task Order is [REDACTED]. This allotment is for this task order and covers the following estimated period of performance: 19 December 2007 through 31 July 2008.

(b) An additional amount of [REDACTED] is obligated under this Task Order for payment of fee.

(End of Clause)"

2. All other terms and conditions remain unchanged.

**SUMMARY OF TASK ORDER VALUE / FUNDING**

TASK ORDER DOCUMENT	TASK VALUE SUMMARY			TASK FUNDING SUMMARY		
	ESTIMATED COST	FIXED FEE	TOTAL CPFF	ESTIMATED COST	FIXED FEE	TOTAL CPFF
BASE	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 01	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711

NOTE: Period of performance for this task order is 19 December 2007 through 31 July 2008.

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE		PAGE OF PAGES 1 5	
2. AMENDMENT/MODIFICATION NO. 000002		3. EFFECTIVE DATE 07/18/2008		4. REQUISITION/PURCHASE REQ. NO. 4200261858	
6. ISSUED BY NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199		CODE LARC		5. PROJECT NO. (if applicable)	
7. ADMINISTERED BY (if other than item 6) NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199		CODE LARC			
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) SCIENCE APPLICATIONS INTL CORP Attn: ██████████ 10260 CAMPUS POINT DR SAN DIEGO CA 92121-1522		<input checked="" type="checkbox"/> 9A. AMENDMENT OF SOLICITATION NO.			
		9B. DATED (SEE ITEM 11)			
		<input checked="" type="checkbox"/> 10A. MODIFICATION OF CONTRACT/ORDER NO. NNL05AA01B NNL08AA37T			
		10B. DATED (SEE ITEM 13) 12/19/2007			
CODE		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)  
PR 4200261858 Net Increase: \$352,115.00

**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 data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: FAR 52.232-20 LIMITATION OF COST (APR 1984)
	D. OTHER (Specify type of modification and authority)

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:

- 1) Revise the statement of work;
- 2) Increase the total value of the task; and
- 3) Add additional funding in accordance with the summary of changes.

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) <b>Robin Amburn Grob, Contracts Manager</b>		15A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Anthony Kram	
15B. CONTRACTOR/OFFICER <i>Robin Amburn Grob</i> (Signature of person authorized to sign)		15C. DATE SIGNED 7/18/08	
15B. UNITED STATES OF AMERICA <i>[Signature]</i> (Signature of Contracting Officer)		15C. DATE SIGNED 07/18/2008	

**SUMMARY OF CHANGES**

1. The statement of work is revised as incorporated in this modification. All previous statements of work are obsolete.
2. As a result of the SOW revision, the total value of the task is increased by \$352,115 from \$347,711 to \$699,826.
3. Additional funding in the amount of \$352,115 is added to fully fund this requirement. Funding changes are listed in the chart below.
4. In accordance with Paragraph B.4, of the Basic Contract (NNL05AA01B), FAR 52.232-20 applies at the Task Order level. In accordance with this clause, NFS 1852.232-81 is incorporated as follows:

**“CONTRACT FUNDING, (NFS 1852.232-81) (JUN 1990)**

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Cost clause, the total amount allotted by the Government to this Task Order is [REDACTED]. This allotment is for this task order and covers the following estimated period of performance: 19 December 2007 through 31 December 2008.

(b) An additional amount of [REDACTED] is obligated under this Task Order for payment of fee.

**(End of Clause)”**

5. All other terms and conditions remain unchanged.

**SUMMARY OF TASK ORDER VALUE / FUNDING**

TASK ORDER DOCUMENT	TASK VALUE SUMMARY			TASK FUNDING SUMMARY		
	ESTIMATED COST	FIXED FEE	TOTAL CPFF	ESTIMATED COST	FIXED FEE	TOTAL CPFF
BASE	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 01	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 02	[REDACTED]	[REDACTED]	\$699,826	[REDACTED]	[REDACTED]	\$699,826

NOTE: Period of performance for this task order is 19 December 2007 through 31 December 2008.

[REDACTED]  
Contract NNL05AA01B  
Task Order Statement of Work Modification 1

**Task Order Number: RFP #**

Requesting Organization: NASA Langley Research Center (LaRC) Systems Analysis and Concepts Directorate (SACD) Space Mission Analysis Branch (SMAB), Organization Code E402

**1. Task Order Title:**

1.1 Science Mission Directorate (SMD) Earth Science Division (ESD) Campaign Analysis

**2. Contractual References:**

2.1 **Statement of Work Reference:** This requirement is pursuant to contract NNL05AA01B, between NASA Langley Research Center and [REDACTED]. Refer to Paragraphs 4.0 *Assessments* and 5.0 *Studies*.

2.2 **Limitation of Future Contracting Reference:** In support of this task order, the contractor:

- may have access to proprietary information and various other types of non-public data

As described in NASA Clause 1852.209-71 (Clause H.11, Limitation of Future Contracting, contained in contract NNL05AA01B), this work may give rise to a potential conflict of interest. Therefore, the contractor shall comply with Clause H.17, Handling of Data, and Exhibit D. Organizational Conflict of Interest Avoidance Plan, contained in contract NNL05AA01B.

**3. Purpose, Objective, and Background of Work to be Performed:**

3.1 The Space Mission Analysis Branch (SMAB) of the Systems Analysis and Concepts Directorate (SACD) of NASA Langley Research Center (LaRC) has been tasked by the Science Mission Directorate (SMD) Earth Science Division (ESD) Director Dr. Michael Freilich to provide a Campaign Analysis based assessment of the National Research Council (NRC) Earth Science and Applications Decadal Survey (DS) missions, with an immediate focus on the first four (SMAP, CLARREO, ICESat-II, and DESDynI). The Campaign Analysis methodology will enable detailed assessments of future missions for use in the development of candidate architecture options, incorporating probabilistic methods to address science value, technology, mission performance, schedule, and cost risks.

The Campaign Analyses of the DS missions will utilize the skills and capabilities of LaRC (SACD, Science Directorate, and Systems Engineering Directorate, and Science Support Office), other NASA centers, other Government agencies, and contractors to conduct the appropriate mission studies.

The contractor shall provide Reliability Estimates, Integrated Cost/Schedule Risk Studies, and Technology Infusion Studies of the [REDACTED] DS missions.

**4. Description of the Work to be Performed:** The Contractor shall perform the following task requirements:

4.1 **Spacecraft Reliability Estimates:** The contractor shall provide estimates of on-orbit spacecraft reliability for the [REDACTED] DS missions. These estimates shall leverage capabilities demonstrated on Science Support Office (SSO) led Concept Study Report (CSR) Evaluations, with probabilistic considerations where feasible.

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products.

4.2 **Integrated Cost/Schedule Risk Studies:** The contractor shall perform Integrated Cost/Schedule Risk Studies of the [REDACTED] DS missions. Each study shall encompass probabilistic assessments of mission schedule and cost, including the following elements:

- Schedule estimates by project phases
- Quantifications of uncertainty
- Technology considerations
- Qualification of feedback and synergy between missions
- Characterization of threats
- Recommended hedging strategies

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products. The functional model will integrate real world data where possible, but may contain clearly defined notional data for the purposes of demonstrating functionality.

4.3 **Technology Infusion Studies:** The contractor shall perform Technology Infusion Studies of the first four DS missions. Each study shall address the costs and benefits associated with relevant technologies identified by the Earth Science Technology Office (ESTO) and the LaRC Technology Assessment Team. Technology Infusion Studies shall incorporate Integrated Cost/Schedule Risk elements to the maximum extent practicable.

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products. The functional model will integrate real world data where possible, but may contain clearly defined notional data for the purposes of demonstrating functionality.

4.4 **The contractor shall prepare completion documents for task closeout purposes.**

5. **Deliverables:**

- 5.1. Spacecraft Reliability Estimator functional models.
- 5.2. Integrated Cost/Schedule Risk functional models.
- 5.3. Demonstration of Spacecraft Reliability Estimator and Integrated Cost/Schedule Risk functional models.
- 5.4. Draft Reliability Estimates and Integrated Cost/Schedule Risk Study results, with relevant analysis models.
- 5.5. Presentation of Reliability Estimates and Integrated Cost/Schedule Risk Study results for the [REDACTED] NRC Decadal Survey Missions.
- 5.6. Technology Infusion functional models.
- 5.7. Demonstration of Technology Infusion functional models.
- 5.8. Draft Technology Infusion Study results, with relevant analysis models.
- 5.9. Presentation of Technology Infusion Study results for the [REDACTED] NRC Decadal Survey Missions.

6. **Government Furnished Items:** The contractor will be provided with supporting data, implementation support, and interface requirements.

7. **Other Information Needed for Task Performance:** Provide info if applicable.

8. **Period of Performance/Schedule:**

Milestone	SOW Paragraph	Milestones	Dates
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Number			
1	5.1	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
2	5.2	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
3	5.3	Presentation at NASA HQ	[REDACTED]
4	5.4	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
5	5.5	Presentation at NASA HQ or to TM	[REDACTED]
6	5.6	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
7	5.7	Presentation to TM	[REDACTED]
8	5.8	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
9	5.9	Presentation at NASA HQ	[REDACTED]

9. **NASA Task Monitor**

NASA TM: Washito A. Sasamoto  
 Mail Stop (M/S): 462  
 Phone Number: (757)864-1923 / Fax Number: (757)864-1975  
 E-Mail Address: Washito.A.Sasamoto@nasa.gov

10. **Concurrences and Approval**

Concurrence: Washito A. Sasamoto Date 06/23/2008  
 Name; NASA/LaRC/SACD SMAB TM

Approval: \_\_\_\_\_ Date \_\_\_\_\_  
 Jennings B. Cherry, NASA/LaRC/SS

2. AMENDMENT/MODIFICATION NO. 000003  
 3. EFFECTIVE DATE See Block 16C  
 4. REQUISITION/PURCHASE REQ. NO. 4200268242  
 5. PROJECT NO. (if applicable)

6. ISSUED BY CODE LARC  
 NASA/Langley Research Center  
 9B Langley Blvd., Bldg. 1195B  
 M/S 126  
 Hampton VA 23681-2199  
 7. ADMINISTERED BY (if other than item 6) CODE LARC  
 NASA/Langley Research Center  
 9B Langley Blvd., Bldg. 1195B  
 M/S 126  
 Hampton VA 23681-2199

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)  
 SCIENCE APPLICATIONS INTL CORP  
 Attn: [REDACTED]  
 10260 CAMPUS POINT DR  
 SAN DIEGO CA 92121-1522  
 9A. AMENDMENT OF SOLICITATION NO. (x)  
 9B. DATED (SEE ITEM 11)  
 10A. MODIFICATION OF CONTRACT/ORDER NO. x  
 >NNL05AA01B  
 >NNL08AA37T  
 10B. DATED (SEE ITEM 13)  
 12/19/2007  
 CODE 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)  
 PR 4200268242 Net Increase: \$294,305.00

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 data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: FAR 52.232-22 LIMITATION OF FUNDS (APR 1984)
	D. OTHER (Specify type of modification and authority)

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:  
 1) Revise the statement of work;  
 2) Increase the total value of the task; and  
 3) Add additional funding in accordance with the summary of changes.  
 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)  
 Robin Amburn Grob, Contracts Manager  
 15B. CONTRACTOR/OFFEROR  
 [Signature of Robin Amburn Grob]  
 15C. DATE SIGNED  
 9/26/08  
 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)  
 Anthony Kram  
 16B. UNITED STATES OF AMERICA  
 [Signature of Anthony Kram]  
 16C. DATE SIGNED  
 09/24/2008

**SUMMARY OF CHANGES**

1. The statement of work is revised as incorporated in this modification. All previous statements of work are obsolete.
2. As a result of the SOW revision, the total value of the task is increased by \$294,306 from \$699,825 to \$994,131.
3. Additional funding in the amount of \$294,306 is added to fund this requirement. Funding changes are listed in the chart below.
4. In accordance with Paragraph B.4, of the Basic Contract (NNL05AA01B), FAR 52.232-20 applies at the Task Order level. In accordance with this clause, NFS 1852.232-81 is incorporated as follows:

**"CONTRACT FUNDING, (NFS 1852.232-81) (JUN 1990)**

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Cost clause, the total amount allotted by the Government to this Task Order is [REDACTED]. This allotment is for this task order and covers the following estimated period of performance: 19 December 2007 through 30 April 2009.

(b) An additional amount of [REDACTED] is obligated under this Task Order for payment of fee.

**(End of Clause)"**

5. All other terms and conditions remain unchanged.

**SUMMARY OF TASK ORDER VALUE / FUNDING**

TASK ORDER DOCUMENT	TASK VALUE SUMMARY			TASK FUNDING SUMMARY		
	ESTIMATED COST	FIXED FEE	TOTAL CPFF	ESTIMATED COST	FIXED FEE	TOTAL CPFF
BASE	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 01	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 02	[REDACTED]	[REDACTED]	\$699,826	[REDACTED]	[REDACTED]	\$699,826
Mod 03	[REDACTED]	[REDACTED]	\$994,131	[REDACTED]	[REDACTED]	\$994,131

NOTE: Period of performance for this task order is 19 December 2007 through 30 April 2009.

[REDACTED]  
**Contract NNL05AA01B**  
**Task Order Statement of Work Modification 3**

**Task Order Number: RFP #**

Requesting Organization: NASA Langley Research Center (LaRC) Systems Analysis and Concepts Directorate (SACD) Space Mission Analysis Branch (SMAB), Organization Code E402

**1. Task Order Title:**

1.1 Science Mission Directorate (SMD) Earth Science Division (ESD) Campaign Analysis

**2. Contractual References:**

2.1 **Statement of Work Reference:** This requirement is pursuant to contract NNL05AA01B, between NASA Langley Research Center and [REDACTED]. Refer to Paragraphs 4.0 *Assessments* and 5.0 *Studies*.

2.2 **Limitation of Future Contracting Reference:** In support of this task order, the contractor:

- may have access to proprietary information and various other types of non-public data

As described in NASA Clause 1852.209-71 (Clause H.11, Limitation of Future Contracting, contained in contract NNL05AA01B), this work may give rise to a potential conflict of interest. Therefore, the contractor shall comply with Clause H.17, Handling of Data, and Exhibit D. Organizational Conflict of Interest Avoidance Plan, contained in contract NNL05AA01B.

**3. Purpose, Objective, and Background of Work to be Performed:**

3.1 The Space Mission Analysis Branch (SMAB) of the Systems Analysis and Concepts Directorate (SACD) of NASA Langley Research Center (LaRC) has been tasked by the Science Mission Directorate (SMD) Earth Science Division (ESD) Director Dr. Michael Freilich to provide a Campaign Analysis based assessment of the National Research Council (NRC) Earth Science and Applications Decadal Survey (DS) missions, with an immediate focus on the first four (SMAP, CLARREO, ICESat-II, and DESDynI), followed by the next five (HyspIRI, ASCENDS, SWOT, GEO-CAPE, and ACE). The Campaign Analysis methodology will enable detailed assessments of future missions for use in the development of candidate architecture options, incorporating probabilistic methods to address science value, technology, mission performance, schedule, and cost risks.

The Campaign Analyses of the DS missions will utilize the skills and capabilities of LaRC (SACD, Science Directorate, and Systems Engineering Directorate, and Science Support Office), other NASA centers, other Government agencies, and contractors to conduct the appropriate mission studies.

The contractor shall provide Reliability Estimates, Integrated Cost/Schedule Risk Studies, and Technology Infusion Studies of the [REDACTED] DS missions.

4. **Description of the Work to be Performed:** The Contractor shall perform the following task requirements:

- 4.1 **Spacecraft Reliability Estimates:** The contractor shall provide estimates of on-orbit spacecraft reliability for the first four DS missions. These estimates shall leverage capabilities demonstrated on Science Support Office (SSO) led Concept Study Report (CSR) Evaluations, with probabilistic considerations where feasible.

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products.

- 4.2 **Integrated Cost/Schedule Risk Studies:** The contractor shall perform Integrated Cost/Schedule Risk Studies of the [REDACTED] DS missions. Each study shall encompass probabilistic assessments of mission schedule and cost, including the following elements:

- Schedule estimates by project phases
- Quantifications of uncertainty
- Technology considerations
- Qualification of feedback and synergy between missions
- Characterization of threats
- Recommended hedging strategies

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products. The functional model will integrate real world data where possible, but may contain clearly defined notional data for the purposes of demonstrating functionality.

- 4.3 **Technology Infusion Studies:** The contractor shall perform Technology Infusion Studies of the first four DS missions. Each study shall address the costs and benefits associated with relevant technologies identified by the Earth Science Technology Office (ESTO) and the LaRC Technology Assessment Team. Technology Infusion Studies shall incorporate Integrated Cost/Schedule Risk elements to the maximum extent practicable.

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products. The functional model will integrate real world data where possible, but may contain clearly defined notional data for the purposes of demonstrating functionality.

- 4.4 **The contractor shall prepare completion documents for task closeout purposes.**

5. **Deliverables:**

- 5.1. Spacecraft Reliability Estimator functional models.
- 5.2. Integrated Cost/Schedule Risk functional models.
- 5.3. Demonstration of Spacecraft Reliability Estimator and Integrated Cost/Schedule Risk functional models.

- 5.4. Draft Reliability Estimates and Integrated Cost/Schedule Risk Study results, with relevant analysis models.
  - 5.5. Presentation of Reliability Estimates and Integrated Cost/Schedule Risk Study results for the [REDACTED] NRC Decadal Survey Missions.
  - 5.6. Technology Infusion functional models.
  - 5.7. Demonstration of Technology Infusion functional models.
  - 5.8. Draft Technology Infusion Study results, with relevant analysis models.
  - 5.9. Presentation of Technology Infusion Study results for the [REDACTED] NRC Decadal Survey Missions.
  - 5.10. Draft Reliability Estimates and Integrated Cost/Schedule Risk Study results for the [REDACTED] NRC Decadal Survey Missions, with relevant analysis models.
  - 5.11. Presentation of Reliability Estimates and Integrated Cost/Schedule Risk Study results for the [REDACTED] NRC Decadal Survey Missions.
  - 5.12. Draft Technology Infusion Study results for the [REDACTED] NRC Decadal Survey Missions, with relevant analysis models.
  - 5.13. Presentation of Technology Infusion Study results for the [REDACTED] NRC Decadal Survey Missions.
6. **Government Furnished Items:** The contractor will be provided with supporting data, implementation support, and interface requirements.
7. **Other Information Needed for Task Performance:** Provide info if applicable.
8. **Period of Performance/Schedule:**

Milestone Number	SOW Paragraph	Milestones	Dates
1	5.1	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
2	5.2	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
3	5.3	Presentation at NASA HQ	[REDACTED]
4	5.4	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
5	5.5	Presentation at NASA HQ or to TM	[REDACTED]
6	5.6	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]

			[REDACTED]
7	5.7	Presentation to TM	[REDACTED]
8	5.8	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
9	5.9	Presentation at NASA HQ	[REDACTED]
10	5.10	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
11	5.11	Presentation at NASA HQ or to TM	[REDACTED]
12	5.12	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
13	5.13	Presentation at NASA HQ or to TM	[REDACTED]

9. **NASA Task Monitor**

NASA TM: Washito A. Sasamoto

Mail Stop (M/S): 462

Phone Number: (757)864-1923 / Fax Number: (757)864-1975

E-Mail Address: Washito.A.Sasamoto@nasa.gov

10. **Concurrences and Approval**

Concurrence: Washito A. Sasamoto Date 08/26/2008

Name; NASA/LaRC/SACD SMAB TM

Approval: \_\_\_\_\_ Date \_\_\_\_\_

Jennings B. Cherry, NASA/LaRC/SSO COTR

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

2. AMENDMENT/MODIFICATION NO. 000004		3. EFFECTIVE DATE 04/27/2009	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (if applicable) 1 1
6. ISSUED BY NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199		CODE LARC	7. ADMINISTERED BY (if other than Item 6) NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199	

8. NAME AND ADDRESS OF CONTRACTOR (No. street, county, State and ZIP Code) SCIENCE APPLICATIONS INTL CORP Attn: [REDACTED] 10260 CAMPUS POINT DR SAN DIEGO CA 92121-1522		(x) 9A. AMENDMENT OF SOLICITATION NO.
CODE		9B. DATED (SEE ITEM 11)
FACILITY CODE		X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNL05AA01B NNL08AA37T 10B. DATED (SEE ITEM 13) 12/19/2007

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)  
See Schedule

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

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 no cost modification is to extend the period of performance from 30 April 2009 to 15 June 2009.

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)		15A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Ronald King	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	15B. UNITED STATES OF AMERICA Ronald L. King (Signature of Contracting Officer)	15C. DATE SIGNED 27 Apr 09

**SUMMARY OF CHANGES**

1. The period of performance is extended to 15 June 2009 at no additional cost to the Government. Consideration for this extension in any form is not appropriate.
2. All other terms and conditions remain unchanged

**SUMMARY OF TASK ORDER VALUE / FUNDING**

TASK ORDER DOCUMENT	TASK VALUE SUMMARY			TASK FUNDING SUMMARY		
	ESTIMATED COST	FIXED FEE	TOTAL CPFF	ESTIMATED COST	FIXED FEE	TOTAL CPFF
BASE	██████████	██████████	\$347,711	██████████	██████████	\$347,711
Mod 01	██████████	██████████	\$347,711	██████████	██████████	\$347,711
Mod 02	██████████	██████████	\$699,826	██████████	██████████	\$699,826
Mod 03	██████████	██████████	\$994,131	██████████	██████████	\$994,131
Mod 04	██████████	██████████	\$994,131	██████████	██████████	\$994,131

NOTE: Period of performance for this task order is 19 December 2007 through 15 June 2009.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1 CONTRACT NUMBER

PAGE OF PAGES

2 AMENDMENT/MODIFICATION NO

000005

3 EFFECTIVE DATE

See Block 16C

4 REQUISITION/PURCHASE REQ NO.

See Schedule

5 PROJECT NO. (if applicable)

6 ISSUED BY

CODE

LARC

7 ADMINISTERED BY (if other than item 6)

CODE

LARC

NASA/Langley Research Center  
9B Langley Blvd., Bldg. 1195B  
M/S 126  
Hampton VA 23681-2199

NASA/Langley Research Center  
9B Langley Blvd., Bldg. 1195B  
M/S 126  
Hampton VA 23681-2199

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

SCIENCE APPLICATIONS INTL CORP  
Attn: [REDACTED]  
10260 CAMPUS POINT DR  
SAN DIEGO CA 92121-1522

9A AMENDMENT OF SOLICITATION NO.

9B DATED (SEE ITEM 11)

X 10A MODIFICATION OF CONTRACT/ORDER NO

NN105AA01B  
NN108AA37T

10B DATED (SEE ITEM 13)

12/19/2007

CODE

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:

\$205,194.00

PR: 4200297957

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-Increase Level of Effort

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 (i) revise the Statement of Work (SOW); (ii) increase the task estimate; (iii) allot additional funding in the amount of \$205,194 [REDACTED] and (iv) extend the period of performance through 11/30/09. As a result, the following changes are hereby made:

- a. Reference the Task SOW. The SOW is hereby deleted in its entirety and replaced with the revised SOW attached hereto.
- b. Reference the Task Cover Page, Optional Form (OF) 347, Block 13. The task completion date is hereby changed to read 11/30/09.
- c. Reference the Task Cover Page, Optional Form (OF) 347, Block 17(e). The Task Estimated Cost Plus Fixed Fee Amount is hereby changed to read \$1,199,325 [REDACTED] Fee).

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 8A or 10A, as hereof changed, remain unchanged and in full force and effect.

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

Robin Amburn Grob, Contracts Manager

15B NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

David O. Garner

15C CONTRACTOR OFFICER

[Signature of Robin Amburn Grob]

15D DATE SIGNED

6/17/09

15E UNITED STATES OF AMERICA

[Signature of David O. Garner]

15F DATE SIGNED

6/17/09

NSN 7540-01 152 8070

Previous edition unusable

STANDARD FORM 30 (REV 10-83)

Prescribed by GSA

FAR (48 CFR) 53.243

d. Reference Contract Summary, Task Order Page 2. Delete subject page and incorporate the attached revised Contract Summary page reflecting the changes to the Task Summary, Funding Summary, and Period of Performance.

e. In accordance with Paragraph B.4, of the Basic Contract (NNL05AA01B), FAR 52.232-20 applies at the Task Order level. In accordance with this clause, NFS 1852.232-81 is incorporated as follows:

**"CONTRACT FUNDING, (NFS 1852.232-81) (JUN 1990)**

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Cost clause, the total amount allotted by the Government to this Task Order is [REDACTED]. This allotment is for this task order and covers the following estimated period of performance: 19 December 2007 through 30 November 2009.

(b) An additional amount of [REDACTED] is obligated under this Task Order for payment of fee.

(End of Clause)"

**SUMMARY OF TASK ORDER VALUE / FUNDING**

TASK ORDER DOCUMENT	TASK VALUE SUMMARY			TASK FUNDING SUMMARY		
	ESTIMATED COST	FIXED FEE	TOTAL CPFF	ESTIMATED COST	FIXED FEE	TOTAL CPFF
BASE	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 01	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 02	[REDACTED]	[REDACTED]	\$699,826	[REDACTED]	[REDACTED]	\$699,826
Mod 03	[REDACTED]	[REDACTED]	\$994,131	[REDACTED]	[REDACTED]	\$994,131
Mod 04	[REDACTED]	[REDACTED]	\$994,131	[REDACTED]	[REDACTED]	\$994,131
Mod 05	[REDACTED]	[REDACTED]	\$1,199,325	[REDACTED]	[REDACTED]	\$1,199,325

NOTE: Period of performance for this task order is 19 December 2007 through 30 November 2009.

f. All other terms and conditions remain unchanged.

1. **Task Order Title:**

1.1 Science Mission Directorate (SMD) Earth Science Division (ESD) Campaign Analysis

2. **Contractual References:**

2.1 **Statement of Work Reference:** This requirement is pursuant to contract NNL05AA01B, between NASA Langley Research Center and [REDACTED] [REDACTED] Refer to Paragraphs 4.0 *Assessments* and 5.0 *Studies*.

2.2 **Limitation of Future Contracting Reference:** In support of this task order, the contractor:

- may have access to proprietary information and various other types of non-public data

As described in NASA Clause 1852.209-71 (Clause H.11, Limitation of Future Contracting, contained in contract NNL05AA01B), this work may give rise to a potential conflict of interest. Therefore, the contractor shall comply with Clause H.17, Handling of Data, and Exhibit D. Organizational Conflict of Interest Avoidance Plan, contained in contract NNL05AA01B.

3. **Purpose, Objective, and Background of Work to be Performed:**

3.1 The Space Mission Analysis Branch (SMAB) of the Systems Analysis and Concepts Directorate (SACD) of NASA Langley Research Center (LaRC) has been tasked by the Science Mission Directorate (SMD) Earth Science Division (ESD) Director Dr. Michael Freilich to provide a Campaign Analysis based assessment of the National Research Council (NRC) Earth Science and Applications Decadal Survey (DS) missions, with an immediate focus on the first four (SMAP, CLARREO, ICESat-II, and DESDynI), followed by the next five (HyspIRI, ASCENDS, SWOT, GEO-CAPE, and ACE). The Campaign Analysis methodology will enable detailed assessments of future missions for use in the development of candidate architecture options, incorporating probabilistic methods to address science value, technology, mission performance, schedule, and cost risks.

The Campaign Analyses of the DS missions shall utilize the skills and capabilities of LaRC (SACD, Science Directorate, and Systems Engineering Directorate, and Science Support Office), other NASA centers, other Government agencies, and contractors to conduct the appropriate mission studies.

The contractor shall provide Reliability Estimates, Integrated Cost/Schedule Risk Studies, and Technology Infusion Studies for the [REDACTED] DS missions.

4. **Description of the Work to be Performed:** The Contractor shall perform the following task requirements:

- 4.1 **Spacecraft Reliability Estimates:** The contractor shall provide estimates of on-orbit spacecraft reliability for the [REDACTED] DS missions. These estimates shall leverage capabilities demonstrated on Science Support Office (SSO) led Concept Study Report (CSR) Evaluations, with probabilistic considerations where feasible.

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products.

- 4.2 **Integrated Cost/Schedule Risk Studies:** The contractor shall perform Integrated Cost/Schedule Risk Studies for [REDACTED] DS missions. Each study shall encompass probabilistic assessments of mission schedule and cost, including the following elements:

- Schedule estimates by project phases
- Quantifications of uncertainty
- Technology considerations
- Qualification of feedback and synergy between missions
- Characterization of threats
- Recommended hedging strategies

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products. The functional model will integrate real world data where possible, but may contain clearly defined notional data for the purposes of demonstrating functionality.

- 4.3 **Technology Infusion Studies:** The contractor shall perform Technology Infusion Studies for the nine DS missions. Each study shall address the costs and benefits associated with relevant technologies identified by the Earth Science Technology Office (ESTO) and the LaRC Technology Assessment Team. Technology Infusion Studies shall incorporate Integrated Cost/Schedule Risk elements to the maximum extent practicable.

A functional mathematical model shall be provided as an interim product to ensure that study results will provide applicable products. The functional model will integrate real world data where possible, but may contain clearly defined notional data for the purposes of demonstrating functionality.

4.4 The contractor shall prepare completion documents for task closeout purposes.

5. **Deliverables:**

- 5.1. Spacecraft Reliability Estimator functional models.
- 5.2. Integrated Cost/Schedule Risk functional models.
- 5.3. Demonstration of Spacecraft Reliability Estimator and Integrated Cost/Schedule Risk functional models.
- 5.4. Draft Reliability Estimates and Integrated Cost/Schedule Risk Study results, for the [REDACTED] NRC Decadal Survey Missions, with relevant analysis models.
- 5.5. Presentation of Reliability Estimates and Integrated Cost/Schedule Risk Study results for the [REDACTED] NRC Decadal Survey Missions.
- 5.6. Technology Infusion functional models.
- 5.7. Demonstration of Technology Infusion functional models.
- 5.8. Draft Technology Infusion Study results for the [REDACTED] NRC Decadal Survey Missions, with relevant analysis models.
- 5.9. Presentation of Technology Infusion Study results for the [REDACTED] NRC Decadal Survey Missions.
- 5.10. Draft Reliability Estimates and Integrated Cost/Schedule Risk Study results for the [REDACTED] NRC Decadal Survey Missions, with relevant analysis models.
- 5.11. Presentation of Reliability Estimates and Integrated Cost/Schedule Risk Study results for the [REDACTED] NRC Decadal Survey Missions.
- 5.12. Draft Technology Infusion Study results for the second five NRC Decadal Survey Missions, with relevant analysis models.
- 5.13. Presentation of Technology Infusion Study results for the second five NRC Decadal Survey Missions.

6. **Government Furnished Items:** The contractor will be provided with supporting data, implementation support, and interface requirements.

7. **Other Information Needed for Task Performance:** NA.

8. **Period of Performance/Schedule:**

Milestone Number	Paragraph	Milestones	Dates
1	5.1	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED] [REDACTED] [REDACTED]

			[REDACTED]
2	5.2	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
3	5.3	Presentation at NASA HQ	[REDACTED]
4	5.4	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
5	5.5	Presentation at NASA HQ or to TM	[REDACTED]
6	5.6	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
7	5.7	Presentation to TM	[REDACTED]
8	5.8	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
9	5.9	Presentation at NASA HQ or to TM	[REDACTED]
10	5.10	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]
11	5.11	Presentation at NASA HQ or to TM	[REDACTED]
12	5.12	Secure electronic transfer (PKI, HTTPS, etc.)	[REDACTED]

13	5.13	Presentation at NASA HQ or to TM	[REDACTED]
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9. **NASA Task Monitor**

NASA TM: Washito A. Sasamoto

Mail Stop (M/S): 462

Phone Number: (757)864-1923 / Fax Number: (757)864-1975

E-Mail Address: Washito.A.Sasamoto@nasa.gov

10. **Concurrences and Approval**

Concurrence: Washito A. Sasamoto Date 06/1/2009

Name: NASA/LaRC/SACD SMAB TM

Approval: \_\_\_\_\_ Date \_\_\_\_\_

Jennings B. Cherry, NASA/LaRC/SSO COTR

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE	PAGE OF PAGES 1 2
2. AMENDMENT/MODIFICATION NO. 000006	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (if applicable)
6. ISSUED BY NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199	CODE LARC	7. ADMINISTERED BY (if other than Item 6) NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199	CODE LARC
8. NAME AND ADDRESS OF CONTRACTOR (No. street, county, State and ZIP Code) SCIENCE APPLICATIONS INTL CORP Attn: <span style="background-color: black; color: black;">XXXXXXXXXX</span> 10260 CAMPUS POINT DR SAN DIEGO CA 92121-1522		(x) 9A. AMENDMENT OF SOLICITATION NO.	9B. DATED (SEE ITEM 11)
CODE		FACILITY CODE	X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNL05AA01B NNL08AA37T 10B. DATED (SEE ITEM 13) 12/19/2007

**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 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)**

See Schedule

**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 Extend the Period of Performance

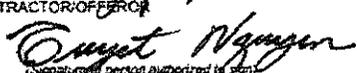
**E. IMPORTANT:** Contractor is not  is required to sign this document and return 1 copies to the issuing office.

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

The purpose of this modification is to extend the period of performance through 1/22/10 at no additional cost to either party. As a result, the following changes are hereby made:

- A. Reference the Task Cover Page, Optional Form (OF) 347, Block 15. The task completion date is hereby changed to read 1/22/10.
- B. Reference Contract Summary, Task Order Page 2. Delete subject page and incorporate the attached revised Contract Summary page reflecting the change to the Period of Performance.
- C. All other terms and conditions of the task order 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) Tuyet Nguyen, Contracts Manager	15A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) David O. Garner
15B. CONTRACTOR/OFFEROR 	15C. DATE SIGNED 12-2-09
15D. UNITED STATES OF AMERICA	15E. SIGNATURE OF CONTRACTING OFFICER 

d. Reference Contract Summary, Task Order Page 2. Delete subject page and incorporate the attached revised Contract Summary page reflecting the changes to the Task Summary, Funding Summary, and Period of Performance.

e. In accordance with Paragraph B.4, of the Basic Contract (NNL05AA01B), FAR 52.232-20 applies at the Task Order level. In accordance with this clause, NFS 1852.232-81 is incorporated as follows:

**"CONTRACT FUNDING, (NFS 1852.232-81) (JUN 1990)**

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Cost clause, the total amount allotted by the Government to this Task Order is [REDACTED]. This allotment is for this task order and covers the following estimated period of performance: 19 December 2007 through 22 January 2010.

(b) An additional amount of [REDACTED] is obligated under this Task Order for payment of fee.

(End of Clause)"

**SUMMARY OF TASK ORDER VALUE / FUNDING**

TASK ORDER DOCUMENT	TASK VALUE SUMMARY			TASK FUNDING SUMMARY		
	ESTIMATED COST	FIXED FEE	TOTAL CPFF	ESTIMATED COST	FIXED FEE	TOTAL CPFF
BASE	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 01	[REDACTED]	[REDACTED]	\$347,711	[REDACTED]	[REDACTED]	\$347,711
Mod 02	[REDACTED]	[REDACTED]	\$699,826	[REDACTED]	[REDACTED]	\$699,826
Mod 03	[REDACTED]	[REDACTED]	\$994,131	[REDACTED]	[REDACTED]	\$994,131
Mod 04	[REDACTED]	[REDACTED]	\$994,131	[REDACTED]	[REDACTED]	\$994,131
Mod 05	[REDACTED]	[REDACTED]	\$1,199,325	[REDACTED]	[REDACTED]	\$1,199,325

NOTE: Period of performance for this task order is 19 December 2007 through 22 January 2010.

f. All other terms and conditions remain unchanged.