LANGLEY SIMULATION AND AIRCRAFT TECHNICAL SERVICES (LSATS) CONTRACT NNL11AA08C (Contract and SOW)

The below information has been determined to be exempt from disclosure under FOIA Exemption b(4) and has been deleted from the contract.

- Values on Page 2 of SF 33
- Section B.2: Estimated Cost of Contract and the Fixed Fee
- Section B.3(a): Estimated Cost-Plus Fixed Fee of CLIN 1
- Section B.3(b): Estimated Cost-No-Fee of CLIN 2
- Section B.3:(c): Estimated Cost-Plus-Fixed Fee of CLIN 3
- Section B.3(d): Estimated Cost-No-Fee of CLIN 4
- Section B.3(e): Total Estimated Value "Excluding" Options
- Section B.4(a): Allotted Amount
- Section B.4(b): Payment Fee
- Section H.6: Key Personnel
- Section H.9: Costs and Fees of CLIN 3 and CLIN 4
- Section H.17: Names of Concern
- Exhibit C: Small Business Subcontracting Plan
- Exhibit F: Organizational Conflict of Interest Plan
- Exhibit G: IT Security Plan
- Exhibit I: The Safety and Health Plan

Exemption 4 of the FOIA protects "trade secrets and commercial or financial information obtained from a person that is privileged or confidential." This exemption is intended to protect the interests of both the government and submitters of information.

It has been held that commercial material is "confidential" for purposes of this exemption if its disclosure would be likely to have either of the following effects: (1) impair the Government's ability to obtain necessary information in the future; or (2) cause substantial harm to the competitive position of the person from whom the information was obtained, National Parks and Conservation v. Morton, 498 F. 2d 765 (D.C. Cir. 1974).

SOLICITATION, OFFER AND AWARD

1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)	RATING	PAGE OF PAGES
		1 | 43

2. CONTRACT NUMBER	3. SOLICITATION NUMBER	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NUMBER
NNL11AA08C	NNL10ZB1016R	☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)	07/27/2010	1200365419

7. ISSUED BY	CODE	8. ADDRESS OFFER TO (If other than Item 7)
NASA/Langley Research Center 9B Langley Blvd., Bldg. 1195B M/S 126 Hampton VA 23681-2199	LARC	

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and _____ copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if hand carried, in the depository located in _____ until _____ (Hour) local time _____ (Date)

CAUTION: LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-1. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE (NO COLLECT CALLS) AREA CODE	NUMBER	EXT.	C. E-MAIL ADDRESS
	Sandra Wallace	757	864-3640		sandra.wallace@nasa.gov

11. TABLE OF CONTENTS

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OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52.232.8)	10 CALENDAR DAYS (%)	20 CALENDAR DAYS (%)	30 CALENDAR DAYS (%)	CALENDAR DAYS (%)
	NT30			

14. ACKNOWLEDGEMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated):	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY
FEDERAL SYSTEMS Attn: Joy Scrimshire 11720 PLAZA AMERICA DR STE 300 RESTON VA 20190-4757	4W798	

15B. TELEPHONE NUMBER AREA CODE	NUMBER	EXT.	15C. CHECK IF REMITTANCE ADDRESS ☐ IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.

16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)
JOY J. SCRIMSHIRE
CONTRACTS DIRECTOR
FEDERAL SYSTEMS
UNISYS CORPORATION

17. SIGNATURE: Joy J. Scrimshire — 18. OFFER DATE: 12/13/2010

AWARD (To be completed by government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
	$48,373,611.00	PR 4200365419: $10,000.00 (Complete)

22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:
☐ 10 U.S.C. 2304 (c) ( ) ☐ 41 U.S.C. 253 (c) ( )

23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified) — ITEM

24. ADMINISTERED BY (If other than Item 7)	CODE	25. PAYMENT WILL BE MADE BY	CODE
See Schedule G	LARC	See Schedule G	NSSC

26. NAME OF CONTRACTING OFFICER (Type or print)
Richard Siebels

27. UNITED STATES OF AMERICA (Signature of Contracting Officer) — 28. AWARD DATE: 12/13/10

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

AUTHORIZED FOR LOCAL REPRODUCTION
Previous edition is unusable

STANDARD FORM 33 (Rev. 9-97)
Prescribed by GSA - FAR (48 CFR) 53.214(c)

NAME OF OFFEROR OR CONTRACTOR
FEDERAL SYSTEMS

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	INCO TERMS 1: FOB INCO TERMS 2: DESTINATION FOB: Destination				
001	Base Period Technical Effort (CPFF) Period of Performance: January 27, 2011 - January 26, 2014 Incrementally Funded Amount: $10,000.00				(b) (4)
002	Base Period Other Direct Costs (ODCs) (Cost-No-Fee) Period of Performance: January 27, 2011 - January 26, 2014				(b) (4)
003	Option Period Technical Effort (CPFF) Period of Performance: January 27, 2014 - January 26, 2016 Amount: $12,103,557.00 (Option Line Item)				
004	Option Period Other Direct Costs (ODCs) (Cost-No-Fee) Period of Performance: January 27, 2014 - January 26, 2016 Amount: $8,126,062.00 (Option Line Item)				

PART I – THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES/PRICES

NAMING/NUMBERING SCHEME FOR CLAUSES IN FULL TEXT AND FOR CLAUSES INCORPORATED BY REFERENCE (LaRC 52.201-90) (Aug 2008)

There are various types of clauses contained in the contract. Most clauses will reference a numbered citation such as: Federal Acquisition Regulation (FAR 52.#); NASA FAR Supplement (NFS 1852.#); or Langley Research Center (LaRC 52.#). There are also clauses that have no designation. Those clauses were written specifically for this contract by LaRC or are generic Agency clauses specific for this contract type and no numbered citation exists.

B.1 SUPPLIES AND/OR SERVICES TO BE PROVIDED

The Contractor shall provide all resources (except as may be expressly stated in the contract as furnished by the Government) necessary to deliver and/or perform the items below in accordance with the Statement of Work (SOW) for Langley Simulation and Aircraft Technical Services (LSATS) (Exhibit A). This contract has a line item for Phase-In/Transition which is a firm-fixed price (FFP) contract line item.

Contract Line Item Number (CLIN)	Period/SOW Section	Type
1	Base Period Technical Effort (SOW Section 1.0 through 2.0)	CPFF
2	Base Period Other Direct Costs (ODCs) (SOW Section 1.0 through 2.0)	Cost-No-Fee
3	Option Period Technical Effort (SOW Section 1.0 through 2.0)	CPFF
4	Option Period Other Direct Costs (ODCs) (SOW Section 1.0 through 2.0)	Cost-No-Fee

(End of clause)

B.2 ESTIMATED COST AND FIXED FEE (1852.216-74) (DEC 1991)

The estimated cost of this contract is [redacted] exclusive of the fixed fee of [redacted]. The total estimated cost and fixed fee is $48,373,611.

(End of clause)

B.3 CONTRACT VALUE

(a) The estimated Cost-Plus-Fixed-Fee value of CLIN 1 is $[redacted].

(b) The estimated Cost-No-Fee value of CLIN 2 is $[redacted].

(c) The estimated Cost-Plus-Fixed-Fee value of CLIN 3 (if exercised) is $[redacted].

(d) The estimated Cost-No-Fee value of CLIN 4 (if exercised) is $[redacted].

(e) The total estimated value of the contract excluding options is $[redacted] and including options is $48,373,611.

(End of clause)

B.4 CONTRACT FUNDING (1852.232-81) (JUN 1990) (EXCLUDING CLIN 1)

(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 $[redacted]. This allotment is for **CLINs 1 and 2** and covers the following estimated period of performance: January 27, 2011 through February 28, 2011.

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

(End of clause)

End of Section

SECTION C - DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK

C.1 SPECIFICATION/STATEMENT OF WORK

The Contractor shall provide the item or services specified in Section B in accordance with the following:

Exhibit A

End of Section

SECTION D - PACKAGING AND MARKING

D.1 PACKAGING, HANDLING, AND TRANSPORTATION (1852.211-70) (SEP 2005)

(a) The Contractor shall comply with NASA Procedural Requirements (NPR) 6000.1, "Requirements for Packaging, Handling, and Transportation for Aeronautical and Space Systems, Equipment, and Associated Components", as may be supplemented by the statement of work or specifications of this contract, for all items designated as Class I, II, or III.

(b) The Contractor's packaging, handling, and transportation procedures may be used, in whole or in part, subject to the written approval of the Contracting Officer, provided (1) the Contractor's procedures are not in conflict with any requirements of this contract, and (2) the requirements of this contract shall take precedence in the event of any conflict with the Contractor's procedures.

(c) The Contractor must place the requirements of this clause in all subcontracts for items that will become components of deliverable Class I, II, or III items.

(End of clause)

End of Section

SECTION E - INSPECTION AND ACCEPTANCE

E.1 CLAUSES INCORPORATED BY REFERENCE -- SECTION E

Clause(s) below at the beginning of this Section are incorporated by reference, with the same force and effect as if they were given in full text. Clauses incorporated by reference which require a fill-in by the Government include the text of the affected paragraph(s) only. This does not limit the clause to the affected paragraph(s). The Contractor is responsible for understanding and complying with the entire clause. The full text of the clause is available at the addresses contained in clause 52.252-2, Clauses Incorporated by Reference, of this contract.

(End of clause)

CLAUSE NUMBER	CLAUSE TITLE
52.246-3	INSPECTION OF SUPPLIES - COST-REIMBURSEMENT (MAY 2001)
52.246-5	INSPECTION OF SERVICES - COST REIMBURSEMENT (APR 1984)

E.2 HIGHER-LEVEL CONTRACT QUALITY REQUIREMENT (52.246-11) (FEB 1999)

The Contractor shall comply with the higher-level quality standard selected below.

(a) ANSI/ISO/ASQC Q ISO 9001, Quality Management Systems Requirements.

(b) The Contractor shall comply with NASA Workmanship Standards for all Software Engineering, development and maintenance activities and comply with these documents:

- NPR 7150.2A NASA Software Engineering Requirements,
- Langley Management System (LMS) Center Procedures for software development located at https://lms.larc.nasa.gov

LMS CENTER PROCEDURES	TITLE
LMS-CP-5528 Rev. B-4	SOFTWARE PLANNING, DEVELOPMENT, ACQUISITION, MAINTENANCE, AND OPERATIONS
LMS-CP-5529 Rev. B	SOFTWARE CONFIGURATION MANAGEMENT PLANNING FOR LOW-, HIGH-, AND CRITICAL-CONTROL SOFTWARE

- NASA standards Located at http://standards.nasa.gov/documents/nasa:

NASA STANDARD	TITLE
NASA-STD-7009	STANDARD FOR MODEL AND SIMULATION
NASA-STD-8739.8	SOFTWARE ASSURANCE STANDARD
NASA-STD-8739.13B	SOFTWARE SAFETY STANDARD

(c) To perform requirements which involve software development and/or maintenance for human-rated software systems, non-human space rated software systems, or mission

support software; the Contractor shall follow Capability Maturity Model – Integration (CMMI®) for Development Capability Level 3 processes.

(d) AS9100, Quality Management System Certification/Registration Requirements.

(End of clause)

End of Section

SECTION F - DELIVERIES OR PERFORMANCE

F.1 CLAUSES INCORPORATED BY REFERENCE -- SECTION F

Clause(s) below at the beginning of this Section are incorporated by reference, with the same force and effect as if they were given in full text. Clauses incorporated by reference which require a fill-in by the Government include the text of the affected paragraph(s) only. This does not limit the clause to the affected paragraph(s). The Contractor is responsible for understanding and complying with the entire clause. The full text of the clause is available at the addresses contained in clause 52.252-2, Clauses Incorporated by Reference, of this contract.

(End of clause)

CLAUSE NUMBER	CLAUSE TITLE
52.242-15	**STOP-WORK ORDER (AUG 1989) ALT I (APR 1984)**

F.2 PERIOD OF PERFORMANCE

The base period of performance of this contract shall be January 27, 2011 to January 26, 2014. One option period exists for January 27, 2014 to January 26, 2016

(End of clause)

F.3 PLACE OF PERFORMANCE - SERVICES

The services to be performed under this contract shall be performed at the following location(s): NASA Langley Research Center, Hampton, VA, the Contractor’s facility and other sites that may be designated by the Contracting Officer.

(End of clause)

End of Section

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 CLAUSES INCORPORATED BY REFERENCE -- SECTION G

Clause(s) below at the beginning of this Section are incorporated by reference, with the same force and effect as if they were given in full text. Clauses incorporated by reference which require a fill-in by the Government include the text of the affected paragraph(s) only. This does not limit the clause to the affected paragraph(s). The Contractor is responsible for understanding and complying with the entire clause. The full text of the clause is available at the addresses contained in clause 52.252-2, Clauses Incorporated by Reference, of this contract.

(End of clause)

CLAUSE NUMBER	CLAUSE TITLE
1852.216-75	**PAYMENT OF FIXED FEE (DEC 1988)**
1852.227-11	**PATENT RIGHTS--RETENTION BY THE CONTRACTOR (SHORT FORM)(Applicable to Small Businesses and Nonprofit Organizations)**
1852.227-70	**NEW TECHNOLOGY (MAY 2002) (Applicable to Large Businesses)**
1852.227-86	**COMMERCIAL COMPUTER SOFTWARE--LICENSING (DEC 1987)**
1852.242-73	**NASA CONTRACTOR FINANCIAL MANAGEMENT REPORTING (NOV 2004)**

G.2 SUBMISSION OF VOUCHERS FOR PAYMENT (1852.216-87) (MAR 1998)

(a) The designated billing office for cost vouchers for purposes of the Prompt Payment clause of this contract is indicated below. Public vouchers for payment of costs shall include a reference to the number of this contract.

(b) (1) If the contractor is authorized to submit interim cost vouchers directly to the NASA paying office, the original voucher should be submitted to:

NASA Shared Services Center
Financial Mgmt Division / Accts Payable, Bldg 1111, C. Road
Stennis Space Center, MS 39529
Fax 866-209-5415
Email: NSSC-AccountsPayable@nasa.gov

(2) For any period that the Defense Contract Audit Agency has authorized the Contractor to submit interim cost vouchers directly to the Government paying office, interim vouchers are not required to be sent to the Auditor, and are considered to be provisionally approved for payment, subject to final audit.

(3) Copies of vouchers should be submitted as directed by the Contracting Officer.

(c) If the contractor is not authorized to submit interim cost vouchers directly to the paying office as described in paragraph (b), the contractor shall prepare and submit vouchers as follows:

(1) One original Standard Form (SF) 1034, SF 1035, or equivalent Contractor's attachment to:

DCAA – Reston Branch
171 Eldon Street, Suite 300
Herndon, VA 20170
Mitchell Campbell
Telephone: 703-439-3786
Fax: 703-439-3139

(2) One copy via email of the SF 1034, SF 1035A, or equivalent Contractor's attachment to the following: NASA LaRC Contracting Officer

(3) The Contracting Officer may designate other recipients as required.

(d) (1) Public vouchers for payment of fee shall be prepared similarly to the procedures in paragraphs (b) or (c) of this clause, whichever is applicable, and be forwarded to the NASA LaRC Contracting Officer.

(e) In the event that amounts are withheld from payment in accordance with provisions of this contract, a separate voucher for the amount withheld will be required before payment for that amount may be made.

(End of clause)

G.3 RESERVED

G.4 TECHNICAL DIRECTION (1852.242-70) (SEP 1993)

(a) Performance of the work under this contract is subject to the written technical direction of the Contracting Officer Technical Representative (COTR), who shall be specifically appointed by the Contracting Officer in writing in accordance with NASA FAR Supplement 1842.270. "Technical direction" means a directive to the Contractor that approves approaches, solutions, designs, or refinements; fills in details or otherwise completes the general description of work or documentation items; shifts emphasis among work areas or tasks; or furnishes similar instruction to the Contractor.

(b) The COTR does not have the authority to, and shall not, issue any instruction purporting to be technical direction that:

(1) Constitutes an assignment of additional work outside the statement of work;

(2) Constitutes a change as defined in the changes clause;

(3) Constitutes a basis for any increase or decrease in the total estimated contract cost, the fixed fee (if any), or the time required for contract performance;

(4) Changes to any of the expressed terms, conditions, or specifications of the contract;

or

(5) Interferes with the contractor's rights to perform the terms and conditions of the contract.

(c) All technical direction shall be issued in writing by the COTR.

(d) The Contractor shall proceed promptly with the performance of technical direction duly issued by the COTR in the manner prescribed by this clause and within the COTR's authority. If, in the Contractor's opinion, any instruction or direction by the COTR falls within any of the categories defined in paragraph (b) of this clause, the Contractor shall not proceed but shall notify the Contracting Officer in writing within 5 working days after receiving it and shall request the Contracting Officer to take action as described in this clause. Upon receiving this notification, the Contracting Officer shall either issue an appropriate contract modification within a reasonable time or advise the Contractor in writing within 30 days that the instruction or direction is:

(1) Rescinded in its entirety; or

(2) Within the requirements of the contract and does not constitute a change under the changes clause of the contract, and that the Contractor should proceed promptly with its performance.

(e) A failure of the contractor and contracting officer to agree that the instruction or direction is both within the requirements of the contract and does not constitute a change under the changes clause, or a failure to agree upon the contract action to be taken with respect to the instruction or direction, shall be subject to the Disputes clause of this contract.

(f) Any action(s) taken by the contractor in response to any direction given by any person other than the Contracting Officer or the COTR shall be at the Contractor's risk.

(End of clause)

G.5 CONTRACTOR REQUESTS FOR GOVERNMENT-PROVIDED PROPERTY (1852.245-70) (SEP 2007) (DEVIATION)

(a) The Contractor shall provide all property required for the performance of this contract. The Contractor shall not acquire or construct items of property to which the Government will have title under the provisions of this contract without the Contracting Officer's written authorization. Property which will be acquired as a deliverable end item as material or as a component for incorporation into a deliverable end item is exempt from this requirement.

(b) (1) In the event the Contractor is unable to provide the property necessary for performance, and the Contractor requests provision of property by the Government, the Contractor's request shall—

(i) Justify the need for the property;

(ii) Provide the reasons why contractor-owned property cannot be used;

(iii) Describe the property in sufficient detail to enable the Government to screen its inventories for available property or to otherwise acquire property, including applicable manufacturer, model, part, catalog, National Stock Number or other

pertinent identifiers;

(iv) Combine requests for quantities of items with identical descriptions and estimated values when the estimated values do not exceed $100,000 per unit; and

(v) Include only a single unit when the acquisition or construction value equals or exceeds $100,000.

(2) Contracting Officer authorization is required for items the Contractor intends to manufacture as well as those it intends to purchase.

(3) The Contractor shall submit requests to the Contracting Officer no less than 30 days in advance of the date the Contractor would, should it receive authorization, acquire or begin fabrication of the item.

(c) The Contractor shall maintain copies of Contracting Officer authorizations, appropriately cross-referenced to the individual property record, within its property management system.

(d) Property furnished from Government excess sources is provided as-is, where-is. The Government makes no warranty regarding its applicability for performance of the contract or its ability to operate. Failure of property obtained from Government excess sources under this clause is insufficient reason for submission of requests for equitable adjustments discussed in the clause at 52.245-1, Government Property.

(End of clause)

G.6 INSTALLATION-ACCOUNTABLE GOVERNMENT PROPERTY (1852.245-71) (SEP 2007) (DEVIATION)

(a) The Government property described in paragraph (c) of this clause may be made available to the Contractor on a no-charge basis for use in performance of this contract. This property shall be utilized only within the physical confines of the NASA installation that provided the property unless authorized by the contracting officer under (b)(1)(iv). Under this clause, the Government retains accountability for, and title to, the property, and the Contractor shall comply with the following:

(1) NASA Procedural Requirements (NPR) 4100.1, NASA Materials Inventory Management Manual;

(2) NASA Procedural Requirements (NPR) 4200.1, NASA Equipment Management Procedural Requirements;

(3) NASA Procedural Requirement (NPR) 4300.1, NASA Personal Property Disposal Procedural Requirements

Contract Managers shall ensure all Installation Accountable Government Property is reassigned before the current contractor equipment user resigns or is terminated.

Property not recorded in NASA property systems must be managed in accordance with the requirements of FAR 52.245-1.

The Contractor shall establish and adhere to a system of written procedures to assure continued, effective management control and compliance with these user responsibilities. Such procedures must include holding employees liable, when appropriate, for loss, damage, or destruction of Government property.

(b) (1) The official accountable recordkeeping, financial control, and reporting of the property subject to this clause shall be retained by the Government and accomplished within NASA management information systems prescribed by the installation Supply and Equipment Management Officer (SEMO) and Financial Management Officer. If this contract provides for the Contractor to acquire property, title to which will vest in the Government, the following additional procedures apply:

(i) The Contractor's purchase order shall require the vendor to deliver the property to the installation central receiving area.

(ii) The Contractor shall furnish a copy of each purchase order, prior to delivery by the vendor, to the installation central receiving area.

(iii) The Contractor shall establish a record of the property as required by FAR 52.245-1, Government Property, and furnish to the Industrial Property Officer a DD Form 1149, Requisition and Invoice/Shipping Document, (or installation equivalent) to transfer accountability to the Government within 5 working days after receipt of the property by the Contractor. The Contractor is accountable for all contractor-acquired property until the property is transferred to the Government's accountability.

(iv) Contractor use of Government property at an off-site location and off-site subcontractor use require advance approval of the Contracting Officer and notification of the Industrial Property Officer. The property shall be considered Government furnished and the Contractor shall assume accountability and financial reporting responsibility. The Contractor shall establish records and property control procedures and maintain the property in accordance with the requirements of FAR 52.245-1, Government Property, until its return to the installation. NASA Procedural Requirements related to property loans shall not apply to offsite use of property by contractors.

(2) After transfer of accountability to the Government, the Contractor shall continue to maintain such internal records as are necessary to execute the user responsibilities identified in paragraph (a) of this clause and document the acquisition, billing, and disposition of the property. These records and supporting documentation shall be made available, upon request, to the SEMO and any other authorized representatives of the Contracting Officer.

(c) The following property and services are provided:

(1) Office space, work area space, and utilities. Government telephones are available for official purposes only.

(2) Office furniture.

(3) Property listed in **Exhibit D**.

(i) If the Contractor acquires property, title to which vests in the Government pursuant to other provisions of this contract, this property also shall become accountable to the Government upon its entry into Government records.
(ii) The Contractor shall not bring to the installation for use under this contract any property owned or leased by the Contractor, or other property that the Contractor is accountable for under any other Government contract, without the Contracting Officer's prior written approval.

(4) Safety and fire protection for Contractor personnel and facilities.

(5) Medical treatment of a first-aid nature for Contractor personnel injuries or illnesses sustained during on-site duty.

(6) Cafeteria privileges for Contractor employees during normal operating hours.

(7) Building maintenance for facilities occupied by Contractor personnel.

(8) Moving and hauling for office moves, movement of large equipment, and delivery of supplies. Moving services may be provided on-site, as approved by the Contracting Officer.

(End of clause)

G.7 DESIGNATION OF NEW TECHNOLOGY REPRESENTATIVE AND PATENT REPRESENTATIVE (NASA 1852.227-72) (JUL 1997)

(a) For purposes of administration of the clause of this contract entitled "New Technology" or "Patent Rights -- Retention by the Contractor (Short Form)", whichever is included, the following named representatives are hereby designated by the Contracting Officer to administer such clause:

Title	**Address (including zip code)**
New Technology Representative	CORT: Victoria Chung M/S 125B NASA Langley Research Center Hampton, VA 23681-2199
Patent Counsel	Patent Counsel M/S 141 NASA Langley Research Center Hampton, VA 23681-2199

(b) Reports of reportable items, and disclosure of subject inventions, interim reports, final reports, utilization reports, and other reports required by the clause, as well as any correspondence with respect to such matters, should be directed to the New Technology Representative unless transmitted in response to correspondence or request from the Patent Representative. Inquires or requests regarding disposition of rights, election of rights, or related matters should be directed to the Patent Representative. This clause shall be included in any subcontract hereunder requiring a "New Technology" clause or "Patent Rights--Retention by the Contractor (Short Form)" clause, unless otherwise authorized or directed by the Contracting

Officer. The respective responsibilities and authorities of the above-named representatives are set forth in 1827.305-370 of the NASA FAR Supplement.

(End of clause)

End of Section

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 CLAUSES INCORPORATED BY REFERENCE -- SECTION H

Clause(s) below at the beginning of this Section are incorporated by reference, with the same force and effect as if they were given in full text. Clauses incorporated by reference which require a fill-in by the Government include the text of the affected paragraph(s) only. This does not limit the clause to the affected paragraph(s). The Contractor is responsible for understanding and complying with the entire clause. The full text of the clause is available at the addresses contained in clause 52.252-2, Clauses Incorporated by Reference, of this contract.

(End of clause)

CLAUSE NUMBER	CLAUSE TITLE
1852.208-81	**RESTRICTIONS ON PRINTING AND DUPLICATING (NOV 2004)**
1852.223-70	**SAFETY AND HEALTH (APR 2002)**
1852.223-75	**MAJOR BREACH OF SAFETY OR SECURITY (FEB 2002)**
1852.225-70	**EXPORT LICENSES (FEB 2000)** Fill In: (b) NASA Langley Research Center
1852.235-73	**FINAL SCIENTIFIC AND TECHNICAL REPORTS (DEC 2006)**
1852.244-70	**GEOGRAPHIC PARTICIPATION IN THE AEROSPACE PROGRAM (APRIL 1985)**

H.2 OBSERVANCE OF LEGAL HOLIDAYS (1852.242-72) (AUG 1992)

(a) The on-site Government personnel observe the following holidays:
New Year's Day
Martin Luther King, Jr.'s Birthday
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veterans Day
Thanksgiving Day
Christmas Day

Any other day designated by Federal statute, Executive order, or the President's proclamation.

(b) When any holiday falls on a Saturday, the preceding Friday is observed. When any holiday falls on a Sunday, the following Monday is observed. Observance of such days by Government personnel shall not by itself be cause for an additional period of performance or entitlement of compensation except as set forth within the contract.

ALTERNATE I (SEP 1989)

(c) On-site personnel assigned to this contract shall not be granted access to the installation during the holidays in paragraph (a) of the clause, except as follows: the Contractor shall provide sufficient on-site personnel to perform round-the-clock requirements of critical work already in process, unless otherwise

instructed by the Contracting Officer or authorized representative. If the Contractor's on-site personnel work during a holiday other than those in paragraph (a) of this clause, no form of holiday or other premium compensation shall be reimbursed as either a direct or indirect cost. However, this does not preclude reimbursement for authorized overtime work that would have been overtime regardless of the status of the day as a holiday.

(d) The Contractor shall place identical requirements, including this paragraph, in all subcontracts that require performance of work on-site, unless otherwise instructed by the Contracting Officer.

ALTERNATE II (OCT 2000)

(e) When the NASA installation grants administrative leave to its Government employees (e.g., as a result of inclement weather, potentially hazardous conditions, or other special circumstances), Contractor personnel working on-site should also be dismissed. However, the contractor shall provide sufficient on-site personnel to perform round-the-clock requirements of critical work already in process, unless otherwise instructed by the Contracting Officer or authorized representative.

(f) Whenever administrative leave is granted to Contractor personnel pursuant to paragraph (e) of this clause, it shall be without loss to the Contractor. The cost of salaries and wages to the Contractor for the period of any such excused absence shall be a reimbursable item of cost under this contract for employees in accordance with the Contractor's established accounting policy.

(End of clause)

H.3 REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFEROR

The completed provision 52.204-8, Annual Representations and Certifications, including any amended representation(s) made at paragraph (b) of the provision; and other representations, certifications and other statements contained in Section K completed and submitted as part of the offer dated August 19, 2010 are hereby incorporated by reference in this resulting contract.

(End of clause)

H.4 RESERVED

H.5 SECURITY PROGRAM/NON-U.S. CITIZEN EMPLOYEE ACCESS REQUIREMENTS (LARC 52.204-91) (FEB 2007)

Access to the LaRC by non-U.S. citizen employees, including those in permanent resident alien status, shall be approved in accordance with NPR 1371.2A, " Requirements for Processing Requests for Access to NASA Installations or Facilities by Foreign Nationals or U.S. Citizens Who are Reps of Foreign Entities". Processing requires advance notice of a minimum of 20 days depending on the nationality of the non-U.S. citizen or foreign representative. Access authorization shall be for a maximum of one year and must be re-evaluated annually. Non-U.S. citizen employees or foreign representatives must be under escort at all times while on Center (by a NASA Civil Servant or permanently badged contractor) unless otherwise approved by the International Visitors Coordinator (IVC).

(End of clause)

H.6 KEY PERSONNEL AND FACILITIES (1852.235-71) (MAR 1989)

(a) The personnel and/or facilities listed below (or specified in the contract Schedule) are considered essential to the work being performed under this contract. Before removing, replacing, or diverting any of the listed or specified personnel or facilities, the Contractor shall (1) notify the Contracting Officer reasonably in advance and (2) submit justification (including proposed substitutions) in sufficient detail to permit evaluation of the impact on this contract.

(b) The Contractor shall make no diversion without the Contracting Officer's written consent; provided, that the Contracting Officer may ratify in writing the proposed change, and that ratification shall constitute the Contracting Officer's consent required by this clause.

(c) The list of personnel and/or facilities shown below may, with the consent of the contracting parties, be amended from time to time during the course of the contract to add or delete personnel and/or facilities.

Contract Program Manager – [redacted]
Software and Analysis Manager – [redacted]
Hardware Engineering, Operations, and Maintenance Manager – [redacted]

(End of clause)

H.7 SPECIAL REQUIREMENTS FOR SERVICE CONTRACTS (LaRC 52.211-99) (APR 2007)

(a) Inherently Governmental Functions - No inherently government functions as defined in FAR 2.101 and FAR 7.5 shall be performed by the contractor under this NASA LaRC contract. Contractor employees shall not participate in any deliberations or meetings intended to exercise an inherently governmental function. All final determinations such as binding the United States to take or not to take some action, selecting program priorities, and providing direction to Federal employees shall be made by the government. The contractor shall immediately notify the Contracting Officers Technical Representative (COTR) and the Contracting Officer if performance of an activity would result in the performance of an inherently governmental function.

(b) Non-Personal Services Contract - In accordance with FAR 37.101, this contract is a non-personal services contract in that the contractor personnel rendering the services shall not be subject, either by the contract's terms or by the manner of its administration, to the continuous supervision and control of a Government officer or employee. The contractor shall immediately notify the COTR and the Contracting Officer if, through contract administration, the actions of a government employee will result in the performance of a personal services contract.

(c) Identification of Contractor Personnel - All contractor personnel who attend meetings, answer government telephones, use a nasa.gov e-mail address, or work in situations where their actions could be construed as acts of Government officials shall clearly identify themselves as contractor personnel. Contractor employees shall never identify themselves as representing NASA but rather shall identify themselves as being under contract to NASA. Additionally, all contractor work spaces located on NASA LaRC shall be clearly identified.

(d) Marking of Reports - The contractor shall mark all documents or reports produced under this contract with the contractor name, contract number, and task order number if applicable.

(End of clause)

H.8 OBSERVATION OF REGULATIONS AND IDENTIFICATION OF CONTRACTOR'S EMPLOYEES (LARC 52.211-104) (FEB 2007)

(a) Observation of Regulations--In performance of that part of the contract work which may be performed at Langley Research Center (LaRC) or other Government installation, the Contractor shall require its employees to observe the rules and regulations as prescribed by the authorities at LaRC or other installation including all applicable Federal, NASA and Langley safety, health, environmental and security regulations.

(b) Identification Credentials--At all times while on LaRC property, the Contractor shall require its employees, subcontractors and agents to wear credentials issued by NASA LaRC. Contractors will be held accountable for these credentials, and may be required to validate its active employees on an annual basis with the NASA LaRC Security Office. Immediately upon employee termination or contract completion, badges shall be returned to the NASA LaRC Badge and Pass Office. It is agreed and understood that all NASA identification badges remain the property of NASA and the Government reserves the right to invalidate such badges at any time.

(c) Employee Out-Processing--The Contractor shall ensure that all employees who are terminated or no longer connected with work being performed under this contract are out processed through the LaRC Badge and Pass Office. Badges and keys must be accounted for and returned.

(End of clause)

H.9 OPTIONS (LaRC 52.217-95) (APR 2002)

Pursuant to the clause 52.217-9, Option to Extend the Term of the Contract, the Contractor hereby grants to the Government an option to extend the term of the contract for 1 additional period of 24 months. Such an option is to be exercisable by issuance of a unilateral modification. Upon exercise of such option by the Government, the following items will be increased by the amount specified below for the option period.

Item	Estimated Cost (B.2)	Fixed Fee(B.2)	Period of Performance (F.2)
Option Period – CLIN 3	$ [redacted]	$ [redacted]	24 Months
Option Period – CLIN 4	$ [redacted]	Not Applicable	24 Months

(End of clause)

H.10 RESERVED

H.11 OBSERVATION OF SAFETY AWARENESS EVENT BY CONTRACTOR EMPLOYEES (LARC 52.223-92) (MAY 2006)

The Langley Research Center (LaRC) Safety Awareness Event is an annual event dedicated to learning best practices for a safe work environment. When the LaRC Director designates the Safety Awareness Event, the Contractor shall require all onsite and near site employees to participate in Safety Awareness activities at LaRC.

(End of clause)

H.12 ORGANIZATIONAL CONFLICTS OF INTEREST - NOTICE, PROCEDURES AND REQUIREMENTS

(a) **Notice**. Pursuant to FAR 9.504, the Contracting Officer is responsible for identifying and evaluating potential Organizational Conflicts of Interest (OCI) early in the acquisition process and either avoiding, neutralizing, or mitigating such conflicts before contract award. This clause provides Offerors with notification of the potential OCIs that the CO has identified, the approach to neutralize and mitigate the potential OCIs that have been identified, and related OCI requirements. This acquisition will result in a contract under which the contractor will support varying research oriented requirements as they are identified. Therefore, in accordance with FAR Subpart 9.5, Organizational and Consultant Conflicts of Interest (OCI), the Contracting Officer has determined that there is a potential for this acquisition to give rise to the types of organizational conflicts of interest described below in paragraph (b). Based on the potential types of OCIs that could arise in relation to the resultant contract, the Contracting Officer has included OCI mitigation approaches within paragraph (c). [For purpose of this clause, the term "Contractor" includes any division, separate company, or subsidiary that is wholly-owned by the parent corporation, and includes any of the prime Contractors teammates and/or Subcontractor(s).]

(b) Description of Potential Conflicts. All three potential OCIs, Unequal Access to Information, Impaired Objectivity and Biased Ground Rules, have been identified throughout the SOW. Examples include:

Potential Unequal Access to Information Conflict:

SOW Section 2.0.3 - "The Contractor shall plan the appropriate resources to prepare, design, develop, integrate, test and execute projects, and produce required deliverables necessary to provide the researcher with supporting documentation and data (and/or other deliverables, e.g., software and/or hardware) specified."

Potential Impaired Objectivity and/or Biased Ground Rules Conflict:

SOW Section 2.2.5.1 - "The Contractor shall provide system engineering services to ensure the continuing operation and evolutionary improvement of the flight simulation and research aircraft facilities. Such services may include, but are not limited to:

> Definition and development of facilities upgrades and capabilities, including development of new ground-based and in-flight simulators which may include providing structural modifications to existing systems and facilities, performing systems analyses and conceiving designs for simulator systems/subsystems, and providing the implementation planning, integration and testing for new simulation systems."

(c) Description of OCI Mitigation Approaches. To ensure that the above potential OCIs that could occur under this contract are properly mitigated, this contract includes the following:

> (i) This clause that includes OCI requirements and procedures for identifying and mitigating potential OCIs.
>
> (ii) A requirement for Offerors to provide an OCI Mitigation Plan for evaluation. The OCI Mitigation Plan and its obligations are hereby incorporated in the contract by reference. Either the Contractor or the Government may propose changes to the OCI Mitigation Plan. Such changes are subject to the mutual agreement of the parties and will become effective only upon incorporating the changes into the plan by contract amendment. In the event that the Government and the Contractor cannot agree upon a mutually acceptable change, the Government reserves the right to make a unilateral change to the OCI Plan as necessary subject

to Contractor appeal as provided in the Disputes clause.

(iii) The Access to Sensitive Information Clause which includes information protection requirements and which incorporates the contractor's OCI mitigation plan into the contract. Detailed data protection requirements are to be included within the contractor's OCI mitigation plan.

(iv) A Limitation of Future Contracting Clause.

(d) Contractor's response to technical direction: Within two working days of receipt of technical direction causing a potential conflict to arise, the Contractor shall notify the Contracting Officer and provide a report of a potential conflict detailing:

(1) The nature of the conflict

(2) Plan for avoiding, neutralizing or mitigating the conflict

(3) The benefits and risks associated with acceptance of the plan

(e) Government Response to a Report of a Potential Conflict: The Contracting Officer shall review the report and determine which of the following approaches is in the best interest of the Government and shall so advise the Contractor:

(1) The Contractor shall perform consistent with the technical direction;

(2) The Contractor shall not perform in accordance with the technical direction;

(3) The technical direction shall be modified to remove the identified conflict; or

(4) The Contractor may identify a subcontractor who can provide services consistent with the technical direction. The Contractor may enter into a subcontract and retain all contractual responsibilities except that the subcontractor will ensure that sensitive information provided to or generated by the subcontractor team performing the requirement will not be transmitted to any prime or subcontractor employees who are not also performing the requirement. Further, the subcontractor will not release any information regarding the technical direction to anyone but Government personnel identified by the Contracting Officer as proper recipients of the information. This subcontract arrangement will not obviate the Contractor's responsibility for acceptable technical performance of the technical direction.

(f) Additional requirements:

(1) Any limitations on future contracting resulting from the Contractor's preparation of materials that lead to solicitations, or access to proprietary, business confidential, or financial data of another company are identified in NFS 1852.209-71, "Limitation of Future Contracting".

(2) The Contractor shall include this clause in all subcontract(s) regardless of tier.

(g) *Representation.* By submission of its offer, the Offeror represents, to the best of its knowledge and belief that it does not know of any facts that would alter the contracting officer's determination in paragraph (b) regarding the potential conflicts of interest that are likely to arise from work under this contract.

(h) Breach. Any breach of the above restrictions and any nondisclosure or misrepresentation of any relevant facts required regarding organizational conflicts of interests to be disclosed may result in—

(1) Termination of this contract for default;

(2) Disqualification of the contractor for subsequent contractual efforts; or

(3) Other remedies as may be available under law or regulation.

(End of clause)

H.13 LIMITATION OF FUTURE CONTRACTING (1852.209-71) (DEC 1988)

(a) The Contracting Officer has determined that this acquisition may give rise to a potential organizational conflict of interest. Accordingly, the attention of prospective Offerors is invited to FAR Subpart 9.5-- Organizational Conflicts of Interest.

(b) The nature of the conflicts is described in **H.12,** the Organizational Conflicts Of Interest - Notice, Procedures And Requirements clause.

(c) The restrictions upon future contracting are as follows:

(1) If the Contractor, under the terms of this contract, or through the performance of this contract, is required to provide specifications, statement of work or related materials that will lead directly, predictably and without delay to a statement of work for a Government competitive solicitation, the Contractor shall be ineligible to perform the work described in that solicitation as a prime or first-tier subcontractor under an ensuing contract. This restriction shall remain in effect for a reasonable time, as agreed to by the Contracting Officer and the Contractor, sufficient to avoid unfair competitive advantage or potential bias (this time shall in no case be less than the duration of the initial production contract). NASA shall not unilaterally require the Contractor to prepare such materials, specifications or statements of work under this contract.

(2) To the extent that the work under this contract requires access to proprietary, business confidential, or financial data of other companies, and/or Government sensitive, non-public information, and as long as these data remain proprietary, confidential or non-public as applicable, the Contractor shall protect these data from unauthorized use and disclosure and agrees not to use them to compete in future procurements.

(End of clause)

H.14 VIRGINIA AND LOCAL SALES TAXES (LARC 52.229-92) (FEB 2004)

To perform this contract, the Contractor must be knowledgeable of relevant state and local taxes when making purchases of tangible personal property. The Contractor shall refrain from paying inapplicable taxes or taxes where an exemption exists, but shall pay applicable taxes that are reimbursable pursuant to FAR 31.205-41, Taxes. Even though title to property purchased under this contract may pass to the Government and the price is reimbursable under contract cost principles, such transactions do not in themselves provide tax immunity to the Contractor. Therefore, within 30 days after the effective date of this contract, the Contractor shall request from the Virginia State Tax Commission a ruling on any tax exemptions that may be applicable to purchases made under this contract. The Contractor shall provide all facts relevant to the situation and shall pursue an interpretation of the law that is most favorable to

both the Contractor and the Government.

(End of clause)

H.15 RESERVED

H.16 ISO 9001:2000 QUALITY MANAGEMENT SYSTEM COMPLIANCE REQUIREMENTS (COMPLIANT AT AWARD) (LaRC 52.246-97) (OCT 2004)

The Contractor's quality system shall be compliant with the requirements of the current ANSI/ISO/ASQC Q ISO 9001 standard, Quality Management Systems Requirements.

The Contractor's quality system shall remain in compliance with the ISO 9001 standard during the term of the contract. The Government reserves the right to audit the Contractor's quality system at any time.

"Compliant" as used in this clause means that the contractor has defined, documented, and will continually implement during the term of the contract management-approved methods of operation that conform to the requirements given in the above-cited International Standard.

(End of clause)

H.17 SMALL DISADVANTAGED BUSINESS PARTICIPATION-CONTRACT TARGETS (LaRC 52.219-91) (OCT 2002)

(a) FAR 19.1202-4(a) requires that SDB subcontracting targets be incorporated in the Contract.

Targets for this contract are as follows:

	*NAICS Industry Subsectors	Dollar Target	Percent of Contract Value
Base Period (36 Months)	334418, 541330, 541511, 541512, 541519, 541618, 541690, 541712	$4,653,000	9.6%
Option Period (24 months)	334418, 541330, 541511, 541512, 541519, 541618, 541690, 541712	$3,102,000	6.4%
Total		$7,755,000	16%

*North American Industry Classification System (NAICS) Industry Subsectors as determined by the Department of Commerce as being underrepresented in accordance with FAR 19.201(b)

(b) FAR 19.1202-4(b) requires that SDB concerns that are specifically identified by the Offeror be listed in the contract when the identification of such subcontractors was evaluated as part of the subfactor on Small Business Utilization. SDB concerns (subcontractors) specifically identified by the Offeror are as follows:

Name of Concern(s):

1. [redacted]

2[redacted]

The Contractor shall notify the Contracting Officer of any substitutions of the firms listed if the replacement contractor is not an SDB concern.

(c) If the prime Offeror is an SDB the target for the work it intends to perform as the prime Contractor is as follows: Not Applicable

(End of clause)

H.18 AS9100 QUALITY MANAGEMENT SYSTEM CERTIFICATION/REGISTRATION REQUIREMENTS (NON-CERTIFIED AT AWARD) (LaRC 52.246-102) (APRIL 2008)

The Contractor's quality system shall be certified/registered to the current AS9100 standard, Quality Management Systems Requirements.

Since the Contractor's quality system is not already certified/registered to the current AS9100 standard, the Contractor shall develop quality system procedures and associated documentation and obtain AS9100 Certification/Registration within nine months after the contract effective date.

Once certification/registration to the current AS9100 has been achieved, a copy of the AS9100 Certification/Registration certificate should be submitted for review and acceptance.

"Certified/Registered" as used in this clause means that the Contractor has defined, documented, and will continually implement during the term of the contract management-approved methods of operation that have been audited by a 3rd party AS9100 Registrar and found to meet the requirements given in the above-cited Aerospace Standard.

(End of clause)

H.19 RESERVED

End of Section

SECTION I - CONTRACT CLAUSES

I.1 CLAUSES INCORPORATED BY REFERENCE (52.252-2) (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es): Federal Acquisition Regulation (FAR) clauses:
http://www.acqnet.gov/far/

NASA FAR Supplement (NFS) clauses:
http://www.hq.nasa.gov/office/procurement/regs/nfstoc.htm

(End of clause)

CLAUSE NUMBER	CLAUSE TITLE
52.202-1	DEFINITIONS (JUL 2004)
52.203-3	GRATUITIES (APR 1984)
52.203-5	COVENANT AGAINST CONTINGENT FEES (APR 1984)
52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT (SEP 2006)
52.203-7	ANTI-KICKBACK PROCEDURES (OCT 2010)
52.203-8	CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)
52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)
52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (OCT 2010)
52.203-13	CONTRACTOR CODE OF BUSINESS ETHICS AND CONDUCT (APR 2010)
52.203-14	DISPLAY OF HOTLINE POSTER(S) (DEC 2007) Fill In: NASA LaRC Office of Inspector General; (757) 864-3262
52.204-2	SECURITY REQUIREMENTS (AUG 1996)
52.204-4	PRINTED OR COPIED DOUBLE-SIDED ON RECYCLED PAPER (AUG 2000)
52.204-7	CENTRAL CONTRACTOR REGISTRATION (APR 2008)
52.204-9	PERSONAL IDENTITY VERIFICATION OF CONTRACTOR PERSONNEL (SEP 2007)
52.204-10	REPORTING EXECUTIVE COMPENSATION AND FIRST-TIER SUBCONTRACT AWARDS (JUL 2010)
52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (SEP 2006)
52.215-2	AUDIT AND RECORDS - NEGOTIATION (OCT 2010)
52.215-8	ORDER OF PRECEDENCE - UNIFORM CONTRACT FORMAT (OCT 1997)
52.215-11	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA -- MODIFICATIONS (OCT 2010)
52.215-13	SUBCONTRACTOR COST OR PRICING DATA – MODIFICATIONS (OCT 2010)
52.215-15	PENSION ADJUSTMENTS AND ASSET REVERSIONS (OCT 2010)

CLAUSE NUMBER	CLAUSE TITLE
52.215-17	WAIVER OF FACILITIES CAPITAL COST OF MONEY (OCT 1997)
52.215-18	REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS (PRB) OTHER THAN PENSIONS (JUL 2005)
52.215-21	REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA - MODIFICATIONS (OCT 2010)
52.215-23	LIMITATIONS ON PASS-THROUGH CHARGES (OCT 2009)
52.216-7	ALLOWABLE COST AND PAYMENT (DEC 2002) Fill in: (3) The designated payment office will make interim payments for contract financing on the 30th day after the designated office receives a proper payment request.
52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS (MAY 2004)
52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN (APR 2008) ALT II (OCT 2010)
52.219-14	LIMITATIONS ON SUBCONTRACTING (DEC 1996)
52.219-25	SMALL DISADVANTAGED BUSINESS PARTICIPATION PROGRAM—DISADVANTAGED STATUS AND REPORTING (APR 2008)
52.219-28	POST-AWARD SMALL BUSINESS PROGRAM REREPRESENTATION (APR 2009)
52.222-1	NOTICE TO THE GOVERNMENT OF LABOR DISPUTES (FEB 1997)
52.222-2	PAYMENT FOR OVERTIME PREMIUMS (JUL 1990) Fill in: (a) “zero”
52.222-3	CONVICT LABOR (JUN 2003)
52.222-21	PROHIBITION OF SEGREGATED FACILITIES (FEB 1999)
52.222-26	EQUAL OPPORTUNITY (MAR 2007)
52.222-35	EQUAL OPPORTUNITY FOR SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS (SEP 2010)
52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES (OCT 2010)
52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS (SEP 2010)
52.222-50	COMBATING TRAFFICKING IN PERSONS (FEB 2009)
52.222-54	EMPLOYMENT ELIGIBILITY VERIFICATION (JAN 2009)
52.223-2	AFFIRMATIVE PROCUREMENT OF BIOBASED PRODUCTS UNDER SERVICE AND CONSTRUCTION CONTRACTS (DEC 2007)
52.223-3	HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (JAN 1997) - ALTERNATE I (JUL 1995)
52.223-5	POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION (AUG 2003)
52.223-6	DRUG-FREE WORKPLACE (MAY 2001)
52.223-10	WASTE REDUCTION PROGRAM (AUG 2000)
52.223-14	TOXIC CHEMICAL RELEASE REPORTING (AUG 2003)
52.223-15	ENERGY EFFICIENCY IN ENERGY-CONSUMING PRODUCTS (DEC 2007)
52.223-17	AFFIRMATIVE PROCUREMENT OF EPA-DESIGNATED ITEMS IN SERVICE AND CONSTRUCTION CONTRACTS (MAY 2008)
52.223-18	CONTRACTOR POLICY TO BAN TEXT MESSAGING WHILE DRIVING (SEP 2010)
52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (JUN 2008)
52.227-1	AUTHORIZATION AND CONSENT (DEC 2007) ALT I (APR 1984)
52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT

CLAUSE NUMBER	CLAUSE TITLE
	INFRINGEMENT (DEC 2007)
52.227-11*	**PATENT RIGHTS -- OWNERSHIP BY THE CONTRACTOR (Dec 2007)**
52.227-14	**RIGHTS IN DATA--GENERAL (DEC 2007)** – **AS MODIFIED BY NASA FAR SUPPLEMENT 1852.227-14 NOTE:** The paragraph numbering has changed in the updated FAR clause 52.227-14. Until such time as 1852.227-14 is updated all references in 1852.227-14 to subparagraph (3) shall be changed to subparagraph (4). **RIGHTS IN DATA--GENERAL ALTERNATE II (DEC 2007)** and **ALTERNATE III (DEC 2007)**
52.227-16	**ADDITIONAL DATA REQUIREMENTS (JUN 1987)**
52.227-19	**COMMERCIAL COMPUTER SOFTWARE LICENSE (DEC 2007)**
52.227-23	**RIGHTS TO PROPOSAL DATA (TECHNICAL) (JUN 1987)**
52.228-5	**INSURANCE - WORK ON A GOVERNMENT INSTALLATION (JAN 1997)**
52.228-7	**INSURANCE – LIABILITY TO THIRD PERSONS (MAR 1996)**
52.230-2	**COST ACCOUNTING STANDARDS (OCT 2010)**
52.230-3	**DISCLOSURE AND CONSISTENCY OF COST ACCOUNTING PRACTICES (OCT 2008)**
52.232-9	**LIMITATION ON WITHHOLDING OF PAYMENTS (APR 1984)**
52.232-11	**EXTRAS (APR 1984)**
52.232-17	**INTEREST (OCT 2010)**
52.232-18	**AVAILABILITY OF FUNDS (APR 1984)**
52.232-22	**LIMITATION OF FUNDS (APR 1984)**
52.232-23	**ASSIGNMENT OF CLAIMS (JAN 1986)**
52.232-25	**PROMPT PAYMENT (OCT 2008) ALTERNATE I (FEB 2002)**
52.232-33	**PAYMENT BY ELECTRONIC FUNDS TRANSFER – CENTRAL CONTRACTOR REGISTRATION (OCT 2003)**
52.233-1	**DISPUTES (JUL 2002) - ALTERNATE I (DEC 1991)**
52.233-3	**PROTEST AFTER AWARD (AUG 1996) ALTERNATE I (JUN 1985)**
52.233-4	**APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM (OCT 2004)**
52.237-2	**PROTECTION OF GOVERNMENT BUILDINGS, EQUIPMENT, AND VEGETATION (APR 1984)**
52.237-3	**CONTINUITY OF SERVICES (JAN 1991)**
52.239-1	**PRIVACY OR SECURITY SAFEGUARDS (AUG 1996)**
52.242-1	**NOTICE OF INTENT TO DISALLOW COSTS (APR 1984)**
52.242-3	**PENALTIES FOR UNALLOWABLE COSTS (MAY 2001)**
52.242-4	**CERTIFICATION OF FINAL INDIRECT COSTS (JAN 1997)**
52.242-13	**BANKRUPTCY (JUL 1995)**
52.243-2	**CHANGES – COST-REIMBURSEMENT (AUG 1987) ALTERNATE I (APR 1984)**
52.244-2	**SUBCONTRACTS (JUN 2007)** Fill in: (d) If the Contractor has an approved purchasing system, the Contractor nevertheless shall obtain the Contracting Officer's written consent before placing the following subcontracts: any subcontract over $1M Insert: (j) Paragraphs (c) and (e) of this clause do not apply to the following subcontracts, which were evaluated during negotiations: any and all subcontractors evaluated during pre-award.
52.244-5	**COMPETITION IN SUBCONTRACTING (DEC 1996)**
52.244-6	**SUBCONTRACTS FOR COMMERCIAL ITEMS (OCT 2010)**
52.245-1	**GOVERNMENT PROPERTY (AUG 2010)**

CLAUSE NUMBER	CLAUSE TITLE
52.245-9	USE AND CHARGES (AUG 2010)
52.246-25	LIMITATION OF LIABILITY - SERVICES (FEB 1997)
52.247-1	COMMERCIAL BILL OF LADING NOTATIONS (FEB 2006)
52.248-1	VALUE ENGINEERING (OCT 2010)
52.249-6	TERMINATION (COST REIMBURSEMENT) (MAY 2004)
52.249-14	EXCUSABLE DELAYS (APR 1984)
52.251-1	GOVERNMENT SUPPLY SOURCES (AUG 2010)
52.253-1	COMPUTER GENERATED FORMS (JAN 1991)
1852.216-89	ASSIGNMENT AND RELEASE FORMS (JUL 1997)
1852.219-74	USE OF RURAL AREA SMALL BUSINESSES (SEP 1990)
1852.227-14	RIGHTS IN DATA- GENERAL
1852.228-75	MINIMUM INSURANCE COVERAGE (OCT 1988)
1852.237-70	EMERGENCY EVACUATION PROCEDURES (DEC 1988)
1852.243-71	SHARED SAVINGS (MAR 1997)

*Applicable to Small Businesses

1.2 SECURITY CLASSIFICATION REQUIREMENTS (1852.204-75) (SEP 1989)

Performance under this contract will involve access to and/or generation of classified information, work in a security area, or both, up to the level of Secret. See Federal Acquisition Regulation clause 52.204-2 in this contract and DD Form 254, Contract Security Classification Specification, **Exhibit E**.

(End of clause)

I.3 UPDATES OF INFORMATION REGARDING RESPONSIBILITY MATTERS (52.209-8) (APR 2010)

(a) The Contractor shall update the information in the Federal Awardee Performance and Integrity Information System (FAPIIS) on a semi-annual basis, throughout the life of the contract, by entering the required information in the Central Contractor Registration database at http://www.ccr.gov (see 52.204-7).

(b) (1) The Contractor will receive notification when the Government posts new information to the Contractor's record.

(2) The Contractor will have an opportunity to post comments regarding information that has been posted by the Government. The comments will be retained as long as the associated information is retained, *i.e.*, for a total period of 6 years. Contractor comments will remain a part of the record unless the Contractor revises them.

(3) With the exception of the Contractor, only Government personnel and authorized users performing business on behalf of the Government will be able to view the Contractor's record in the system. Public requests for system information will be handled under Freedom of Information Act procedures, including, where appropriate, procedures promulgated under E.O. 12600.

(End of clause)

I.4 NOTIFICATION OF OWNERSHIP CHANGES (52.215-19) (OCT 1997)

(a) The Contractor shall make the following notifications in writing:

(1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days.

(2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.

(b) The Contractor shall –

(1) Maintain current, accurate, and complete inventory records of assets and their costs;

(2) Provide the ACO or designated representative ready access to the records upon request;

(3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and

(4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

(c) The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

(End of clause)

I.5 OPTION TO EXTEND SERVICES (52.217-8) (NOV 1999)

The Government may require continued performance of any services within the limits and at the rates specified in the contract. These rates may be adjusted only as a result of revisions to prevailing labor rates provided by the Secretary of Labor. The option provision may be exercised more than once, but the total extension of performance hereunder shall not exceed 6 months. The Contracting Officer may exercise the option by written notice to the Contractor prior to the expiration of the contract.

(End of clause)

I.6 OPTION TO EXTEND THE TERM OF THE CONTRACT (52.217-9) (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor prior to contract expiration; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause and excluding the Phase-In/Transition period and FAR clause 52.217-8, shall not exceed 60 months.

(End of clause)

I.7 SMALL BUSINESS SUBCONTRACTING REPORTING (1852.219-75) (MAY 1999)

(a) The Contractor shall submit the Summary Subcontract Report (Standard Form (SF) 295) semiannually for the reporting periods specified in block 4 of the form. All other instructions for SF 295 remain in effect.

(b) The Contractor shall include this clause in all subcontracts that include the clause at FAR 52.219-9.

(End of clause)

I.8 ESTIMATE OF PERCENTAGE OF RECOVERED MATERIAL CONTENT FOR EPA-DESIGNATED ITEMS (52.223-9) (MAY 2008)

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

"Postconsumer material" means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item. Postconsumer material is a part of the broader category of "recovered material."

"Recovered material" means waste materials and by-products recovered or diverted from solid waste, but the term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.

(b) The Contractor, on completion of this contract, shall -

(1) Estimate the percentage of the total recovered material content for EPA-designated item(s) delivered and/or used in contract performance, including, if applicable, the percentage of post-consumer material content; and

(2) Submit this estimate to the Contracting Officer.

(End of clause)

I.9 AUTHORIZED DEVIATIONS IN CLAUSES (52.252-6) (APR 1984)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the date of the clause.

(b) The use in this solicitation or contract of any NASA FAR Supplement (48 CFR 18) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the name of the regulation.

(End of clause)

I.10 SECURITY REQUIREMENTS FOR UNCLASSIFIED INFORMATION TECHNOLOGY RESOURCES (1852.204-76) (PIC 09-14)

(a) The Contractor shall protect the confidentiality, integrity, and availability of NASA Electronic Information and IT resources and protect NASA Electronic Information from unauthorized disclosure.

(b) This clause is applicable to all NASA contractors and subcontractors that process, manage, access, or store unclassified electronic information, to include Sensitive But Unclassified (SBU) information, for NASA in support of NASA's missions, programs, projects and/or institutional requirements. Applicable requirements, regulations, policies, and guidelines are identified in the Applicable Documents List (ADL) provided as an attachment to the contract. The documents listed in the ADL can be found at: www.nasa.gov/offices/ocio/itsecurity/index.html. For policy information considered sensitive, the documents will be identified as such in the ADL and made available through the Contracting Officer.

(c) Definitions

(1) IT resources means any hardware or software or interconnected system or subsystem of equipment, that is used to process, manage, access, or store electronic information.

(2) NASA Electronic Information is any data (as defined in the Rights in Data clause of this contract) or information (including information incidental to contract administration, such as financial, administrative, cost or pricing, or management information) that is processed, managed, accessed or stored on an IT system(s) in the performance of a NASA contract.

(3) IT Security Management Plan -- This plan shall describe the processes and procedures that will be followed to ensure appropriate security of IT resources that are developed, processed, or used under this contract.

(4) IT Security Plan – this is a FISMA requirement; see the ADL for applicable requirements.

Within 30 days after contract award, the Contractor shall develop and deliver an IT Security Management Plan. The delivery address and approval authority will be included in the ADL.
All contractor personnel requiring physical or logical access to NASA IT resources must complete NASA's annual IT Security Awareness training. Refer to the IT Training policy located in the IT Security website at https://itsecurity.nasa.gov/policies/index.html.

(d) The Contractor shall afford Government access to the Contractor's and subcontractors' facilities, installations, operations, documentation, databases, and personnel used in performance of the contract. Access shall be provided to the extent required to carry out a program of IT inspection (to include vulnerability testing), investigation and audit to safeguard against threats and hazards to the integrity, availability, and confidentiality of NASA Electronic Information or to the function of IT systems operated on behalf of NASA, and to preserve evidence of computer crime.

(e) At the completion of the contract, the contractor shall return all NASA information and IT resources provided to the Contractor during the performance of the contract in accordance with retention documentation available in the ADL. The Contractor shall provide a listing of all NASA Electronic information and IT resources generated in performance of the contract. At that time, the Contractor shall request disposition instructions from the Contracting Officer. The Contracting Officer will provide disposition instructions within 30 calendar days of the contractor's request.

(f) The Contracting Officer may waive specific requirements of this clause upon request of the contractor.

The Contractor shall provide all relevant information requested by the Contracting Officer to support the waiver request.

The Contractor shall insert this clause, including this paragraph in all subcontracts that process, manage, access or store NASA Electronic Information in support of the mission of the Agency.

(End of clause)

I.11 OMBUDSMAN (1852.215-84) (OCT 2003) – ALTERNATE I (JUN 2000)

(a) An ombudsman has been appointed to hear and facilitate the resolution of concerns from Offerors, potential Offerors, and contractors during the preaward and postaward phases of this acquisition. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman is not to diminish the authority of the contracting officer, the Source Evaluation Team, or the selection official. Further, the ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of formal contract disputes. Therefore, before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the contracting officer for resolution.

(b) If resolution cannot be made by the contracting officer, interested parties may contact the installation ombudsman, Cynthia C. Lee, direct inquiries to the Office of Procurement Deputy Director, NASA Langley Research Center, Mail Stop 134, Hampton, VA 23681-2199; phone (757) 864-2426; facsimile (757) 864-8541. Concerns, issues, disagreements, and recommendations which cannot be resolved at the installation may be referred to the NASA ombudsman, the Director of the Contract Management Division, at 202-358-0445, facsimile 202-358-3083, e-mail james.a.balinskas@nasa.gov.

Please do not contact the ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the Contracting Officer or as specified elsewhere in this document.

(c) If this is a task or delivery order contract, the ombudsman shall review complaints from contractors and ensure they are afforded a fair opportunity to be considered, consistent with the procedures of the contract.

(End of clause)

I.12 NASA 8 PERCENT GOAL (1852.219-76) (JUL 1997)

(a) Definitions.

"Historically Black Colleges or University," as used in this clause, means an institution determined by the Secretary of Education to meet the requirements of 34 CFR Section 608.2. The term also includes any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

"Minority institutions," as used in this clause, means an institution of higher education meeting the requirements of section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)) which for the purposes of this clause includes a Hispanic-serving institution of higher education as defined in section 316(b)(1) of the Act (20 U.S.C. 1059c(b)(1)).

"Small disadvantaged business concern," as used in this clause, means a small business concern that

(1) is at least 51 percent unconditionally owned by one or more individuals who are both socially and economically disadvantaged, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one or more socially and economically disadvantaged individuals, and (2) has its management and daily business controlled by one or more such individuals. This term also means a small business concern that is at least 51 percent unconditionally owned by an economically disadvantaged Indian tribe or Native Hawaiian Organization, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one or more of these entities, which has its management and daily business controlled by members of an economically disadvantaged Indian tribe or Native Hawaiian Organization, and which meets the requirements of 13 CFR 124.

"Women-owned small business concern," as used in this clause, means a small business concern (1) which is at least 51 percent owned by one or more women or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women, and (2) whose management and daily business operations are controlled by one or more women.

(b) The NASA Administrator is required by statute to establish annually a goal to make available to small disadvantaged business concerns, Historically Black Colleges and Universities, minority institutions, and women-owned small business concerns, at least 8 percent of NASA's procurement dollars under prime contracts or subcontracts awarded in support of authorized programs, including the space station by the time operational status is obtained.

(c) The contractor hereby agrees to assist NASA in achieving this goal by using its best efforts to award subcontracts to such entities to the fullest extent consistent with efficient contract performance.

(d) Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as small disadvantaged business concerns, Historically Black Colleges and Universities, minority institutions, and women-owned small business concerns.

(End of clause)

I.13 DRUG- AND ALCOHOL-FREE WORKFORCE (1852.223-74)(MARCH 1996)

(a) Definitions. As used in this clause the terms "employee," "controlled substance," "employee in a sensitive position," and “use, in violation of applicable law or Federal regulation, of alcohol” are as defined in 48 CFR 1823.570-2.

(b) (1) The Contractor shall institute and maintain a program for achieving a drug-and alcohol-free workforce. As a minimum, the program shall provide for preemployment, reasonable suspicion, random, post-accident, and periodic recurring (follow-up) testing of contractor employees in sensitive positions for use, in violation of applicable law or Federal regulation, of alcohol or a controlled substance. The Contractor may establish its testing or rehabilitation program in cooperation with other contractors or organizations.

(2) This clause neither prohibits nor requires the Contractor to test employees in a foreign country. If the Contractor chooses to conduct such testing, this clause does not authorize the Contractor to violate foreign law in conducting such testing.

(3) The Contractor's program shall test for the use of marijuana and cocaine. The Contractor's program may test for the use of other controlled substances.

(4) The Contractor's program shall conform to the "Mandatory Guidelines for Federal Workplace

Drug Testing Programs" published by the Department of Health and Human Services (59 FR 29908, June 9, 1994) and the procedures in 49 CFR part 40, "Procedures for Transportation Workplace Drug Testing Programs," in which references to "DOT" shall be read as "NASA", and the split sample method of collection shall be used.

(c) (1) The Contractor's program shall provide, where appropriate, for the suspension, disqualification, or dismissal of any employee in a sensitive position in any instance where a test conducted and confirmed under the Contractor's program indicates that such individual has used, in violation of applicable law or Federal regulation, alcohol or a controlled substance.

(2) The Contractor's program shall further prohibit any such individual from working in a sensitive position on a NASA contract, unless such individual has completed a program of rehabilitation described in paragraph (d) of this clause.

(3) The Contractor's program shall further prohibit any such individual from working in any sensitive position on a NASA contract if the individual is determined under the Contractor's program to have used, in violation of applicable law or Federal regulation, alcohol or a controlled substance and the individual meets any of the following criteria:

(i) The individual had undertaken or completed a rehabilitation program described in paragraph (d) of this clause prior to such use;

(ii) Following such determination, the individual refuses to undertake such a rehabilitation program;

(iii) Following such determination, the individual fails to complete such a rehabilitation program; or

(iv) The individual used a controlled substance or alcohol while on duty.

(d) The Contractor shall institute and maintain an appropriate rehabilitation program which shall, as a minimum, provide for the identification and opportunity for treatment of employees whose duties include responsibility for safety-sensitive, security, or National security functions who are in need of assistance in resolving problems with the use of alcohol or controlled substances.

(e) The requirements of this clause shall take precedence over any state or local Government laws, rules, regulations, ordinances, standards, or orders that are inconsistent with the requirements of this clause.

(f) For any collective bargaining agreement, the Contractor will negotiate the terms of its program with employee representatives, as appropriate, under labor relations laws or negotiated agreements. Such negotiation, however, cannot change the requirements of this clause. Employees covered under collective bargaining agreements will not be subject to the requirements of this clause until those agreements have been modified, as necessary; provided, however, that if one year after commencement of negotiation the parties have failed to reach agreement, an impasse will be determined to have been reached and the Contractor will unilaterally implement the requirements of this clause.

(g) The Contractor shall insert a clause containing all the terms of this clause, including this paragraph (g), in all subcontracts in which work is performed by an employee in a sensitive position, except subcontracts for commercial items (see FAR Parts 2 and 12).

(End of clause)

I.14 ACCESS TO SENSITIVE INFORMATION (1852.237-72) (JUN 2005)

(a) As used in this clause, “sensitive information” refers to information that a contractor has developed at private expense, or that the Government has generated that qualifies for an exception to the Freedom of Information Act, which is not currently in the public domain, and which may embody trade secrets or commercial or financial information, and which may be sensitive or privileged.

(b) To assist NASA in accomplishing management activities and administrative functions, the Contractor shall provide the services specified elsewhere in this contract.

(c) If performing this contract entails access to sensitive information, as defined above, the Contractor agrees to--

(1) Utilize any sensitive information coming into its possession only for the purposes of performing the services specified in this contract, and not to improve its own competitive position in another procurement.

(2) Safeguard sensitive information coming into its possession from unauthorized use and disclosure.

(3) Allow access to sensitive information only to those employees that need it to perform services under this contract.

(4) Preclude access and disclosure of sensitive information to persons and entities outside of the Contractor's organization.

(5) Train employees who may require access to sensitive information about their obligations to utilize it only to perform the services specified in this contract and to safeguard it from unauthorized use and disclosure.

(6) Obtain a written affirmation from each employee that he/she has received and will comply with training on the authorized uses and mandatory protections of sensitive information needed in performing this contract.

(7) Administer a monitoring process to ensure that employees comply with all reasonable security procedures, report any breaches to the Contracting Officer, and implement any necessary corrective actions.

(d) The Contractor will comply with all procedures and obligations specified in its Organizational Conflicts of Interest Avoidance Plan, which this contract incorporates as a compliance document.

(e) The nature of the work on this contract may subject the Contractor and its employees to a variety of laws and regulations relating to ethics, conflicts of interest, corruption, and other criminal or civil matters relating to the award and administration of government contracts. Recognizing that this contract establishes a high standard of accountability and trust, the Government will carefully review the Contractor's performance in relation to the mandates and restrictions found in these laws and regulations. Unauthorized uses or disclosures of sensitive information may result in termination of this contract for default, or in debarment of the Contractor for serious misconduct affecting present responsibility as a government contractor.

(f) The Contractor shall include the substance of this clause, including this paragraph (f), suitably modified to reflect the relationship of the parties, in all subcontracts that may involve access to sensitive information

(End of clause)

I.15 RELEASE OF SENSITIVE INFORMATION (1852.237-73) (JUN 2005)

(a) As used in this clause, "Sensitive information" refers to information, not currently in the public domain, that the Contractor has developed at private expense, that may embody trade secrets or commercial or financial information, and that may be sensitive or privileged.

(b) In accomplishing management activities and administrative functions, NASA relies heavily on the support of various service providers. To support NASA activities and functions, these service providers, as well as their subcontractors and their individual employees, may need access to sensitive information submitted by the Contractor under this contract. By submitting this proposal or performing this contract, the Contractor agrees that NASA may release to its service providers, their subcontractors, and their individual employees, sensitive information submitted during the course of this procurement, subject to the enumerated protections mandated by the clause at 1852.237-72, Access to Sensitive Information.

(c) (1) The Contractor shall identify any sensitive information submitted in support of this proposal or in performing this contract. For purposes of identifying sensitive information, the Contractor may, in addition to any other notice or legend otherwise required, use a notice similar to the following:

Mark the title page with the following legend:

This proposal or document includes sensitive information that NASA shall not disclose outside the Agency and its service providers that support management activities and administrative functions. To gain access to this sensitive information, a service provider's contract must contain the clause at NFS 1852.237-72, Access to Sensitive Information. Consistent with this clause, the service provider shall not duplicate, use, or disclose the information in whole or in part for any purpose other than to perform the services specified in its contract. This restriction does not limit the Government's right to use this information if it is obtained from another source without restriction. The information subject to this restriction is contained in pages [*insert page numbers or other identification of pages*]. Mark each page of sensitive information the Contractor wishes to restrict with the following legend:

Use or disclosure of sensitive information contained on this page is subject to the restriction on the title page of this proposal or document.

(2) The Contracting Officer shall evaluate the facts supporting any claim that particular information is "sensitive." This evaluation shall consider the time and resources necessary to protect the information in accordance with the detailed safeguards mandated by the clause at 1852.237-72, Access to Sensitive Information. However, unless the Contracting Officer decides, with the advice of Center counsel, that reasonable grounds exist to challenge the Contractor's claim that particular information is sensitive, NASA and its service providers and their employees shall comply with all of the safeguards contained in paragraph (d) of this clause.

(d) To receive access to sensitive information needed to assist NASA in accomplishing management activities and administrative functions, the service provider must be operating under a contract that contains the clause at 1852.237-72, Access to Sensitive Information. This clause obligates the service

provider to do the following:

(1) Comply with all specified procedures and obligations, including the Organizational Conflicts of Interest Avoidance Plan, which the contract has incorporated as a compliance document.

(2) Utilize any sensitive information coming into its possession only for the purpose of performing the services specified in its contract.

(3) Safeguard sensitive information coming into its possession from unauthorized use and disclosure.

(4) Allow access to sensitive information only to those employees that need it to perform services under its contract.

(5) Preclude access and disclosure of sensitive information to persons and entities outside of the service provider's organization.

(6) Train employees who may require access to sensitive information about their obligations to utilize it only to perform the services specified in its contract and to safeguard it from unauthorized use and disclosure.

(7) Obtain a written affirmation from each employee that he/she has received and will comply with training on the authorized uses and mandatory protections of sensitive information needed in performing this contract.

(8) Administer a monitoring process to ensure that employees comply with all reasonable security procedures, report any breaches to the Contracting Officer, and implement any necessary corrective actions.

(e) When the service provider will have primary responsibility for operating an information technology system for NASA that contains sensitive information, the service provider's contract shall include the clause at 1852.204-76, Security Requirements for Unclassified Information Technology Resources. The Security Requirements clause requires the service provider to implement an Information Technology Security Plan to protect information processed, stored, or transmitted from unauthorized access, alteration, disclosure, or use. Service provider personnel requiring privileged access or limited privileged access to these information technology systems are subject to screening using the standard National Agency Check (NAC) forms appropriate to the level of risk for adverse impact to NASA missions. The Contracting Officer may allow the service provider to conduct its own screening, provided the service provider employs substantially equivalent screening procedures.

(f) This clause does not affect NASA's responsibilities under the Freedom of Information Act.

(g) The Contractor shall insert this clause, including this paragraph (g), suitably modified to reflect the relationship of the parties, in all subcontracts that may require the furnishing of sensitive information.

(End of clause)

I.16 IDENTIFICATION AND MARKING OF GOVERNMENT EQUIPMENT (1852.245-74) (SEPTEMBER 2007)

(a) The Contractor shall identify all equipment to be delivered to the Government using NASA Technical

Handbook (NASA-HDBK) 6003, Application of Data Matrix Identification Symbols to Aerospace Parts Using Direct Part Marking Methods/Techniques, and NASA Standard (NASA-STD) 6002, Applying Data Matrix Identification Symbols on Aerospace Parts Handbook. This includes deliverable equipment listed in the schedule and other equipment when NASA directs physical transfer to NASA or a third party. The Contractor shall identify property in both machine and human readable form unless the use of a machine readable-only format is approved by the NASA Industrial Property Officer.

(b) Property shall be marked in a location that will be human readable, without disassembly or movement of the property, when the items are placed in service unless such placement would have a deleterious effect on safety or on the item's operation.

(c) Concurrent with equipment delivery or transfer, the Contractor shall provide the following data in an electronic spreadsheet format:

(1) Item Description.

(2) Unique Identification Number (License Tag).

(3) Unit Price.

(4) An explanation of the data used to make the unique identification number.

(d) For items physically transferred under paragraph (a) the following additional data is required:

(1) Date originally placed in service.

(2) Item condition.

(3) Date last serviced.

(e) The data required in paragraphs (c) and (d) shall be delivered to the NASA center receiving activity listed below:

_____
_____
_____

(f) The contractor shall include the substance of this clause, including this paragraph (f), in all subcontracts that require delivery of equipment.

(End of clause)

I.17 PROPERTY MANAGEMENT CHANGES (DEVIATION) (1852.245-75) (SEPTEMBER 2007)

(a) The Contractor shall submit any changes to standards and practices used for management and control of Government property under this contract to the assigned property administrator and Industrial Property Officer (IPO), prior to making the change whenever the change --

(1) Employs a standard that allows increase in thresholds or changes the timing for reporting loss, damage, or destruction of property;
(2) Alters physical inventory timing or procedures;
(3) Alters recordkeeping practices;

(4) Alters practices for recording the transport or delivery of Government property; or
(5) Alters practices for disposition of Government property.

(b) The Contractor shall contact the IPO at:

Susan Tillman, Industrial Property Officer
Mail Stop 216
NASA Langley Research Center
Hampton VA 23681-2199
(757) 864-2064
Susan.C.Tillman@nasa.gov

(End of clause)

I.18 OCCUPANCY MANAGEMENT REQUIREMENTS (1852.245-82) (SEPTEMBER 2007)

(a) In addition to the requirements of the clause at FAR 52.245-1, Government Property, the Contractor shall comply with the following in performance of work in and around Government real property:

(1) NPD 8800.14, Policy for Real Estate Management

(2) NPR 8831.2, Facility Maintenance and Operations Management

(b) The Contractor shall obtain the written approval of the Contracting Officer before installing or removing Contractor-owned property onto or into any Government real property or when movement of Contractor-owned property may damage or destroy Government-owned property. The Contractor shall restore damaged property to its original condition at the Contractor's expense.

(c) The Contractor shall not acquire, construct or install any fixed improvement or structural alterations in Government buildings or other real property without the advance, written approval of the Contracting Officer. Fixed improvement or structural alterations, as used herein, means any alteration or improvement in the nature of the building or other real property that, after completion, cannot be removed without substantial loss of value or damage to the premises. Title to such property shall vest in the Government.

(d) The Contractor shall report any real property or any portion thereof when it is no longer required for performance under the contract, as directed by the Contracting Officer.

(End of clause)

I.19 NOTIFICATION OF EMPLOYEE RIGHTS UNDER THE NATIONAL LABOR RELATIONS ACT (DEVIATION) (LaRC 52.222-99) (JUNE 2010)

(a) During the term of this contract, the Contractor shall post a notice, of such size and in such form, and containing such content as prescribed by the Secretary of Labor, in conspicuous places in and about its plants and offices where employees covered by the National Labor Relations Act engage in activities relating to the performance of the contract, including all places where notices to employees are customarily posted both physically and electronically, in the languages employees speak, in accordance with 29 CFR 471.2 (d) and (f).

(1) Physical posting of the employee notice shall be in conspicuous places in and about

the Contractor's plants and offices so that the notice is prominent and readily seen by employees who are covered by the National Labor Relation Act and engage in activities related to the performance of the contract.

(2) If the Contractor customarily posts notices to employees electronically, then the Contractor shall also post the required notice electronically by displaying prominently, on any website that is maintained by the Contractor and is customarily used for notices to employees about terms and conditions of employment, a link to the Department of Labor's website that contains the full text of the poster. The link to the Department's website, as referenced in (b)(3) of this section, must read, "Important Notice about Employee Rights to Organize and Bargain Collectively with Their Employers."

(b) This required notice, printed by the Department of Labor, may be–

(1) Obtained from the Division of Interpretations and Standards, Office of Labor-Management Standards, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-5609, Washington, DC 20210, (202) 693-0123, or from any field office of the Office of Labor-Management Standards or Office of Federal Contract Compliance Programs;

(2) Provided by the Federal contracting agency, if requested];

(3) Downloaded from the Office of Labor-Management Standards web site at www.dol.gov/olms/regs/compliance/EO13496; or

(4) Reproduced and used [as] exact duplicate copies of the Department of Labor's official poster.

(c) The required text of the Employee Notification referred to in this clause is located at Appendix A, Subpart A, 29 CFR Part 471.

(d) The Contractor shall comply with all provisions of the Employee Notice and related rules, regulations, and orders of the Secretary of Labor.

(e) In the event that the Contractor does not comply with the requirements set forth in paragraphs (a) through (d) of this clause, this contract may be terminated or suspended in whole or in part, and the Contractor may be suspended or debarred in accordance with 29 CFR 471.14 and FAR Subpart 9.4. Such other sanctions or remedies may be imposed as are provided by 29 CFR Part 471, which implements E.O. 13496 or as otherwise provided by law.

(f) *Subcontracts.*

(1) The Contractor shall include the substance of this clause, including this paragraph (f), in every subcontract that exceeds $10,000 and will be performed wholly or partially in the United States, unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 3 of Executive Order 13496 of January 30, 2009, so that such provisions will be binding upon each subcontractor.

(2) The Contractor is not permitted to procure supplies or services in a way designed to avoid the applicability of Executive Order 13496 or this subpart.

(3) The Contractor shall take such action with respect to any such subcontract as may be

directed by the Secretary of Labor as a means of enforcing such provisions, including the imposition of sanctions for non compliance.

(4) However, if the Contractor becomes involved in litigation with a subcontractor, or is threatened with such involvement, as a result of such direction, the Contractor may request the United States, through the Secretary of Labor, to enter into such litigation to protect the interests of the United States.

(End of clause)

End of Section

SECTION J - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS

J.1 LIST OF EXHIBITS/ATTACHMENTS

The following documents are attached hereto and are made a part of this contract:

Exhibits

Exhibit A	Statement of Work (SOW)
Exhibit B	Contract Documentation Reporting Requirements
Exhibit C	Small Business Subcontracting Plan
Exhibit D	Installation-Accountable Government Property
Exhibit E	Contract Security Classification DD Form 254
Exhibit F	Organizational Conflict of Interest Plan
Exhibit G	IT Security Management Plan
Exhibit H	Reserved
Exhibit I	Safety & Health Plan
Exhibit J	Flight Simulation Facilities

End of Section

STATEMENT OF WORK

LANGLEY SIMULATION AND AIRCRAFT TECHNICAL SERVICES (LSATS)

1.0 - BACKGROUND

This statement of work describes the requirement for simulation and flight research support at the research and development facilities located at the National Aeronautics and Space Administration's (NASA) Langley Research Center (LaRC).

1.1 - Mission Description

1.1.1 The Simulation Development and Analysis Branch (SDAB) of the Research Services Directorate (RSD) provides software and hardware services utilizing the unique national research and development facilities located at NASA LaRC. These facilities are dedicated to providing researchers with high-fidelity environments in which to conduct simulation and flight research and to advance the state-of-the-art of simulation technology. The Flight Simulation Facilities (FSF) are comprised of the computing systems including the Real-Time Computer Systems, the Computer Image Generation Systems, the Computer Graphics Generation Systems, and the Real-Time Network Systems; and the Cockpit Motion Facility (CMF), the Differential Maneuvering Simulator (DMS), the Visual Motion Simulator (VMS), the Development and Test Simulator (DTS), and the Test and Evaluation Simulator (TES). The CMF houses a state-of-the-art six-degree-of-freedom synergistic motion system, the Research Flight Deck (RFD) Simulator, the Integration Flight Deck (IFD) Simulator, the Generic Flight Deck (GFD) Simulator, and has space for an, as yet, undefined fourth simulator. All of the simulators in the CMF are capable of operating in a fixed-base mode or installed on the motion system. The FSF also include the System Integration Laboratory. These flight simulators provide real-time, high fidelity (Technology Readiness Level 5 to 7), full mission, human-in-the-loop flight simulation environment and capabilities to conduct state-of-the-art, preeminent research and development aerospace research.

1.1.2 In addition to the FSF, SDAB provides research software and hardware development support to the research aircraft operated by the Research Services Directorate. These include the OV-10 aircraft, B-200 aircraft, the UC-12B aircraft, the SR-22 aircraft, and the C-206 aircraft.

1.1.3 The FSF and research aircraft are used by researchers from the LaRC, other NASA Centers, the Federal Aviation Administration, the Department of Defense, other government organizations, industry, and universities. Researchers use the software and hardware services of the facilities to investigate a variety of topics ranging from the design of new aircraft/spacecraft, to new guidance and control systems, to the human factor implications of new/existing flight deck displays, control/data input devices, and airspace operations. Additionally, software and hardware services are utilized for in-house research projects and experiments that are conducted to develop new simulator systems and subsystems, improve existing simulation systems, develop advanced software engineering techniques to

improve the fidelity and validity of simulation software programs, and incorporate the latest technology into simulator and computer systems.

1.1.4 The SDAB, RSD, manages the FSF through Civil Service line managers and facility managers who are ultimately responsible for the successful performance of the mission of each facility.

1.1.5 As authorized by the Contracting Officer's Technical Representative (COTR) with Contracting Officer (CO) concurrence through Project Assignments (PAs), the Contractor shall prepare, operate, maintain, improve and systems integrate the assigned simulators, and ensure that the researchers' data is collected as specified.

2.0 – SCOPE/REQUIREMENTS

2.0.1 The Contractor shall develop, integrate, test and execute projects to meet the Simulation Development and Analysis Branch's (SDAB) mission. The Contractor shall be responsible for total system operation, and to ensure the fidelity, integrity and quality of projects as tasked. Thus, it is not only important that the individual subsystems operate properly, but also, that when integrated, all elements continue to perform properly and efficiently. The Contractor shall prepare and maintain plans for coordinating this total system operation, and shall minimize the periods when the facilities are unavailable for use. When problems occur, the Contractor shall ensure that the proper corrective procedures are applied and that the response is appropriate to prevent excessive downtime.

2.0.2 The Contractor shall deliver flight simulation products and services for the various categories of simulation – (1) Real Time, Fast or Pseudo Real Time, (2) Analyses or Batch; Monte Carlo Analyses, (3) Part Task, Specific Conditions/Operations, and (4) Full Mission, End-to-End.

2.0.3 The Contractor shall provide the appropriate resources to prepare, design, develop, integrate, test and execute projects, and produce required deliverables necessary to provide the researcher with supporting documentation and data (and/or other deliverables, e.g., software and/or hardware) specified. These include resources supplied by LaRC consistent with the high-level planning conducted by LaRC Facility Managers.

2.0.4 The Contractor shall ensure the safety, quality, integrity and maintenance of the computer systems, networks, simulators, facilities and Installation-Accountable Government Property (IAGP). In the event that a modification by the Contractor to the existing Flight Simulation and Research Aircraft Facilities impacts the safety of the test subject or workers, the Contractor shall provide the analyses required to satisfy LaRC's Human Occupancy Review Board's safety requirements.

2.0.5 The Contractor shall prepare, operate, and maintain the simulators, integration laboratories, and any future simulators and integration laboratories described in Exhibit J.

2.0.6 The Contractor shall maintain the Installation-Accountable Government Property (IAGP) listed in Exhibit D.

2.0.7 Work under this contract includes full life cycle flight simulation software and hardware services and flight simulation hardware infrastructure support for LaRC ground-based and flight research systems and facilities. The infrastructure support requirements include, but are not limited to, mainframe processors, computer generated image (CGI) out-the-window visual scene systems, head-down raster and stroke graphics computers, flight management computers, flight control computers, display devices, networks and interfaces, ground-based and flight simulation cockpits, and other required physical devices. Software service requirements include, but are not limited to, analysis, design, development, integration, testing, verification, validation, research operations, data recording and post-processing, and documentation. Hardware service requirements include, but are not limited to, engineering, operations, and maintenance of the simulation hardware and software infrastructure. Infrastructure engineering services include, but are not limited to, modification of existing infrastructure, design and implementation of new infrastructure, and support for simulation operations and maintenance activities. Infrastructure operations and maintenance services are required to support the research mission.

2.1 - Contract-Level Program Management

2.1.1 - Management/Administration

2.1.1.1 The Contractor shall provide an overall management and administrative function to ensure the proper resources are available and allocated, adequate reports and documentation are prepared, and the overall environment supports the project requirements. The Contractor shall ensure management and administrative functions to meet the requirements listed below.

2.1.1.2 The Contractor shall provide an organizational structure with clear lines of authority and clearly identified Government interfaces.

2.1.1.3 The Contractor shall ensure the facilities are available for scheduled simulation and flight projects. All work areas shall facilitate multiple work shifts depending upon facility, simulation, flight, maintenance, and development schedules and/or availability of laboratory and facility equipment.

2.1.1.4 The Contractor shall manage the resources for specific projects in a manner to ensure projects are performed in accordance with published schedules.

2.1.1.5 The Contractor shall implement a discrepancy reporting and tracking system. The Contractor shall be responsible for accepting and administering self-generated and LaRC-generated discrepancy reports. The system shall assure all discrepancies are documented and resolved, and that the history of discrepancies is reviewed for indications of systematic or recurring problems. The system shall provide for the daily accumulation and dissemination of

facility hardware/software status (including the status of any open discrepancy reports), with information accessible to NASA via on-line computer inquiry and published monthly in the State of the Facilities and On-going Projects report.

2.1.1.6 The Contractor shall provide a monthly report of the state of the facilities and on-going projects, identifying risks and critical issues. The report shall include, but not be limited to: status information in narrative form and schedule updates; staffing data; issues and problems that may impede performance; and recommended actions for both LaRC and the Contractor. The report shall contain productivity metrics such as the reliability metric of 95% set forth in 2.1.3.1.4. The report shall also include monthly man-hours for individual projects and their respective simulators and monthly purchasing activity data.

2.1.1.7 The Contractor shall maintain and update current plans and procedures to ensure the facilities consistently meet requirements. These include equipment operating procedures such as: 1) equipment start-up procedures (power-up) normal/abnormal; 2) equipment readiness procedures and diagnostics; 3) pre-flight procedures; 4) normal/abnormal procedures for equipment in full-up mode; 5) emergency procedures to ensure safety of personnel inside and outside the simulators; and 6) post-use procedures for full-up to stand-by status/data transfer. The Contractor shall also generate and maintain contingency and off-nominal operating plans/procedures to ensure the effects of anomalies are minimized, appropriate notifications are made, and corrective actions are initiated.

2.1.1.8 The Government will make available to the Contractor plans and procedures that currently exist which the Contractor may use in performance of the contract.

2.1.1.9 The Contractor shall document and obtain concurrence from the Contracting Officer's Technical Representative (COTR) for all deviations, waivers and non-compliances to the requirements of PAs.

2.1.2 - Property Management

2.1.2.1 To ensure accountability for installation-provided equipment and facilities, as provided and through any upgrades or repairs, the Contractor shall comply with the requirements listed below.

2.1.2.2 The Contractor shall prepare and maintain a Property Management Plan that, at a minimum: identifies the objectives of the plan and how they will be fulfilled, defines the property management tasks that will be performed, and identifies where Government-furnished logistics, forms and procedures will be used.

2.1.2.3 The Contractor shall develop and implement procedures for maintaining within-facility stock of materials/spares, and maintain current database inventory documentation.

2.1.3 - Safety, Reliability & Quality Assurance (SR & QA)

2.1.3.1 To ensure the facilities are operated in a safe and reliable manner, with adequate quality controls, the Contractor shall meet the SR&QA requirements listed below.

2.1.3.1.1- Environmental Safety

2.1.3.1.1.1 The Contractor shall identify and keep records for all hazardous materials, and obtain permits through the Langley Office of Environmental Engineering, and Office of Safety, Environment & Mission Assurance in accordance with the Langley Environmental Program Manual (LPR 8800.1) and in coordination with the COTR. The Contractor shall comply with the applicable regulations included in LPR 8800.1.

2.1.3.1.2 - System Safety

2.1.3.1.2.1 The Contractor shall provide copies of valid certifications from vendors providing DOD or FAA parts or services.

2.1.3.1.2.2 Should a project assignment require the protection of human research subjects, the Contractor shall comply with NPD 7100.8E, Protection of Human Research Subjects.

2.1.3.1.3 - Occupational Safety

2.1.3.1.3.1 The Contractor shall comply with safety standards consistent with NPR 8715.1, NASA Occupational Safety and Health Programs, NPR 8715.3, NASA Safety Manual, and LAPD 1700.1, Safety Program, for all work.

2.1.3.1.3.2 The Contractor shall furnish safety equipment required by LAPD 1700.1 to protect personnel.

2.1.3.1.4 - Reliability

2.1.3.1.4.1 The Contractor shall ensure facilities are available, reliable, and maintained such that facilities, including all development systems and support equipment, are operational and available to perform requirements at least 95% of the time.

2.1.4 - Configuration Management

2.1.4.1 To ensure the facilities are operated in a regular, consistent and known manner, their performance levels are measured and recorded, and a historical record of activities are maintained, the Contractor shall comply with the requirements listed below.

2.1.4.2 The Contractor shall establish, maintain and implement a configuration management plan in accordance with the Langley Management System,

Standard Operation Procedure, and Configuration Management Online (CMOL).

2.1.4.3 The Contractor shall maintain the facilities' documentation libraries and ensure the libraries are current, accurate and complete, including but not limited to:
- All operating procedures and reference manuals.
- Records of measured system performance parameters.
- Documentation recording the performance of projects including project notebooks/work files and significant repairs/upgrades.
- Manufacturer's manuals, bulletins, parts lists, and vendor source lists.
- Facility configuration controlled and non-configuration controlled documents such as drawings, procedures, and checklists.

2.1.5 - Capability Maturity Model Integration (CMMI) - The Contractor shall comply with and support guidelines and practices of the process areas required by the LaRC SDAB CMMI Capability Level 3 rating.

2.1.6 – Software Development Plan, Project Development Data, Software Process Tracking Information and Software Products

2.1.6.1 In accordance with NPR 7150.2A "NASA Software Engineering requirements", the Contractor shall develop and deliver a Software Development Plan which covers the software developed or modified under this SOW. This plan shall be submitted electronically to the Contracting Officer within 30 calendar days from time of contract award. Written acceptance or requested changes will be sent to the Contractor by the Contracting Officer within 14 calendar days after receipt of this plan.

2.1.6.1.1 At a minimum, the Software Development Plan shall include the following:
- Scope
- Management of the quality characteristics of the software products or services
- Management of safety, security, privacy, and other critical requirements of the software products or services
- Verification and validation approach (including peer review/inspection process of software work products)
- Configuration management (e.g., version control).

2.1.6.2 The Contractor shall provide Project Development Data monthly, in electronic format, for each project. At a minimum, the data shall include:
- Project schedule
- Software progress tracking measures (e.g. schedule and cost metrics)
- Software functionality measures (e.g. number of requirements implemented)
- Software quality measures (e.g. defect density, status of problem reports)
- Software requirement volatility
- Software characteristics (e.g. software size)

2.1.6.3 The Contractor shall deliver Software Process Tracking Information, in electronic format, including software development and management

metrics. At a minimum, the Software Process Tracking Information shall include:

- Schedules
- Time charged to projects by software staff
- Purchase orders
- Configuration status accounting
- Configuration audits
- Quality assurance audits
- Problem report status

2.1.6.4 Software Products include, but are not limited to the following:

- Requirements document(s)
- Requirements mapping matrix
- Architecture and design documents
- Source code, data, and makefiles
- Build and installation instructions
- Configuration record of the executable (if product is built within ClearCase) but not the executable itself
- Test plan (and test procedures if class C software)
- Test results
- User's manual

2.2 - Core Requirements and Functional Capabilities

2.2.1 Aeronautical/Aerospace Engineering and Applications Programming

2.2.1.1 The Contractor shall provide the following core requirements and functional capabilities in order to meet the requirements of this SOW. The Contractor shall ensure that these core requirements and functional capabilities shall be capable of supporting at least 50 aeronautics and space exploration research projects simultaneously for various categories of simulation including real-time, batch or Monte Carlo, and full-mission simulation, while at the same time, operating real-time, high fidelity flight simulation production/operation for at least five research and development simulation studies and providing development and operation efforts for at least two aircraft flight research experiments simultaneously.

2.2.1.2 The Contractor shall perform aeronautical and aerospace engineering and applications software programming to complete the software analysis, design, development, modification, installation, checkout, verification, validation, integration, maintenance, and documentation of all real-time mathematical models (e.g., mathematical models of advanced and existing aircraft/spacecraft for real-time computation). The software products generated shall employ these essential, state-of-the-art elements:

- Design and development of methodologies and tools
- Software languages and development environments
- Relevant software processes to generate, operate, and maintain products that are highly reusable, scalable, portable, re-configurable, maintainable, and cost effective for different aerospace vehicles operating in their respective simulated environments

2.2.1.3 The Contractor shall perform aeronautical and aerospace engineering and applications programming including, but not limited to:

- Aircraft/spacecraft dynamic equations of motion
- Aeronautical/Aerospace vehicle databases
- Landing gear/ground reactions and ground handling models
- Primary and secondary flight control systems
- Auto flight systems
- Avionics systems
- Propulsion systems
- Fuel Systems
- Hydraulic systems
- On-board auxiliary systems
- Air conditioning/pressurization systems
- Navigation systems programs
- Detection/communication systems
- Maintenance and/or creation of new navigational data bases (e.g., terrain profiles, radio facilities)
- Translation of Simulink or other similar commercial off-the-shelf software diagrams into real-time software code

2.2.2 - Systems Software/Device Drivers/Imbedded Software

2.2.2.1 The Contractor shall:

- Provide specialized systems software including real-time schedulers, debug packages, program development tools, input/output routines, special device handlers, networks, and hardware diagnostics.
- Provide data reduction software.
- Perform systems analysis and recommendations for redesign of systems software.
- Coordinate systems software development with hardware engineering.
- Train and consult with system users regarding new hardware/software.
- Provide requirements and specification studies.
- Maintain current system configuration control library, including subcontractor supplied software and equipment.
- Implement/maintain a system of programming standards, design, coding, and documentation methods.
- Provide systems administration support for host computers, graphics computers, and image generation computer systems.

2.2.3 - Graphics Programming - The Contractor shall complete the design, development, modification, installation, checkout and documentation of all graphics and text display software, which may include, but are not limited to the creation and maintenance of real-time graphics software and the creation and maintenance of text and graphics displays for simulation and flight heads-down and heads-up display units, and experimenter/researcher control display units.

2.2.4 - Real-Time Visual Displays/Visual Scene Models Programming for Image Generation Systems - The Contractor shall create and maintain real-time visual scene databases and visual scene models for image generation computer systems.

2.2.5 - Research Solutions Based Systems Engineering - The Contractor shall provide system engineering services to ensure the continuing operation and evolutionary improvement of the flight simulation and research aircraft facilities. Such services may include, but are not limited to:

2.2.5.1 Definition and development of facility upgrades and capabilities, including development of new ground-based and in-flight simulators which may include providing structural modifications to existing systems and facilities, performing systems analyses and conceiving designs for simulator systems/subsystems, and providing the implementation planning, integration and testing for new simulation systems.

2.2.5.2 Design, fabricate, install, integrate, build, and test a new “FAA level D equivalent” research flight simulator capable of fixed and motion based operations.

2.2.5.3 Make or procure major real-time, high fidelity (Technology Readiness Level 5 to 7), and full mission flight simulator state-of-the-art electrical components and integrate them into existing flight simulators. Major components include but not limited to mainframe processors, computer generated image (CGI) out-the-window visual scene systems, head-down raster and stroke graphics computers, flight management computers, flight control computers, display devices, networks and interfaces, ground-based and flight simulation cockpits, and other required physical devices.

2.2.5.4 Design, development, and integration of advanced technology into simulation systems (i.e., advanced controls/displays). This may also include developing advanced engineering techniques to improve fidelity/validity of simulations.

2.2.5.5 Systems analyses and providing recommendations for redesign of software and hardware systems including networks.

2.2.5.6 Development and modification of advanced aircraft/spacecraft models for real-time computation.

2.2.5.7 Determination of methods to provide effective visual/motion cues to simulator pilots.

2.2.5.8 Operate and maintain classified simulators with appropriate level of control on both hardware and software systems. Provide or obtain personnel with Security Clearances to the Secret level.

2.2.6 - Research Solutions Based Hardware and Mechanical Systems Engineering (NOTE: Hardware and mechanical systems can be separate systems or several sub-systems interconnected as a larger system.) - The Contractor shall:

2.2.6.1 Design, fabricate, modify, assemble, and integrate hardware and equipment for simulation and flight research projects and discrete projects. Specific projects may include fabrication of original equipment from design drawings or sketches and/or modification or changes to

existing hardware and systems. Sample projects are flight deck instrument panels and consoles, floor panels, seats, visual display support structures, sheet metal assemblies, pilot control devices such as sticks, grips, surface controls, and power management mechanisms.

2.2.6.2 Design, develop, maintain, operate, and modify simulation mechanical, hydraulic, electrical/electronic, and servo systems.

2.2.6.3 Design, fabricate and/or modify electronic chassis, assemblies and subassemblies, and cables.

2.2.6.4 Design and perform structural analyses of the mechanical structures supporting major flight simulator electrical components.

2.2.6.5 Provide specialized simulation related services such as HVAC, hydraulics system, electrical power systems, fire detection and prevention system, computer aid drafting, and rigger services.

2.2.6.6 Develop/maintain equipment operations and maintenance logs for usage/configuration and availability, including discrepancy reports.

2.2.6.7 Understand/manage diverse hardware/software environments.

2.2.6.8 Provide integration of new hardware/software systems.

2.2.7 – Simulation-to-Flight Research Support - The Contractor shall analyze, design, develop, verify, validate, operate, maintain, modify, and integrate research hardware and software systems for a seamless, efficient, and cost effective transition of research experiments from a real-time, high fidelity (Technology Readiness Level 5 to 7), full mission ground flight simulator to a an aircraft in order to perform Simulation-to-Flight concept flight research. The verification and validation of flight hardware and software shall be conducted in an integration laboratory when required.

2.3 - Research Projects

2.3.1 Research projects cover a variety of topics including but not limited to the design of new aircraft/spacecraft, new guidance and control systems, the human factor implications of new/existing flight deck displays, control/data input devices, and airspace operations. The Contractor shall be capable of designing, developing, testing, and operating real-time, high fidelity flight simulations for at least five research and development simulation studies in five real-time flight simulators, while at the same time, providing development and operation efforts for at least two aircraft flight research experiments simultaneously.

2.3.2 The COTR with CO concurrence will generate Project Assignments (PAs) for research projects support. The successful performance of research projects is one of the primary functions of the Simulation and Flight Facilities. The process cycle for a successful research project includes planning, preparation, operations and post-operation activities. The Contractor shall document and obtain concurrence of the COTR for all deviations, waivers and non-compliances

to the requirements of PAs. The Contractor shall use the functional capabilities defined in section 2.2, as necessary to achieve the goals of each research project. The specific requirements applicable to each phase of the process cycle are defined below.

2.3.3 - Project Planning

2.3.3.1 Project planning focuses on the development of the technical and management approaches, technical objectives, risk allocation, and performance metrics that identify key actions/deliverables to be used to assess the success (or failure) of Contractor performance. In response to a PA, the Contractor shall:

2.3.3.2 Define, develop, operate and maintain a project resource control system for the resources that are allocated for the specific project, which tracks the project schedule, finances and configuration.

2.3.3.3 Generate a Project Management Plan (PMP) that outlines the Contractor's approach to the technical objectives throughout the preparation, operations and post-operations phases. The PMP shall require approval by the COTR with CO concurrence and shall:

- Define the tasks necessary to perform the project, the associated required resources, the estimate to perform the PA, and the schedule.
- Address special matters pertaining to Safety, Reliability and Quality Assurance (SR&QA), configuration management, maintenance, potential environmental impacts (complete LF 461), facilities integrity, and Installation-Accountable Government Property (IAGP).
- Address any known technical, resource, and schedule risks associated with the proposed approach.

2.3.4 - Project Preparation

2.3.4.1 With the planning phase complete, preparation for the project is required. While the extent, complexity and duration of preparation activities vary from project to project, for a nominal project, hardware, systems software, applications programming, electrical, electronic and mechanical development shall be provided by the Contractor in order to prepare all facets of a project. This phase includes all activities from completion of project-specific planning to the beginning of the actual research phase of the project.

2.3.4.2 The Contractor shall implement project preparation in accordance with the approved PMP. The Contractor shall:

2.3.4.2.1 Generate project operations plans and procedures, along with foreseeable contingencies, as described in the PMP.

2.3.4.2.2 Complete the design, development, fabrication, installation, integration and checkout of all mechanical, electrical and hardware systems necessary for the performance of the project.

2.3.4.2.3 Complete the development of specialized systems software necessary for the performance of the project.

2.3.4.2.4 Perform application programming, database modeling and graphics to complete the design, development, modification, installation, checkout and documentation necessary for the performance of the project.

2.3.4.2.5 Develop the data collection process to support the project, including, but not limited to, the definition of the parameters, data rate and volume, and data format.

2.3.5 - Project Operations

2.3.5.1 The operations phase is the period of activities that occur from the start of the actual research experiment through its completion. This is the period where pilots evaluate the aircraft or scenario and data is collected and stored. The Contractor shall implement project operations in accordance with the approved PMP. As part of the project operations, the Contractor shall:

2.3.5.2 Operate the simulation in accordance with written plans/procedures, and shall provide the flexibility to modify research experiment parameters contingent upon interim research experiment results.

2.3.5.3 Ensure integrity of the facilities prior to each day's research experiment runs. The Contractor shall document the setup, operation, and performance of each project in a consistent format.

2.3.5.4 Conduct data collection, verification and any post-processing required for each project.

2.3.5.5 Record system discrepancies and ensure they are resolved in an appropriate manner. The Contractor shall also log changes in systems status for each research experiment run (e.g., electrical/electronic, mechanical, hardware/software, and spares).

2.3.6 - Post-Project Operations

2.3.6.1 Subsequent to research experiment completion, the Contractor shall complete all documentation and deliverables.

2.3.6.2 The Contractor shall implement post-project operations in accordance with the approved PMP. The Contractor shall provide required outputs in accordance with project requirements, which may include but are not limited to:

- Data distribution and analysis per the PMP.
- Project summary report including documentation of all modifications made to software/hardware to support the research experiment.
- Recommend what software/hardware data to retain for future use/reference and capture the configuration to ensure the project can be repeated at a future time.
- Record lessons learned and update the current project documentation, a copy of which shall be provided to the COTR.

2.4 - Discrete Projects

2.4.1 The COTR with CO concurrence will generate PAs for discrete projects that fall outside the bounds of research projects, maintenance, and routine support functions. Such projects may include proof of concept, demonstrations, facility enhancements, or other facility projects. As with the research project activities of section 2.3, discrete projects shall follow the standard process cycle including planning, preparation, operation and post-operation activities, and shall meet the same requirements delineated in section 2.1. The Contractor shall use the functional capabilities defined in section 2.2, as necessary, to achieve the goals of each discrete project.

2.4.2 Discrete projects encompass analyses, design, acquisition, modification, installation, and checkout of Flight Simulation and Research Aircraft Facilities software and hardware, including, but not limited to, computer systems, real-time data I/O systems, simulators, simulator subsystems, and aircraft subsystems.

2.4.3 The Contractor shall analyze and recommend solutions in the areas identified in paragraph 2.4.2 above that may lead to acquisition of off-the-shelf solutions or in-house development and modifications. Follow-on activities shall include system level installation and checkout of these solutions.

2.4.4 The Contractor shall document and obtain concurrence of the COTR for all deviations, waivers and non-compliance to the requirements of PAs.

2.4.5 Examples of solution based discrete projects under this SOW include but are not limited to:

- Design and development of the Langley Standard Real-Time Simulation (LaSRS) Methodology and the C++ Object-Oriented Software Implementation (LaSRS++) of this methodology.
- Software and hardware design, development and systems integration of advanced aircraft or spacecraft simulation systems.
- Software design and development of computer generated image airport visual data bases for research studies.
- Design, development and systems integration of research data acquisition systems for simulation and flight.
- Design, development and systems integration of major subsystems for the Research Flight Deck Simulator, the Integration Flight Deck Simulator, the Generic Flight Deck Simulator, the Differential Maneuvering Simulator, the Visual Motion Simulator, the Development and Test Simulator, and the Test and Evaluation Simulator.
- Final outfitting and testing of the Research Flight Deck Simulator, the Integration Flight Deck Simulator, the Generic Flight Deck Simulator, the Differential Maneuvering Simulator, the Visual Motion Simulator, the Development and Test Simulator, and the Test and Evaluation Simulator.

2.5 - Hardware and Software Maintenance

2.5.1 The Contractor shall maintain the simulators, integration laboratories, and any future simulators and integration laboratories identified in Exhibit J.

2.5.2 The Contractor shall use the functional capabilities defined in section 2.2 to accomplish the hardware and software maintenance requirements.

2.6 - Preventive Maintenance

2.6.1 The Contractor shall provide all services necessary to maintain the Flight Simulation Facilities specified in paragraph 2.5.1 above.

2.6.2 Unless otherwise provided by the Government, the Contractor shall provide spare parts to support routine maintenance/anticipated failures, and tools required to maintain assigned equipment, unless such tools are listed in Exhibit D of this SOW.

2.6.3 The Contractor shall prepare preventive maintenance plans for assigned facilities, systems, and equipment to minimize system downtime.

2.6.4 The Contractor shall perform functions to ensure proper maintenance of facility systems, including but not limited to:

- Provide mechanical maintenance in accordance with operations manuals, manufacturer's service information and standard industry practices.
- Clean, lubricate, service, adjust, and tune equipment to support flight simulation and research aircraft schedules as required.
- Maintain analog and digital systems with associated peripherals, networks and interfaces.
- Maintain hardware, such as real-time control consoles, strip-chart recorders, and real-time I/O systems.
- Maintain real-time graphics generation systems used to generate heads-down and heads-up cockpit displays.
- Maintain visual and graphics display systems, including, but not limited to, high-resolution CRT's and high-resolution liquid crystal displays.
- Maintain electric and hydraulic control loaders and hydraulic power units.
- Maintain communications and audio systems, such as aircraft sound systems.
- Develop/maintain equipment operations and maintenance logs for usage/configuration and availability, including discrepancy reports.

2.6.5 The Contractor shall perform the following functions to ensure proper maintenance of systems software for all assigned computer systems:

- Maintain, integrate, test and install software for each assigned computer system.
- Maintain documentation for these computer systems.
- Incorporate modifications to solve reported problems, and incorporate and document approved design changes.
- Test and report on all new/modified systems software (accept/reject).
- Archive software and associated documentation.
- Perform system/subsystem testing, diagnostics, and reporting on new hardware.
- Provide programming and software capabilities assistance to systems users.

2.7 - Corrective Maintenance

2.7.1 The Contractor shall follow the standard process cycle for corrective maintenance. This includes planning, preparation, operation and post-operation activities and shall meet the same requirements delineated in section 2.1, although in an expedited fashion because corrective maintenance is likely to be time critical.

Examples of items that fall under this category may include but are not limited to: emergency purchase of replacement equipment, repair of malfunctioning heads-down display units, and replacement of boards for computer systems.

LSATS CONTRACT DOCUMENTATION REQUIREMENTS

I. DOCUMENTATION PREPARATION/SUBMISSION INSTRUCTIONS

A. Initial Baseline Financial Management Report -- The Contractor shall prepare a time-phased baseline financial management report for CLIN 2 and 3 separately and options if exercised, detailing by month how you plan to incur costs for the first 12-month interval of the total 5-year contract period, utilizing the NASA Form 533Q format. The report shall be prepared and submitted in accordance with instructions set forth on the reverse side of the 533Q form and NASA Procedural Requirements (NPR) 9501.2, NASA Contractor Financial Management Reporting. The initial 533Q shall be submitted within 30 working days after the effective date of contract.

Financial baseline reports for each of the remaining 12-month intervals shall be submitted within 10 working days of the anniversary of the effective date of this contract. The total estimated cost and direct labor hours reflected in the baseline report must equal the contract values for the total contract period. The report shall be updated, as required, during the contract performance by submission of revised pages for approval by the Contracting Officer. The baseline financial report shall be revised each time a contract modification is executed which increases or decreases the contract estimated cost, for a reason other than an overrun. The report shall not be revised to include overrun costs.

Minimum reporting categories shall include:

a. Direct Labor Hours

b. Direct Labor Dollars

c. Overhead(s)

d. Subcontract

e. Material

f. Other Direct Cost

g. G&A

h. Total Estimated Cost

i. Fee

j. Total Estimated Cost and Fee

B. Monthly Financial Management Report -- The contractor shall comply with the NASA FAR Supplement (NFS) clause 1852.242-73 NASA Contractor Financial Management Reporting, by monthly submission of NASA Form 533M for CLIN 2 and 3 separately and options if exercised. The form shall be prepared and submitted in accordance with the instructions set forth on the reverse side of the form and NASA Procedural Requirements (NPR) 9501.2, NASA Contractor Financial Management Reporting as further definitized below:

1. Due not later than the 10th working day following the close of the Contractor's accounting period being reported.

2. Columns 8.a and b shall be completed using estimates (forecasts) for the succeeding two months.

3. It is NASA's goal to improve the integrity of its financial data. Since NASA uses the Contractor's estimate for the current month (column 8a of the 533M) as accrued costs in its monthly financial statements, it is important that this estimate be your best projection of the actual costs to be reported in column 7a of the subsequent month's 533M.

Therefore, each NF533M shall include a narrative explanation for variances exceeding +-10 percent between estimated dollars shown in the prior month and actual dollars shown in the current month at the contract level. (For example, the estimated dollars shown for June in column 8a. in the May 533M and the actual June dollars shown in column 7a. in the June 533M.) Accuracy of financial reporting will be evaluated as part of the annual performance evaluation.

4. The minimum reporting categories specified in A. above shall be included in column 6 of this report.

C. Quarterly Financial Management Report -- The Contractor shall submit a quarterly financial report at the contract level as specified in A. above, on NASA Form 533Q at times and in accordance with the instructions contained on the reverse side of the form.

D. State of the Facilities and On-going Projects Report -- The Contractor shall submit a monthly State of the Facilities and On-going Projects report in accordance with Section 2.1.1.6 of the Statement of Work. This report shall be submitted within 10 working days following the end of the reporting period.

E. Safety Reports -- The Contractor shall submit safety reports to the LaRC Safety and Facility Assurance Office. These reports shall be submitted on a quarterly basis if the period of performance exceeds ninety days. If the period of performance is less than ninety days, the Contractor shall submit a single report upon completion of on-site work. The Safety Report shall include the hours worked on the contract and the number of fatalities, lost time cases, OSHA recordable incidents and first aid cases which have occurred during the past quarter (if less than ninety days, during the contract's period of performance). NOTE: The NASA LaRC Safety and Facility Assurance Office (SFAO) has developed a web-based system entitled Contractor Monthly Accident Reporting (CMAR) located at http://cmar.larc.nasa.gov/login.cfm If you choose to submit your information electronically via CMAR, no additional hard-copy reports are required. Please contact the responsible NASA official identified at the site for additional information regarding access to the system.

F. Notice of Violation Response -- The Contractor shall respond to any Notice of Violation (NOV) issued for safety violations to the prime itself or its' subcontractors within three working days of issuance. The response shall include cause for violation; mitigation of impact, if applicable; planned prevention of recurrence. Response shall be submitted to the issuer of the NOV.

G. Information Technology (IT) Security Management Plan -- The Contractor shall submit the IT Security Management Plan required by contract clause NFS 1852.204-76 Security Requirements for Unclassified Information Technology Resources for Contracting Officer approval no later than 30 days after effective date of the contract.

H. Annual IT Security Training Report -- The purpose of this report is to obtain confirmation that IT security training for contractor employees required under paragraph (e) of NFS clause 1852.204-76 Security Requirements for Unclassified Information Technology Resources, has been completed by all individuals required to do so. NASA requires that this annual training be completed by 100% of the appropriate employees no later than June 30 of each year. Accordingly, a report that includes the information listed below shall be submitted to the Contracting Officer no later than June 30 of each calendar year, so long as the period of performance of the contract has not expired prior to June 30th.

Report Content: (1) the number of employees requiring IT security training in accordance with the contract clause (i.e., in accordance with NPR 2810.1 Nondiscrimination in Federally Assisted and Conducted Programs, which requires such training for all "employees who have access to NASA computer systems and networks that process, store, or transmit information"); (2) the number of those employees in item (1) that have completed the annual training as of June 30th; (3) whether the NASA on-line training system was used (use of the NASA on-line system is optional); and (4) a plan of action with milestones to reach 100% in item (2) if that level has not been achieved by June 30th.

I. Software Development Plan, Project Development Data, and Software Process Tracking Information -- The Contractor shall submit a Software Development Plan, Project Development Data and Software Process Tracking Information in accordance with the requirements identified in Section 2.1.6 of the Statement of Work.

J. Quality System Documents ISO 9001:2000 and AS9100 -- The Contractor shall submit ISO 9001:2000 compliant documents in accordance with **H.15**, ISO 9001:2000 QUALITY MANAGEMENT SYSTEM COMPLIANCE REQUIREMENTS (NON-COMPLIANT AT AWARD), no later than nine months from the effective date of the contract or **H.16**, ISO 9001:2000 QUALITY MANAGEMENT SYSTEM COMPLIANCE REQUIREMENTS (COMPLIANT AT AWARD), whichever applies.

The Contractor shall submit AS9100 certification/registration documents in accordance with **H.18**, AS9100 QUALITY MANAGEMENT SYSTEM CERTIFICATION/REGISTRATION REQUIREMENTS (NON-CERTIFIED AT AWARD), no later than nine months from the effective date of the contract or **H.19**, AS9100 QUALITY MANAGEMENT SYSTEM CERTIFICATION/REGISTRATION REQUIREMENTS QUALITY MANAGEMENT SYSTEM (CERTIFIED AT AWARD), whichever applies.

K. Federal Contractor Veterans Employment Report -- In compliance with Clause 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans, the Contractor shall submit the Federal Contractor Veterans Employment Reports (VETS-100) as required by this clause.

L. Evidence of Insurance -- The Contractor shall submit evidence of the insurance coverage, required by NFS Clause 1852.228-75 Minimum Insurance Coverage, (i.e., a Certificate of Insurance or other confirmation), to the Contracting Officer prior to performing under this

contract. The Contractor shall also present such evidence to the Contracting Officer prior to commencement of performance under any options exercised, if applicable.

M. Interim Patent Rights Report/New Technology Report -- After the first anniversary date of the contract, the Contractor shall submit an annual list of all subject inventions to be disclosed as set forth in FAR 52.227-11 Patent Rights--Retention by the Contractor (Short Form) (as modified by 1852.227-11 Patent Rights--Retention by the Contractor (Short Form)). This report is due by March 31 of each year.

or

Interim New Technology report -- After the first anniversary date of the contract, the Contractor shall submit an annual list of subject inventions, certify that all subject inventions have been disclosed (or that there are no such inventions), and certify that the procedures required by paragraph (e)(1) of the NFS clause 1852.227-70 New Technology, clause have been followed. This report is due by March 31 of each year.

N. Final Patent Rights Report/New Technology Report -- The Contractor shall submit a listing of all subject inventions or certify that there were none as set forth in FAR 52.227-11 Patent Rights--Retention by the Contractor (Short Form) (as modified by 1852.227-11 Patent Rights--Retention by the Contractor (Short Form)). This report is due prior to contract closeout.

or

Final New Technology report -- The Contractor shall submit a list of subject inventions or certify that that there were no such subject inventions, and list all subcontracts at any tier containing a patent rights clause or certify that there were no such subcontracts as set forth in NFS 1852.227-70 New Technology. This report is due within 3 months after completion of the contracted work.

O. Invention Disclosure Reporting -- The Contractor shall disclose each subject invention under the contract as set forth in FAR 52.227-11 Patent Rights--Retention by the Contractor (Short Form) (as modified by 1852.227-11 Patent Rights--Retention by the Contractor (Short Form)). The electronic or paper version of NASA Form 1679, Disclosure of Invention and New Technology (Including Software), may be used for this reporting. Both the electronic and paper versions of this form may be accessed at http://invention.nasa.gov. Disclosures are required within two months after the inventor discloses it in writing to Contractor personnel who are responsible for patent matters.

P. On and Near-Site Staffing Report -- The contractor shall submit a report which includes the number of on-site and near-site Work Year Equivalents (WYE's) performing work on the contract, broken down by skill category. An initial report shall be submitted within 30 days from the effective date of the contract. Subsequent updated reports are due quarterly, on January 1, April 1, July 1 and October 1 of each year.

These reports shall be e-mailed to the following: larc-dl-contractorwye@mail.nasa.gov

The subject line for the e-mail should be "Contractor WYE".

"On-site" WYE's include the time worked by prime contractor and subcontractor employees on this contract whose primary duty station is on-site at Langley Research Center, whether such

employees charge direct or indirect in the contractor's or subcontractor's accounting systems (e.g., management and administrative staff may charge their time to an "indirect" account, but the time worked by such individuals shall still be counted in the on-site WYE).

"Near-site" WYE's include the time worked by prime contractor and subcontractor employees on this contract whose primary duty station is within 50 miles of LaRC, whether such employees charge direct or indirect in the contractor's or subcontractor's accounting systems. Work performed on local college campuses shall not be considered "near site" WYE's.

The contractor shall use the number of hours in its productive work year to compute the number of WYE's to be reported.

The contractor shall break out the On-site and Near-site WYE by skill category using the following categories: Scientist, Engineer, Technician, Administrative Professional, and Clerical.

Q. Organizational Conflict of Interest Avoidance Plan -- In compliance with Section **H.12** Organizational Conflicts Of Interest (OCI) (LaRC 52.227-96) and Section **I.15**, Access to Sensitive Information (NFS 1852.237-72), the Contractor shall provide the Contracting Officer with a comprehensive OCI avoidance plan IAW the RFP suspense date and update as needed throughout the contract performance period.

R. Estimate of Percentage of Recovered Material Content for EPA Designated Products -- In compliance with Section I.6, Estimate of Percentage of Recovered Material Content for EPA Designated Products (FAR 52.223-9), the Contractor shall provide to the Environmental Management Office the percentage of the total recovered material used in contract performance including, if applicable, the percentage of postconsumer material content, upon contract completion.

S. Subcontracting Reports --

1. NASA's required method for obtaining both Standard Form 294, Subcontracting Report for Individual Contracts, and Standard Form 295, Summary Subcontractor Report is electronically using Electronic Subcontract Reporting System (eSRS). Access to eSRS can be found at: http://www.esrs.gov/

If the Contractor does not submit an electronic SF 294 and SF295 using eSRS, the Contractor shall follow the instructions found on the reverse of the forms and the instructions for distribution under paragraph of this section entitled: II. Document Distribution Requirements.

In addition to the above, the Contractor is required to comply with NFS Clause 1852.219-75, Small Business Subcontracting Reporting.

2. The Contractor shall submit an SDB Participation Report in accordance with the Section I FAR Clause 52.219-25, Small Disadvantaged Business Program -- Disadvantaged Status and Reporting. This report shall be submitted within 30 calendar days after the end of each contract year.

II. DOCUMENT DISTRIBUTION REQUIREMENTS

A. Unless otherwise specified elsewhere in this contract, reports and other documentation shall be submitted F.O.B. destination as specified below, addressed as follows:

National Aeronautics and Space Administration Langley Research Center
Attn: TBD/See below, Mail Stop TBD/See below, Contract NNL11AA08C
Hampton, VA 23681-2199

B. The following letter codes designate the recipients of reports and other documentation which are required to be delivered prepaid to Langley Research Center by the Contractor:

A--Contract Specialist, Mail Stop 126

B--Contracting Officer Technical Representative
Victoria Chung, M/S 125B
EMAIL: Victoria.I.Chung@nasa.gov

C--New Technology Representative, Mail Stop 401

D--Financial Management, LaRC-DL-NF533@mail.nasa.gov

E--Safety and Facility Assurance Branch, Mail Stop 421

F--Patent Counsel, Mail Stop 141

G--Center Information Technology Security Manager (CITSM), Mail Stop 124

H--According to instructions on form

I--Industry Assistance Representative, Mail Stop 144

J--On and Near-Site Staffing Report, LaRC-DL-contractorwye@mail.nasa.gov

K--Environmental Management Office, Mail Stop 418

L-- Langley Management System Project Office, Mail Stop 438

C. The following are the distribution requirements for reports and other documentation required to be delivered F.O.B. destination. The numeral following the letter code specifying the number of copies to be provided:

LETTER CODE AND DOCUMENT: DISTRIBUTION

DISTRIBUTION REQUIREMENTS		
Document Letter	**Document**	**Distribution Code and Quantity**
A	Initial Baseline Financial Management Report	A-1, B-1, D-1 (Via Email)
B	Monthly Financial Management Report (533M)	A-1, B-1, D-1 (Via Email)

C	Quarterly Financial Management Report (533Q)	A-1, B-1, D-1 (Via Email)
D	State of the Facilities and On-going Projects Report	A-1, B-1 (Via Email)
E	Safety Reports or CMAR website	A-1, E-1, or in accordance with directions posted on the website (CMAR)
F	Notice of Violation Responses	A-1, E-1
G	IT Security Management Plan	A-1, B-1, G-1
H	Annual IT Security Training Report	A-1, B-1, G-1,
I	Software Development Plan, Project Development Data, and Software Process Tracking Information	A-1, B-1
J	Quality System Documents (ISO 9001:2000 and AS9100)	A-1, B-1, L-1
K	Federal Contractor Veterans Employment Report (VETS-100)	A-1, H-1
L	Evidence of Insurance	A-1
M	Interim Patent Report/New Technology Report	A-1, B-1, C-1, F-1
N	Final Patent Report/New Technology Report	A-1, B-1, C-1, F-1
O	Invention Disclosure Reporting	A-1, B-1, C-1, F-1
P	On and Near-Site Staffing Report	A-1, B-1, J-1 (Via E-mail)
Q	Organizational Conflicts of Interest Plan	A-1, B-1
R	Estimate of Percentage of Recovered Material Content for EPA Designated Products	A-1, K-1
S	Subcontracting Reports	eSRS, H-1, I-1

D. When the Contract Specialist is not designated above to receive a copy of a report or document, the Contractor shall furnish a copy of the report/document transmittal letter to the Contract Specialist. If delegated, the Contractor shall also furnish a copy of the transmittal letter and a copy of each Financial Management Report to the delegated Administrative Contracting Officer of the cognizant DoD (or other agency) contract administrative services component.

EXHIBIT C

Small Business Subcontracting Plan

LSATS INSTALLATION-ACCOUNTABLE GOVERNMENT PROPERTY (IAGP)

	QTY
Altimeter	1
Altimeter, aircraft simulator	2
Altimeter, simulator	1
Analyzer, servo	1
Calligraphic/raster display, DCSM	6
CAMAC crate	2
Cameras, color video	3
Cameras, television	9
Cart, instrument	2
Clock, digital	3
Computers, design & development	58
Computers, head down graphics	40
Computers, mini	8
Console, operators	4
Control loader	8
Control unit, camera	12
Controller, crate	2
Converter, frequency	4
Cooler, hydraulic oil	2
Counter, frequency	1
Generator, function	1
Generator, pulse	1
Generator, signal	1
Image Generator, 1-Channel	2
Image Generator, 5-Channel	3
Indicator, angle	2
Indicator, attitude	3
Indicator, horiz situation	3
Indicator, mach/airspeed	3
Joystick, computer	2
Lens, camera, television	10
Monitors, television	14
Monitors, video	4
Oscilloscopes, dual trace	1
Oscilloscopes, general purpose	2
Oscilloscopes, multimeter	1
Oscilloscopes, none specific	2
Oscilloscopes, portable	8
Plug-in, amplifier	2
Plug-in, interface	1
Plug-in, time base	2
Power supply	10
Power supply, special purpose	10
Printer/plotters	2
Programmer, prom	1
Projector, laser	2
Projector, simulator, OTW	20
Projector, video	10

Receivers, fiber optic	30
Recorder, strip chart	2
Reflectometer	2
Scanner	1
Switch, electro/optical	1
Switch, network transparent	2
Switch, optic, quad	5
Synthesizer, electrical	2
Terminals, data proc	12
Terminals, server	2
Tester, logic module	1
Transmitters, fiber optic	34
Total	386

DEPARTMENT OF DEFENSE
CONTRACT SECURITY CLASSIFICATION SPECIFICATION

(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)

1. CLEARANCE AND SAFEGUARDING

a. FACILITY CLEARANCE REQUIRED: SECRET

b. LEVEL OF SAFEGUARDING REQUIRED: NONE

2. THIS SPECIFICATION IS FOR: *(x and complete as applicable)*

[X]	a. PRIME CONTRACT NUMBER: NNL11AA08C	
[ ]	b. SUBCONTRACT NUMBER	
[ ]	c. SOLICITATION OR OTHER NUMBER	Due Date *(YYMMDD)*

3. THIS SPECIFICATION IS: *(x and complete as applicable)*

[X]	a. ORIGINAL *(Complete date in all cases)*		Date *(YYYYMMDD)*: 20101210
[ ]	b. REVISED *(Supersedes all previous specs)*	Revision No.	Date *(YYMMDD)*
[ ]	c. FINAL *(Complete Item 5 in all cases)*		Date *(YYMMDD)*

4. IS THIS A FOLLOW-ON CONTRACT? [X] YES [ ] NO. If Yes, complete the following:

Classified material received or generated under NNL06AA74T *(Preceding Contract Number)* is transferred to this follow-on contract.

5. IS THIS A FINAL DD FORM 254? [ ] YES [X] NO. If Yes, complete the following:

In response to the contractor's request dated _____ retention of the identified classified material is authorized for the period of _____

6. CONTRACTOR *(Include Commercial and Government Entity (CAGE) Code)*

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)*
Unisys Corporation 11493 Sunset Hills Road Reston, VA 20190-5230	4W798	Defense Security Service (IOFCC1) 14428 Albemarle Point Place, Suite 140 Chantilly, VA 20151 Main: 703-428-0018 Fax: 703-325-0374

7. SUBCONTRACTOR

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)*
N/A		

8. ACTUAL PERFORMANCE

a. LOCATION	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)*
NASA LANGLEY RESEARCH CENTER M/S 125B HAMPTON, VA 23681	N/A	N/A

9. GENERAL IDENTIFICATION OF THIS PROCUREMENT

Langley Simulation and Aircraft Technology Services (LSATS)

10. THIS CONTRACT WILL REQUIRE ACCESS TO:	YES	NO	11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:	YES	NO
a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION	[ ]	[X]	a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY	[X]	[ ]
b. RESTRICTED DATA	[ ]	[X]	b. RECEIVE CLASSIFIED DOCUMENTS ONLY	[ ]	[X]
c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION	[ ]	[X]	c. RECEIVE AND GENERATE CLASSIFIED MATERIAL	[ ]	[X]
d. FORMERLY RESTRICTED DATA	[ ]	[X]	d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE	[ ]	[X]
e. INTELLIGENCE INFORMATION:			e. PERFORM SERVICES ONLY	[ ]	[X]
(1) Sensitive Compartmented Information (SCI)	[ ]	[X]	f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S. PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES	[ ]	[X]
(2) Non-SCI	[ ]	[X]	g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER	[ ]	[X]
f. SPECIAL ACCESS INFORMATION	[ ]	[X]	h. REQUIRE A COMSEC ACCOUNT	[ ]	[X]
g. NATO INFORMATION	[ ]	[X]	i. HAVE TEMPEST REQUIREMENTS	[ ]	[X]
h. FOREIGN GOVERNMENT INFORMATION	[ ]	[X]	j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS	[ ]	[X]
i. LIMITED DISSEMINATION INFORMATION	[ ]	[X]	k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE	[ ]	[X]
j. FOR OFFICIAL USE ONLY INFORMATION	[X]	[ ]	l. OTHER *(Specify)*	[ ]	[X]
k. OTHER *(Specify)*	[ ]	[X]			

DD Form 254, DEC 1999 *Previous editions are obsolete*

805/340

12. PUBLIC RELEASE. Any information *(classified or unclassified)* pertaining to this contract shall not be released for public dissemination except as provided by the industrial Security Manual or unless it has been approved for public release by appropriate U.S. Government authority. Proposed public releases shall be submitted for approval prior to release

☐ Direct ☒ Through *(Specify)*

NASA Langley Research Center, M/S 126, Hampton, VA 23681-2199
ATTN: Wilma Washington 757-864-2471

to the Office of Public Affairs, National Aeronautics and Space Administration, Washington, DC 20546, for review."

13. SECURITY GUIDANCE. The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes in this guidance, the contractor is authorized and encouraged to provide recommended changes; to challenge the guidance or the classification assigned to any information or material furnished or generated under this contract; and to submit any questions for interpretation of the guidance to the official identified below. Pending final decision, the information involved shall be handled and protected at the highest level of classification assigned or recommended. *(Fill in as appropriate for the classified effort. Attach, or forward under separate correspondence, any documents/guides/extracts referenced herein. Add additional pages as needed to provide complete guidance.)*

All performance of work for this procurement involving classified information shall be performed at Government or properly cleared Contractor facilities.

Security classification guidance will be provided by the responsible NASA official issuing the classified task associated with this contract.

The Certifier in Section 16A shall be provided a copy of any DD Forms 254 issued to subcontractors performing work for this contract within 30 days from date of issuance.

The contractor Facility Security Officer (FSO) shall certify the security clearance status of employees supporting this contract via standard visit request submitted annually or as required to the Certifier identified in Section 16A and Center Personnel Security Office. Content will be as defined in DoD 5220.22 (NISPOM) Section 6-104 to include city of birth, level of clearance, date of issue, investigation type, and date completed.

Information excluded from public release under the Freedom of Information Act shall be marked "Sensitive But Unclassified".

14. ADDITIONAL SECURITY REQUIREMENTS. Requirements, in addition to NISPOM requirements, are established for this contract.

(If Yes, identify ☐ Yes ☒ No *the pertinent contractual clauses in the contract document itself, or provide an appropriate statement which identifies the additional requirements. Provide a copy of the requirements to the cognizant security office. Use Item 13 if additional space is needed.)*

15. INSPECTIONS. Elements of this contract are outside the inspection responsibility of the cognizant security office. ***(If Yes, explain and identify specific areas or elements carved out and the activity responsible for inspections. Use Item 13 if additional space is needed.)*** ☐ Yes ☒ No

16. CERTIFICATION AND SIGNATURE. Security requirements stated herein are complete and adequate for safeguarding the classified information to be released or generated under this classified effort. All questions shall be referred to the official named below.

a. TYPED NAME OF CERTIFYING OFFICIAL	b. TITLE	c. TELEPHONE *(Include Area Code)*
John W. Lau	Security Specialist	757-864-3461

d. ADDRESS *(Include Zip Code)*
NASA Langley Research Center
M/S 163, ATTN: John W. Lau
Hampton, VA 23681-2199

e. SIGNATURE

17. REQUIRED DISTRIBUTION

- ☒ a. CONTRACTOR
- ☐ b. SUBCONTRACTOR
- ☒ c. COGNIZANT SECURITY OFFICE FOR PRIME
- ☐ d. U.S. ACTIVITY RESPONSIBLE FOR OVERSEAS SECURITY ADMINISTRATION
- ☒ e. ADMINISTRATIVE CONTRACTING OFFICER
- ☒ f. OTHERS AS NECESSARY

EXHIBIT F

Organizational Conflict of Interest Plan

EXHIBIT G

Information Technology (IT) Security Management Plan

EXHIBIT H

Reserved

EXHIBIT I

Safety and Health Plan

FLIGHT SIMULATION FACILITIES

1. The Langley Flight Simulation Facilities are a portfolio of the NASA Agency Strategic Capabilities Assets Program (SCAP) and include the Cockpit Motion Facility, the Differential Maneuvering Simulator, the Visual Motion Simulator, the Test and Evaluation Simulator, the Development and Test Simulator, the System Integration Laboratory (allows flight hardware to be tied into the simulators), centralized real-time computer systems, centralized image generator systems, centralized graphics display systems, and centralized data and communications networks.

2. The Cockpit Motion Facility (CMF), located in Building 1268D, is made up of one motion system site and four fixed-base sites. The motion system site contains a six-degree-of-freedom state-of-the-art synergistic motion base with 76-inch extension actuators. The four fixed-base sites provide homes for the simulator cockpits when they are not resident on the motion system. The cockpits are fully operational when located in the fixed-base sites and run totally independent of each other and the motion system site. When a research study requires use of the motion system, the appropriate cockpit is moved from its fixed-base site to the motion system by use of an overhead facility crane system and lifting rig. Each fixed-base site and the motion system site are equipped with quick disconnect features for power, air conditioning, hydraulics, video, audio, data communication and fire detection to allow for rapid changeover. The four cockpits are the Research Flight Deck Simulator, the Integration Flight Deck Simulator, the Generic Flight Deck Simulator, and a future, undefined simulator.

3. The Research Flight Deck (RFD) Simulator, located in the CMF in Building 1268D, is an advanced all-glass jet transport simulator. The simulator is currently driven by a Boeing 757-200 aircraft dynamics mathematical model which has been enhanced through data obtained in Langley's wind tunnels. The mathematical model can be changed to any vehicle for which data is available. In one configuration, the cockpit main instrument panel includes eight Category D size displays on which primary flight information, navigation/map information, engine information, and other specified system parameters are displayed. In a second configuration the cockpit main instrument panel is completely glass with all instrumentation generated by computer graphics. All displays can be changed to meet researcher's requirements. There is a heads-up display mounted in front of the pilot, and there is a center aisle stand mounted between the two pilots. There are two control display units located in the center aisle stand mounted between the pilots. Each pilot has a two-axes side stick control loader system (both hydraulic and electric systems are available to the researcher) for pitch/roll control and a set of hydraulic control loaded rudder pedals. The pilot's side stick controller is mounted on his left side, and the copilot's side stick controller is mounted on his right side. The cockpit's visual system is a panorama system, which provides 200 degrees horizontal field-of-view and 40 degrees vertical field-of-view. The visual system is driven by a state-of-the-art computer generated image system. A number of very high detailed terminal area and surrounding area visual data bases are available to the researcher. The RFD is considered equivalent to an FAA certified Level D simulator.

4. The Integration Flight Deck (IFD) Simulator, located in the CMF in Building 1268D, is a duplicate of the former NASA Langley Boeing 757-200 aircraft cockpit. The simulator is driven by a Boeing 757-200 aircraft dynamics mathematical model which has been enhanced through data obtained in Langley's wind tunnels. The mathematical model can be changed to any vehicle for which data is available. The cockpit includes standard ship's instruments representative of a line operations Boeing 757-200 aircraft. There is a heads-up display

mounted in front of the pilot. There are two control display units located in a center aisle stand mounted between the two pilots. Each pilot has a hydraulic column/wheel control loader system for pitch/roll control and a set of hydraulic control loaded rudder pedals. The cockpit's visual system is a panorama system, which provides 200 degrees horizontal field-of-view and 40 degrees vertical field-of-view. The visual system is driven by a state-of-the-art computer generated image system and has the same visual data bases available as does the RFD Simulator. The IFD is considered equivalent to an FAA certified Level D simulator.

5. The Generic Flight Deck (GFD) Simulator, located in the CMF in Building 1268D, is an advanced all-glass generic simulator which can be used to represent a wide range of vehicle types including conventional and advanced transports, such as the Boeing 757 Aircraft and the Blended Wing Body Aircraft, and spacecraft, such as the HL-20, the Orion Crew Exploration Vehicle, the Altair Lunar Lander, and a generic Planetary Lander. The simulator is driven by the appropriate vehicle dynamics mathematical model for the class of vehicle under study. In one configuration, the cockpit includes four 13-inch liquid crystal display (LCD) units mounted on the main instrument panel on which primary flight information, navigation/map information, engine information and other specified system parameters are displayed and three LCD units mounted in the overhead panel. In an alternate configuration, the main instrument panel is completely glass. There is a center aisle stand, which also contains two LCD units, mounted between the two pilots. The LCD units are equipped with touch panel overlays. The cockpit is designed such that different types of control inceptors can be utilized depending on the particular research being conducted, and are designed for rapid changeout. Presently, each pilot position can be configured to have one of three types of control loaded inceptors: (1)column/wheel/rudders, (2) side stick/rudders, and (3) pedestal mounted center stick/rudders. The side sticks many be either hydraulic systems or electrical systems. The cockpit's visual system is also flexible and can be configured in two different ways: (1) Four collimated window systems (two forward and two side units), and (2) two direct view forward windows and two collimated side windows. The visual system is driven by a state-of-the-art computer generated image system and has the same visual data bases as do the RFD and IFD Simulators. International Space Station and lunar data bases are also available.

6. The Differential Maneuvering Simulator (DMS), located in Building 1268A, is a twin-dome air-combat simulator capable of providing a 360-degree field-of-view computer-generated visual environment and projection of up to two target aircraft for each dome. The cockpits provide an all-glass instrument environment, each with three heads-down displays, one heads-up display and several small backup instruments. Each cockpit includes a three-axes control loader system and an audio cue system for engine sounds, weapon systems, etc. This simulator is used to examine future aircraft designs, modifications to existing aircraft, aircraft handling qualities, control system design, display system design, etc. The DMS is also being considered for space-related simulations including rendezvous and docking of the Orion capsule with the Altair lunar lander, Altair lunar landings, and surface operations of a lunar rover vehicle.

7. The Visual Motion Simulator (VMS), located in Building 1268A, is a generic cockpit mounted on a six-degree-of-freedom synergistic motion system. The left side of the cockpit is configured to represent a generic transport and the right side is configured to represent a generic fighter or helicopter. Both sides of the cockpit are outfitted with three heads-down displays (primary flight display, navigation/map display and engine display), a number of small standard electromechanical instruments and a control display unit mounted in the center aisle stand. The left side contains a two-axes side stick control loader and the right side contains a two-axes center stick. Both sides contain control loaded rudder systems. A center aisle stand with throttle quadrant is also available. The cockpit is outfitted with four collimated window systems

to provide an out-the-window computer-generated visual scene. All visual databases available for the CMF simulators are also available for the VMS. The simulator is used to examine handling quality characteristics of aircraft/spacecraft (both existing and proposed), guidance and control algorithms, display concepts, etc. The simulator is also used as a simulation technology tool to evaluate new and advanced motion cueing algorithms and delay compensation algorithms including the advanced software and programming techniques required to implement these algorithms.

8. The Development and Test Simulator (DTS), located in B1268A, is an advanced all-glass jet transport simulator and was originally a research cockpit mounted inside the former NASA Langley Boeing 757-200 aircraft. With the decommissioning of the aircraft, the research cockpit was removed and reconstructed in the Flight Simulation Facilities and renamed the DTS. The simulator is currently driven by a Boeing 757-200 aircraft dynamics mathematical model which has been enhanced through data obtained in Langley's wind tunnels. The mathematical model can be changed to any vehicle for which data is available. The cockpit includes eight Category D size displays on which primary flight information, navigation/map information, engine information, and other specified system parameters are displayed. All displays can be changed to meet researcher's requirements. There are provisions for a heads-up display mounted in front of the pilot, and there is a center aisle stand mounted between the two pilots. There are two control display units located in the center aisle stand mounted between the two pilots. Each pilot has a two-axis electric side stick control loader system for pitch/roll control and a set of rudder pedals. The pilot's side stick controller is mounted on his left side, and the copilot's side stick controller is mounted on his right side. The cockpit's visual system is a panorama system, which provides 210 degrees horizontal field-of-view and 45 degrees vertical field-of-view. The visual system is driven by a state-of-the-art computer generated image system. A number of very high detailed terminal area and surrounding area visual data bases are available to the researcher.

9. The Test and Evaluation Simulator (TES), located in B1268A, is a reconfigurable simulator and can be configured to represent any type of vehicle. It is currently being configured to support the Constellation Program's Orion Capsule and the Altair Lunar Lander. The TES in this configuration allows for an astronaut to sit for Orion simulations or stand for Altair simulations. This is accomplished by a moveable platform which allows the astronauts eyepoint to be at the correct vertical position for the visual system. The visual system is a panorama system, which provides a 135 degrees horizontal field-of-view and a 67.5 degrees vertical field-of-view. The visual system is driven by a state-of-the-art computer generated image system. A high detailed International Space Station database and a lunar database of the Lunar South Pole and Shackleton Crater area are available to the researcher. The flight deck contains three actual Orion heads down display units, a three-axis rotational hand controller, and a three-axis thrust management controller.

10. The System Integration Laboratory (SIL) is a ground-based facility used in the development and validation of flight/simulation experiments prior to implementation in the research aircraft and/or simulators. The SIL configurations, to the extent practical, match that of the aircraft/spacecraft system to maximize efficiency of the simulation-to-flight process. The SIL includes flight control computers, flight management computers, experimental electronics systems, data link systems, etc. The SIL serves principally as a development facility and is located within the Cockpit Motion Facility (CMF). Research software that supports simulation-to-flight experiments is developed and tested at the various simulators in conjunction with the SIL before actual flight validation.