OMB Approval 2700-0042

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		3

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
1	May 29, 2015	N/A	

6. ISSUED BY CODE

NASA ARMSTRONG FLIGHT RESEARCH CENTER
PO BOX 273/M/S DAOF S323B/A/JEK
EDWARDS, CA 93523-0273

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

Jim E. Kitahara (661) 276-5355

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

All Offerors

CODE FACILITY CODE

(X)	9A. AMENDMENT OF SOLICITATION NO.
	NND15549896R
X	9B. DATED *(SEE ITEM 11)*
	May 20, 2015
	10A. MODIFICATION OF CONTRACT/ORDER NO.
	10B. DATED ***(SEE ITEM 13)***

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

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

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

N/A

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

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

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

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

The purpose of this amendment is to answer questions submitted by interested vendors and provide a clarification and update to the Statement of Work (SOW). All terms and conditions of the solicitation remain unchanged.

- See Continuation Page -

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

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
		Jim E. Kitahara, Contracting Officer	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
_____ *(Signature of person authorized to sign)*		BY _____ *(Signature of Contracting Officer)*	

Solicitation Questions and Answers

Q: Could you please provide me with a little more information on the Spey Mark 511-8 engines? The information we usually ask for when quoting these types of services are as follows:

- Engine time since new
- Engine cycles since new
- Engine times since last overhaul (if any)
- Engine cycles since last overhaul
- Date of last midlife or overhaul inspection (I understand that midlife is overdue)

A: Current Engine information:

Engine #1, S/N: 11022
- Since new
  - Hours: 10,053.4
  - Cycles: 6,397
- Since overhaul
  - Hours: 3,163.4
  - Cycles: 2,252
- Last Overhaul completed on 29 March 2000

Engine #2, S/N: 11021
- Since new
  - Hours: 10,053.4
  - Cycles: 6,378
- Since overhaul
  - Hours: 3,163.4
  - Cycles: 2,252
- Last Overhaul completed on 10 April 2000

Statement of Work (SOW) Clarifications and changes (to be incorporated as SOW Revision 1)

3.0 Seller Responsibilities/Requirement Scope – Revise the paragraph to read as follows:

The ACTE project team expects to have the two engines overhauled. The contractor shall remove, overhaul, re-install, and rig and trim the Rolls Royce Spey MK 511-8 engines. The work shall be completed by a GIII qualified FAA repair station and overhauled by an AS9110 certified Rolls Royce Spey Engine Overhaul Facility that can provide proper documentation to certify the engines' airworthiness and provide full documentation of compliance when the overhauls are completed.

4.0 Requirements:

Subsection 4.2 Engine Overhaul – Revise the third bullet to read as follows:

- The contractor shall remove, overhaul, re-install, and rig and trim the Rolls Royce Spey MK 511-8 engines. The contractor will need to provide the necessary fixtures and tooling for engine removal and re-installation. The Government will provide support personnel and equipment (e.g. certified lift operators and crane) to assist the Contractor with the "critical lift" requirement during engine removal and reinstallation; and will also conduct the "engine runs" for the trimming of the fuel controls. Upon

reinstallation, NASA Quality Assurance will perform in-process inspection points called out in CMP cards in Appendix A. In addition to CMP inspection points, NASA personnel will perform engine bay cavity inspection-prior to engine install, engine inspection prior to install, witness final mount torques, fuel line reconnections, and engine rigging. The contractor will have to follow AFRC procedures, including but not limited to critical lift, while removing and installing the engines.

Subsection 4.2 Engine Overhaul – Revise the sixth bullet to read as follows:

- After overhaul, NASA AFRC would like the most comprehensive engine performance test data (thrust/fuel flow, etc.) possible. The contractor shall provide observed data and corrected data. The contractor shall provide the methods and formulas used to perform the conversion from observed to corrected including static conditions of the test chamber before, during and after each series of test run completion or end of the day whichever occurs first. For each test point, the contractor as a minimum shall provide observed barometric pressure (BARO), ambient indicated temperature (AIT), Thrust, percent N2 RPM, percent N1 RPM, temperature at station 6 (T6), fuel flow, Pressure at station 7 (P7), Pressure at station 3 (P3), Pressure at station 2 (P2), Temperature at station 2 (T2), oil pressure, oil temperature, vibration forward and vibration rear and compressor temperature (CAT). Contractor shall indicate if pressure or temperature is static or total. In addition to the standard required maximum takeoff, maximum continuous, and idle test point conditions, the contractor shall provide all data and corrected data at the following test point conditions based on observed the percent observed N2 RPM speed: 96%, 95%, 94%, 92%, 90%, 88%, 86%, 84%, 82%, 80%, 76%, 74%, 70%, 66%, 64%, 60%. Between 70% and 60% N2 observed, the contractor shall note if the engine has entered into a region of combustion instability. The contractor shall hold the engine at each test point to allow a stabilized reading, i.e., the demanded N2 shall equal the actual N2 for a time period of greater than 10 seconds. All data shall be provided in Excel spreadsheet format. The contractor shall provide at minimum the corrected data: Thrust, N2, N1, T6, fuel flow (WF), specific fuel consumption (SFC), P7, P3, P2, P3/P2, N2/T2, P2/P1, N1/T1, CAT, and T4.

5.0 Deliverables – Revise the section to include the following deliverable:

- The engine performance test data. The data shall be provided in Excel spreadsheet format.

As a result of these changes, the response date for submission of proposals is extend through June 15, 2015.

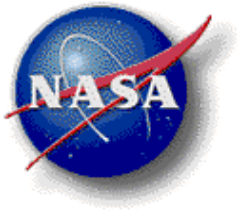
RFP # NND15549896R

ATTACHMENT A - STATEMENT OF WORK

G-III 804 SCRAT/ACTE Engine Overhaul

Program Office

Revision 1
Date May 29, 2015



National Aeronautics and Space Administration
Armstrong Flight Research Center
Edwards, California

Table of Contents

1.0 Background:

NASA (National Aeronautics & Space Administration) AFRC (Armstrong Flight Research Center) operates a Gulfstream G-III aircraft as a testbed for subsonic aeronautics research. The aircraft tail number is N804NA, serial number 344 and is referred to as SCRAT (SubsoniC Research Aircraft Testbed). The ACTE (Adaptive Compliant Trailing Edge) project currently occupies the testbed aircraft. The ACTE project is using compliant flap surfaces to perform aeronautics research that could increase fuel efficiency and reduce noise and drag for future aircraft.

The ACTE project requires the procurement of services in the form of engine removal, overhaul, shipment, installation, and rigging/trimming. The engine overhaul services are to be performed on SCRAT's Rolls Royce Spey Mark 511-8 engines, serial numbers 11021 & 11022, which are currently installed on that aircraft. These engines are just over 5 years past their calendar requirement for midlife inspection. The ACTE project would like to skip the midlife inspection and perform a full overhaul of the engines.

The SCRAT aircraft is located at NASA Armstrong Research Center, Edwards, CA and shall remain there through the duration of the contract.

Aircraft Information:

Type Aircraft	Gulfstream G-III (N804NA)
Engine Type	Rolls Royce Spey MK 511-8
Location NASA AFRC	Edwards, CA

2.0 Government Objectives:

The complete overhaul of two (2) Rolls Royce Spey Mark 511-8 engines currently installed on G-III N804NA. The requirement is in support of the SubsoniC Research Aircraft Testbed (SCRAT) and the Adaptive Compliant Trailing Edge (ACTE) project.

3.0 Seller Responsibilities/Requirement Scope:

The ACTE project team expects to have the two engines overhauled. The contractor shall remove, overhaul, re-install, and rig and trim the Rolls Royce Spey MK 511-8 engines. The work shall be completed by a GIII qualified FAA repair station and overhauled by an AS9110 certified Rolls Royce Spey Engine Overhaul Facility that can provide proper documentation to certify the engines' airworthiness and provide full documentation of compliance when the overhauls are completed.

4.0 Requirements:

4.1 General

- The aircraft, G-III S/N: 344 is located at NASA Armstrong Flight Research Center, Edwards, CA and shall remain there through the duration of the contract.

4.2 Engine Overhaul

- The facility performing the overhaul shall be FAA and AS9110 certified to perform full Rolls Royce Spey Mark 511-8 engine overhauls. Hereafter will be referred to as the "overhaul facility."

- The Overhaul Facility shall have the capabilities, experience, and equipment to repair any discrepancies discovered, beyond the normal scope of an overhaul. The Overhaul Facility is required to present NASA AFRC with a breakdown of discrepancies found, parts required, and cost. With this documentation a review by NASA AFRC will be conducted and NASA AFRC will provide a written approval to proceed via email. No repairs/modifications are to be made without the approval of NASA AFRC.

- The contractor shall remove, overhaul, re-install, and rig and trim the Rolls Royce Spey MK 511-8 engines. The contractor will need to provide the necessary fixtures and tooling for engine removal and re-installation. The Government will provide support personnel and equipment (e.g. crane and certified lift operators) to assist the Contractor with the "critical lift" requirement during engine removal and reinstallation; and will also conduct the "engine runs" for the trimming of the fuel controls. Upon reinstallation, NASA Quality Assurance will perform in-process inspection points called out in CMP cards in Appendix A. In addition to CMP inspection points, NASA personnel will perform engine bay cavity inspection-prior to engine install, engine inspection prior to install, witness final mount torques, fuel line reconnections, and engine rigging. The contractor will have to follow AFRC procedures, including but not limited to critical lift, while removing and installing the engines.

- The contractor will be required to rig/trim the engines once re-installed to the aircraft after the overhaul. The contractor will need to provide any necessary rigging/trimming tooling and also provide the data showing compliance with the rigging procedure. AFRC mechanics and inspector(s) will witness the process and assist with running of the engines.

- An expected duration of engine overhaul tasks must be estimated ahead of time and an estimated schedule is to be provided as part of the contractor's quote.

- After overhaul, NASA AFRC would like the most comprehensive engine performance test data (thrust/fuel flow, etc.) possible. The contractor shall provide observed data and corrected data. The contractor shall provide the methods and formulas used to perform the conversion from observed to corrected including static conditions of the test chamber before, during and after each series of test runs completion or end of the day whichever occurs first. For each test point, the contractor a minimum shall provide observed barometric pressure (BARO), ambient indicated temperature (AIT), Thrust, percent N2 RPM, percent N1 RPM, temperature at station 6 (T6), fuel flow, Pressure at station 7 (P7), Pressure at station 3 (P3), Pressure at station 2 (P2), Temperature at station 2 (T2), oil pressure, oil temperature, vibration forward and vibration rear and compressor temperature (CAT). Contractor shall indicate if pressure or temperature is static or total. In addition to the standard required maximum takeoff, maximum continuous, and idle test point conditions, the contractor shall provide all data and corrected data at the following test point conditions based on observed the percent observed N2 RPM speed: 96%, 95%, 94%, 92%, 90%, 88%, 86%, 84%, 82%, 80%, 76%, 74%, 70%, 66%, 64%, 60%. Between 70% and 60% N2 observed, the contractor shall note if the engine has entered into a region of combustion instability. The contractor shall hold the engine at each test point to allow a stabilized reading, i.e., the demanded N2 shall equal the actual N2 for a time period of greater than 10 seconds. All data shall be provided in Excel spreadsheet format. The contractor shall provide at minimum the corrected data: Thrust, N2, N1, T6, fuel flow (WF), specific fuel consumption (SFC), P7, P3, P2, P3/P2, N2/T2, P2/P1, N1/T1, CAT, and T4.

- The contractor is hereby informed that this aircraft has been modified and has wiring and instrumentation that is unique to our research. This instrumentation needs to be avoided during inspection and protected. The NASA technician(s) will be onsite to provide verbal and physical help with any issues that arise with this specialized equipment and its location.

- All CMP codes in Appendix A pertaining to engine overhaul must be completed, along with any "CMP related codes."

Project Milestones/Completion Dates (Estimates and as applicable)

Task Number	**Work Milestones**	**Projected Completion Time**
4.1	Engines Removed & Shipped to Overhaul Facility	1 week
4.2	Engines Overhauled	8 weeks
4.3	Engine Overhaul follow on work – fix discrepancies	To be negotiated upon written notice of discrepancy and fix estimate
4.4	Engines Installed & Rigged	1 week

5.0 Deliverables:

- The contractor must deliver:

- ◊ Two Fully Overhauled Engines serial numbers 11021 & 11022, allowing 8,000 flight hours and 240 months until next overhaul. All the latest mods, AD's & SB's, and engine structure NDT inspections shall be complied with.
    - A report summarizing any discrepancies or findings with the engines and what was done to correct them.
    - A certificate of conformance, FAA 8130, and certification documentation stating what overhaul activities have been performed on the engines.
    - An update of each engine log book (data package)
        - Life Limited Parts List
        - FAA form 8130-3 for return to service
        - List of Service Bulletins Embodied
        - List of Airworthiness Directives Embodied
        - List of all Service Letters Embodied
        - List of all CMP Codes Embodied (Appendix A)
        - Submittals to Rolls Royce and responses from Rolls (if applicable)
    - The engine performance test data. The data shall be provided in Excel spreadsheet format.
- ◊ Two (2) Rolls Royce Spey Trunnion & Mount Bolt Exchange Kits.

6.0 Government-Furnished Property (GFP)

Rolls Royce Spey Mark 511-8 engines (2), serial numbers 11021 & 11022.

7.0 Security:

Unique security requirements associated with contract performance (when applicable).

- Contractors will be required to come onsite at NASA AFRC to perform engine removal, and engine installation. They must secure visitor badges in advance of their visit.
- The contractor is hereby informed that this aircraft has been modified and has wiring and instrumentation that is unique to our research. This instrumentation needs to be avoided during engine removal, installation, and rigging. The NASA technician(s) will be onsite and present during the activities to provide a briefing, and physical assistance with any issues that arise with this specialized equipment and its location.

8.0 Travel:

Travel requirements that are to be encountered in the performance of the service(s).

- If contractor staff is required to travel to NASA Armstrong Flight Research Center to conduct warranty, maintenance, or other unforeseen tasks above and beyond the above scope, the contractor is required to send their technicians to NASA Armstrong Flight Research Center at no cost to NASA Armstrong Flight Research Center.
- A few NASA personnel may wish to travel to the overhaul facility or contractor site to perform QA inspections, witness testing & procedures, hold reviews, etc.

9.0 Badging And Entry to Government Facilities:

All Contractor CFT members must be United States Citizens and must be able to pass a background check for badging purposes. A visitor request per NASA AFRC Visitor Request Form 10735 shall be submitted a minimum of 3 days prior to commencement of work to allow for processing of the badges. See Attachment E.

10.0 Special Material Requirements:

If items are required to fix discrepancies, the FAA certified Rolls Royce Mark 511-8 overhaul station is required to use certificated material and provide all chemical/physical and other certification for the items used on our engines at the completion of the contract.

11.0 Quality Assurance:

NASA Armstrong Mandatory Inspections:

- NASA personnel reserve the right to gain access to the engines while at the overhaul facility for the purposes of: inspection of the engines, witnessing overhaul procedures, witnessing re-assembly of the engines, witnessing engines tests, and inspecting shipping containers. A five work day notification is required prior to the completion of the work requiring a NASA Quality Assurance Representative (QAR) inspection. The advance notice is to permit the NASA QAR adequate scheduling of travel arrangements.

- NASA will provide documentation with the approved officials that will be onsite.

NASA QAR Contact Information:

Clint Nelson
Email: clinton.e.nelson@nasa.gov
Work Phone: 661.276.7474

Pre-Ship Review (PSR)

- The Contractor shall hold a Pre-Ship Review (PSR) via conference call or in-person at the contractor facility at the completion of verification & validation tests and prior to shipment of the hardware to NASA. Any discrepancies between the hardware to be delivered and the drawings or specifications shall be listed and acceptance/waiver justifications presented. All discrepancy report documentation is to be discussed and included as part of the Data Delivery Package.
- At the time of the PSR, documents and analysis to support compliance with the requirements of this SOW for the hardware being delivered shall be complete and all actions from previous reviews for the hardware being delivered shall be closed.

12.0 Safety & Health Plan:

The Contractor shall submit a Commercial OSHA compliant Safety and Health Plan in accordance with solicitation provision NFS 1852.223-73 Safety & Health Plan (The successful offeror shall submit the S&H Plan a minimum of 10 days prior to commencement of work to allow for Government review of the document).

13.0 Place of Performance:

The places of performance:

- Engine overhaul – at the engine overhaul facility.
- Engine removal, installation, & rigging – at NASA Armstrong Flight Research Center.

14.0 Period of Performance (Desired/Required):

- Desired Performance/Delivery Date: 90 Days ARO
- Required Performance/Delivery Date: 120 Days ARO

Appendix A – List of CMP cards (codes) and STC's to be performed

Note: Contractor must perform all "related codes" that are associated with the codes listed below

Engine Overhaul

713011(1)	713011(2)	713021(1)	713021(2)	762020(1)	762020(2)
785038	713013	713048	713080	713081	

*Perform any and all updates to Airworthiness Directives & Service Bulletins based on Rolls Royce Spey's latest revisions and the current engine status.

Engine Removal / Installation

713010 713045

Engine Control System Rigging

761041 761042

DATA REQUIREMENTS DESCRIPTION

1. TITLE	2. NUMBER
Completed Data Package	**DRD-1** **Page 1 of 1**
3. USE **Contractual documentation of completed work.**	4. DATE **May 11, 2015**
	5. PREPARED BY: **Jim E. Kitahara**
	6. APPROVED BY:
7. INTERRELATIONSHIP **Section 5.0 of the SOW**	8. DUE DATE: **Upon delivery of each Rolls-Royce MK 511-8 engine**

9. PREPARATION INFORMATION

- **Data Package**
  - **Life Limited Parts (LLP) List**
  - **FAA form 8130-3 for return to service**
  - **List of all Service Bulletins Embodied**
  - **List of all Airworthiness Directives Embodied**
  - **List of all Service Letters Embodied**
  - **List of all CMP Codes Embodied (Appendix A)**
  - **Submittals to Rolls Royce and responses from Rolls (if applicable)**
  - **The engine performance test data. The data shall be provided in Excel spreadsheet format**

Submit reports to the following addresses:

(1) Contracting Officer (Jim E. Kitahara – Code A), NASA AFRC, SAIF M/S 703:S323-D, 2825 East Avenue P, Palmdale CA 93550 – Original.
(2) Contracting Officer's Technical Representative (John C. Ruhf – Code OE), NASA AFRC, M/S 4800:2133, P.O. Box 273, Edwards, CA 93523-0273 - One copy.