PERFORMANCE WORK STATEMENT (PWS)

For

Reverse Engineering of F-15 Stick Force Tube Assy

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ACRONYM LIST

ARO	After Receipt of Order
CDRL	Contract Data Requirements List
CDR	Contract Data Requirement
DI	Data Item
GPM	Government Program Manager
IPB	Illustrated Parts Breakdown
LRU	Line Replaceable Unit
NSN	National Stock Number
OC-ALC	Oklahoma City Air Logistics Complex
OSHA	Operational Safety and Health Administration
P/N	Part Number
PWS	Performance Work Statement
SBIR	Small Business Innovative Research
SPO	System Program Office
SRA	Shop Replaceable Assembly
SRU	Shop Replaceable Unit
TAFB	Tinker Air Force Base
TFFI	Total Fuel Flow Indicator
UUT	Unit Under Test
VPP	Voluntary Protection Program

1 INTRODUCTION

1.1 Purpose

The purpose of this document is to describe the requirements for the reverse engineering of the F-15 Stick Force Sensor Tube Assembly P/N 478406-03 NSN 6615-01-495-5621.

1.2 Scope

This effort will provide a design and 1 prototype for a Form-Fit-Function (FFF) replacement. This will be a drop-in replacement for the existing Tube Assembly that will be backwards compatible with existing units; interface with mating components will be identical. The government will provide legacy units as a guide for the contractor to acquire dimensioning and material specifications. Deliverables should include a Technical Data Package (TDP) for Tube Assembly with unlimited rights, testing reports, initial prototype, and Source qualification plan.

1.3 Background

The Stick Force Sensor (SFS) provides the F-15E Automatic Flight Control System (AFCS) with simplex signals proportional to the force applied to the pilot's control grip. The signals are produced by a machined, stainless-steel beam that has two bending elements or blades which are positioned such that they bend under applied force. One blade responds to pitch forces while the other responds to roll forces. The amount of bending is detected as surface strain by etched foil resistance strain gages bonded to the blade surface.

The Tube Assembly that is the focus of this reverse engineering effort serves as the housing and provides support for this beam assembly. It accommodates signal transmission between the Beam Assembly and Circuit Cards contained in the SFS housing via holes for the wires. It also serves as a mounting point for a housing switch.

The reverse-engineered Tube Assembly must interface with all mating components in the same way as the current Tube Assembly does. Due to age, parts obsolescence, and lack of parts re-procurement data, the Tube Assembly now used on the F-15E aircraft is no longer supportable.

2 REFERENCE DOCUMENTS

- TO 5A22-5-4-3 **TECHNICAL MANUAL OVERHAUL INSTRUCTIONS WITH ILLUSTRATED PARTS BREAKDOWN** STICK FORCE SENSOR ASSEMBLY TR-346/ASW-51
- TR-346/ASW-51 JOINT ELECTRONICS TYPE DESIGNATION, SENSOR, STICK FORCE (478400-02-02)

3 CONTRACTOR TASKING / REQUIREMENTS

The Contractor shall design and fully document the Tube Assembly as a form, fit, and function replacement for the current P/N 478406-03 with unlimited data rights. The contractor shall design and build a minimum of 1 prototype for use in testing IAW TO 5A22-5-4-3 applicable specification (TR-346/ASW-51).

No Government Furnished Information (GFI) is required for this contract. Two assets can be provided as GFE for analysis and testing. Any destructive testing of GFE must be determined as necessary by 422 SCMS/GUEA Engineering.

3.1 Program Management

The contractor shall establish a single management focal point to accomplish the requirements of this PWS and to coordinate with the government task leader (GTL) or the GTL's technical representative. The contractor shall perform administrative, technical, and financial management functions during the program and shall maintain a status of these.

3.1.1 Project Kick-Off Meeting

The contractor shall host/conduct a kick-off meeting with Government participation. The purpose of the meeting will be to establish/define communication points of contact (POCs), review the current design and overview of proposed changes, and determine a schedule of contract work to be completed. A Conference Agenda shall be delivered IAW CDRL A004 and Conference Minutes IAW CDRL A001, per the delivery schedule in Table 4.2. (DI-ADMN-81249B A004, Meeting Agenda), (DI-ADMN-81250B, CDRL: A001)

3.1.2 Program Management Plan

The schedule for contract work to be completed shall be provided to the Government IAW CDRL A007.

(DI-MGMT-81861B, A007, Integrated Schedule/Management Plan and Analysis Report)

3.1.3 Program Management Review

The Contractor shall schedule and conduct quarterly (or as determined necessary by the GTL) program status reviews in coordination with the Government Program Manager. The purpose of these meetings shall be to brief the progress of the project. The Contractor shall generate presentation materials as required to aid in the discussion of technical issues. The Contractor shall provide meeting agendas and meeting minutes and shall track Action Items associated with these meetings. (DI-ADMN-81249B A004, Meeting Agenda) (DI-ADMN- 81250B, A005, Meeting Minutes)

3.2 Testing

3.2.1 Qualification Testing

The Contractor shall perform all tests listed in TO 5A22-5-4-3 for the Stick Force Sensor type TR-346/ASW-51 regardless of sample size. The Contractor shall Perform Environmental Testing IAW MIL-STD-810H and MIL-STD-461G. The contractor will provide the test procedures and report results. (DI-NDTI-80603A, Test Procedure, CDRL A009), (DI-ENVR-81663, ESS Report, CDRL: A002), (DI-EMCS-80200C, EMI Testing Report, CDRL A008), (Test and Inspection Report, DI-NDTI-80809B, A010)

3.2.2 Shop Testing

The contractor shall provide Design Engineering Services for On-Site shop testing one day and up to three possibly non-consecutive days on-site at Tinker AFB, OK. The contractor shall operate in compliance with contractors' Security and Safety Requirements plans and policies. When notified by the USG, the contractor will provide employees' details to Tinker AFB personnel and TAFB security as required to accommodate access to TAFB and Oklahoma City Air Logistics Complex (OC-ALC).

3.2.3 On Aircraft Testing

The Contractor shall provide Design Engineering Services for On-Aircraft testing that addresses the accuracy and vibration tests listed in MIL-T-83027. Participation with On-Aircraft testing for up to five days on site at Tinker Air Force Base or another base to be determined later. Contractors will also need to get access through the same process for flight testing.

3.3 Technical Data

The Contractor shall provide a complete Technical Data Package (DI-MISC-80750, A003, Technical Data Report)

3.4 Final Report

The contractor shall provide a final report on the findings. The purpose is to address all testing issues that could not be resolved during the testing phases of this contract.

(DI-NDTI-80809B, A006 Test/Inspection Final Report)

3.5 Service Contract Report

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract via a secure data collection site. The contractor is required to completely fill in all required data fields in the Service Contract Report (SCR) at www.SAM.gov

Reporting inputs will be for the labor executed during the period of performance for each Government fiscal year (FY), which runs from 1 October through 30 September. While inputs may be reported any time during the FY, all data shall be reported no later than 31 October* of each calendar year Contractors may direct questions to the SAM.gov service desk (https://www.fsd.gov/fsd-gov/home.do)."

***Reporting Period**: Contractors are required to input data by 31 October of each year.

Uses and Safeguarding of Information: Information from the secure web site is considered to be proprietary in nature when the contract number and contractor identity are associated with the direct labor hours and direct labor dollars. At no time will any data be released to the public with the contractor's name and contract number associated with the data.

User Guide: Data for Air Force service requirements must be input at www.sam.gov. A quick start user guide is available at on the SAM.gov website at https://sam.gov/SAM/transcript/SCR_QSG.pdf. In addition, a full user guides for contractors and government personnel are available at https://www.sam.gov/SAM/pages/public/help/samUserGuides.jsf.

3.6 Emergency Procedures

Contractor employees shall follow the direction of Government employees in regard to emergency procedures, i.e. fire, tornado, active shooter, bomb threats. It is the responsibility of the contractor to provide guidance and establish procedures for responding to an emergency for their employees. It is the contractors' responsibility to account for their employees following an emergency evacuation. Contractor Personnel shall participate with government personnel in all fire and tornado drills at no additional cost to the Government.

3.7 Mission Essential Contractor Services.

Not applicable IAW DFARS 252.237-7023.

3.8 Contractor Identification

Contractor employees shall identify themselves as Contractor personnel and always display distinguishing badges or other visible identification. Contractor personnel shall appropriately identify themselves as Contractor employees in conversations, formal and informal written correspondence, teleconferences, video teleconferences, faxes, and/or other electronic communication whether with Government personnel, other contractor personnel, or with the public when supporting this contract where their status as contractor employees might not otherwise be apparent or where they might be mistaken for civil service employees or military personnel.

3.9 Privately Owned Motor Vehicles (POV):

Contractor employees shall comply with directives pertaining to operation of privately owned vehicles on TAFB per DAFI 31-218, *Motor Vehicle Traffic Supervision*.

4 DELIVERY SCHEDULE AND PERIOD OF PERFORMANCE

4.1 Period of Performance

The period of performance for this task shall be for 9 months from contract award. Early completion and delivery is acceptable and encouraged, but without additional monetary compensation/reward.

4.2 Delivery Schedule for PR FD2030-26-01300

The following table summarizes the deliverables and their respective due dates. The Contractor shall develop a finalized Integrated Schedule IAW CDRA007. All schedules are specified in terms of calendar days

Table 4.2 CDRL Deliverable Schedule

Paragraph	Description/CDRL	CDRL Data Item	Due Date
3.1.1	Kick Off Meeting Minutes DI-ADMN-81250B	A001	10 Days after meeting
3.2.1	Environmental Stress Screening Report DI-ENVR-81663	A002	10 Days After Testing Complete
3.3	Tech Data Package Report DI-MISC-80750	A003	60 Days Before Contract Competition
3.1.1 3.1.3	Meeting Agenda DI-ADMN-81249B	A004	5 Days Before Scheduled meeting
3.1.3	Meeting Minutes DI-ADMN- 81250B	A005	5 Days After Scheduled meeting
3.4	Test/Inspection Final Report DI-NDTI-80809B	A006	30 days prior to Contract Completion
3.1.2	Integrated Schedule/Management Plan and Analysis Report DI-MGMT-81861B	A007	3 days before Kick-off meeting
3.2.1	EMI Testing Report DI-EMCS-80200C	A008	10 Days after testing is complete

3.2.1	Test Procedure DI-NDTI-80603A	A009	10 days before testing starts
3.2.1	Test and Inspection Report DI-NDTI-80809B	A010	10 Days after testing is complete

4.3 Government Inspection and Acceptance of Deliverables

The Government Program Manager will have the right to reject or require correction of any deficiencies found in deliverables. Specifications will be identified by each CDR. If no comments are provided within 30 calendar days of deliverable receipt, the deliverable will be deemed to have been accepted by the Government.

5 SERVICES SUMMARY

The Contractor shall ensure the performance objectives, performance thresholds, and support for surveillance methods are achieved as follows:

Table 5.1: Services Summary

Performance Objective	PWS Para	Performance Threshold
Delivery of Meeting Minutes - CDR A001	3.1.1	The contractor shall provide CDR A001 Meeting Minutes, DI-ADMN-81250B deliverable in accordance with the PWS with 2 or fewer defects.
Delivery of Environmental Stress Screening Report –CDR A002	3.2.1	The contractor shall provide CDR A002, Environmental Stress Screening Report, DI-ENVR-81663 deliverable in accordance with the PWS; subject CDR shall be delivered to the COR with 2 or fewer defects. A defect is defined as a mistake that adversely impacts technical content and/or clarity.
Delivery of Tech Data Package Report -CDR A003	3.3	Contractor shall deliver the CDR A003, Technical Data Package, DI-MISC-80750,deliverable in accordance with the PWS; subject CDR shall be delivered to the COR with 2 or fewer defects. A defect is defined as a mistake that adversely impacts technical content and/or clarity

Delivery of Meeting Agenda - CDR A004	3.1.1 3.1.3	The contractor shall provide CDR A004 Meeting Agenda, DI-ADMN-81249B deliverable in accordance with the PWS with 1 or fewer defect.
Delivery of Meeting Minutes- CDR A005	3.1.3	The contractor shall provide CDR A005 Meeting Minutes, DI-ADMIN-81250 deliverable in accordance with the PWS with 1 or fewer defect.
Delivery of Test/Inspection Final Report - CDR A006	3.4	The contractor shall provide CDR A006, Test/Inspection Final Report, DI-NDTI-80809B deliverable in accordance with the PWS; subject CDR shall be delivered to the COR with 2 or fewer defects. A defect is defined as a mistake that adversely impacts technical content and/or clarity.
Delivery of Integrated Schedule/Management Plan and Analysis Report- CDR A007	3.1.2	The contractor shall provide CDR A007 Integrated Schedule/Management Plan and Analysis Report, DI-MGMT-81861B deliverable in accordance with the PWS with 1 or fewer defect.
Delivery of EMI Testing Report- CDR A008	3.2.1	The contractor shall provide CDR A008, EMI Testing Report, DI-EMCS-80200C deliverable in accordance with the PWS; subject CDR shall be delivered to the COR with 2 or fewer defects. A defect is defined as a mistake that adversely impacts technical content and/or clarity.
Delivery of Test Procedure- CDR A009	3.2.1	The contractor shall provide CDR A009, Test Procedure DI-NDTI-80603A deliverable in accordance with the PWS; subject CDR shall be delivered to the COR with 2 or fewer defects. A defect is defined as a mistake that adversely impacts technical content and/or clarity.
Delivery of Test Inspection Report– CDR A010	3.2.1	The contractor shall provide CDR A010, Test and Inspection Report DI-NDTI 80809B deliverable in accordance with the PWS; subject CDR shall be delivered to the COR with 2 or fewer defects. A defect is defined as a mistake that adversely impacts technical content and/or clarity.

6 DATA MARKING

The following references govern how artifacts containing technical data shall be marked

- DODI 5230.24, Distribution Statements on Technical Documents
- AFI 61-201, Scientific, Research And Development Management of Scientific and Technical Information (STINFO)
- DFARS 252.227-7013, Rights in Technical Data--Noncommercial Items

6.1 Asserted Rights in Technical Data

Mark all technical data to be delivered to the Government IAW DFARS 252.227.7013(f) Technical data delivered or otherwise provided under a contract without restrictive markings shall be presumed to have been delivered with unlimited rights and may be released or disclosed without restriction.

6.2 Removal of Unjustified and Nonconforming Markings

IAW DFARS 252.227.7013(h), Proprietary markings shall be considered non-conforming and not authorized. The words "unlimited rights" shall be considered non-conforming and not authorized. All nonconforming markings will require removal and redelivery of the artifacts within 60 days.

6.3 Distribution Statements

Mark STINFO to be delivered to the Government IAW DODI 5230.24 and DAFI 61-104.

Descriptions and examples of each applicable Distribution Statement are listed below.

6.3.1 Distribution Statement A

Distribution Statement A shall be used for technical data with asserted license rights of Unlimited where Export Control is not required. A Destruction Notice is not required.

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

6.3.2 Distribution Statements D and E

Distribution Statements D and E shall be used for the following instances:

- Distribution Statement D shall be used for technical data with asserted license rights of Unlimited where Export Control is required.
- Distribution Statement E shall be used for technical data with asserted license rights of Limited.
- Distribution Statement E shall be used for technical data with asserted license rights of Government Purpose.
- Distribution Statement E shall be used for technical data that contains proprietary information.

Distribution Statements D and E are expressed in a standard format comprising four components presented in the following order and as applicable to this Contractual Engineering Task (CET):

1. Authorized Audience – Department of Defense and DOD contractors or DoD Components only.

2. Reason for Control - More than one reason or justification for non-release of controlled technical information may apply. Therefore, more than one reason may be used in a Distribution Statement. Applicable reasons are: a. Administrative or Operational Use.
   b. Critical Technology.
   c. Export Controlled – All artifacts found to contain export controlled technical data, must specify "Export Controlled" as a reason for limitation in addition to all other reasons that apply.
   d. Proprietary Information – For technical data, note the Government's license rights i.e. "Proprietary Information (DFARS Limited Rights)". For non-technical data, such as financial information, state "Proprietary Information" without the Government's license rights.
3. Date of Determination – Date contract was awarded.
4. Controlling Office - 422 SCMS/GUEAA, 3001 Staff Drive, Tinker AFB, OK 73145.

DISTRIBUTION STATEMENT D. Distribution authorized to the Department of Defense and U.S. DoD contractors only; Critical Technology and Export Controlled; 23 August 2018. Other requests shall be referred to 422 SCMS/GUEAA, 3001 Staff Drive, Tinker AFB, OK 73145.

DISTRIBUTION STATEMENT E. Distribution authorized to DoD Components only; Proprietary Information (DFARS Limited Rights) and Export Controlled; 23 August 2018. Other requests shall be referred to 422 SCMS/GUEAA, 3001 Staff Drive, Tinker AFB, OK 73145.

6.4 Export Control Warning Label

Mark all STINFO determined to contain export controlled data to be delivered to the Government IAW DODI 5230.24. The Export Control Warning shall be placed directly below the Distribution Statement. All documents assigned a Distribution Statement other than A shall be marked on every page with the following statement:

WARNING - This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25.

6.5 Destruction Notice for Unclassified Documents

Mark all limited-released (marked with a Distribution other than A) STINFO to be delivered to the Government IAW DODI 5230.24 and AFI 61-201. The Destruction Notice illustrated below, shall be placed directly underneath the Export Control Warning.

DESTRUCTION NOTICE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

6.6 Classification

Mark all data to be delivered to the Government with classification markings representing the highest classification of the document.

The Contractor may mark all unclassified technical data to be delivered to the Government with **"UNCLASSIFIED**" typed on the footer and header of each page.

6.7 General Marking Guidance

- All markings shall be conspicuously electronically fixed as to not interfere with other markings contained within the document.
- All markings shall be legible when viewed at normal 100 percent viewing resolutions.
- All markings shall be electronically fixed to the footer of every page of the electronic document.
- Coversheets shall not be used unless coversheet page numbering is sequentially consistent with the document.
- Portions or pages of a document may have different distribution statements that would govern their distribution if separated from the main document. The most restrictive distribution on its parts applies to the document as a whole.

7 SAFETY AND HEALTH

While performing work under this contract the contractor shall comply with all applicable federal, state and local regulations regarding occupational safety and health. The contractor shall notify the Contracting Officer (CO), within eight (8) hours of any damage to government property where the dollar value exceeds $500,000.00 and within two workdays, for any damage to government property less than $500,000.00 during the execution of the contract.

Mishap notifications shall contain, as a minimum, the following information:

a. Contract, Contract Number, Name and Title of Person(s) Reporting

b. Date, Time and exact location of accident/incident

c. Brief Narrative of accident/incident (Events leading to accident/incident)

d. Cause of accident/incident, if known

e. Estimated cost of accident/incident (material and labor to repair/replace)

f. Nomenclature of equipment and personnel involved in accident/incident

g. Corrective actions (taken or proposed)

h. Other pertinent information

If requested by the designated CO, the contractor shall immediately secure the mishap scene/damaged property and impound pertinent maintenance and training records, until released by the Procuring Safety Office.

7.1 VPP Overview

What is VPP?

Working with industry and labor, OSHA created the Voluntary Protection Programs (VPP) in 1982 to recognize and partner with worksites that implement exemplary systems to manage worker safety and health. The managers, employees, and any authorized employee representatives at these sites

voluntarily implement comprehensive safety and health programs — hereinafter referred to as safety and health management systems — that go beyond basic compliance with OSHA standards.

Sites qualifying for VPP attain Star, Merit, or Demonstration status. Star participants meet all VPP requirements. Merit participants have demonstrated the potential and willingness to achieve Star status, but some aspects of their programs need improvement.

Statistical evidence for VPP's success is impressive. Consistently since the Programs began, the average VPP worksite has had a recordable incidence rate for days away from work, restricted work activity, and/or job transfer (DART rate) about 50 percent below the average for its industry!

In VPP,

- Management commits to operating an effective occupational safety and health management system characterized by four basic elements: **Management Leadership and Employee Involvement, Worksite Analysis, Hazard Prevention and Control, and Safety and Health Training**.
- Employees agree to participate in the program and work with management to ensure a safe and healthful workplace.
- The site submits an application to OSHA that describes its system of worker protection.
- OSHA evaluates the application. If OSHA accepts it, the agency then conducts an onsite review to verify that the safety and health management system meets VPP requirements. With approval comes OSHA's public recognition of the applicant's exemplary safety and health management system.
- OSHA also periodically reevaluates the participant to confirm its continuing qualification for VPP. Onsite evaluations are every 2 1/2 to 5 years for Star, 12 to 18 months for Demonstration, and 18 to 24 months for Merit.
- OSHA removes VPP participants from its programmed inspection lists.
- OSHA enforcement personnel will investigate workplace complaints, any fatality or catastrophe, and other significant events. After such events, VPP personnel may also review a participant's continuing eligibility for VPP.

7.2 VPP BENEFITS

Who benefits from VPP?

- The foremost beneficiaries of OSHA's VPP are the workers who, at day's end, arrive home safe and healthy to families who needn't fear the tragedy of worker death, injury, and illness.

- Employers Benefit – Fewer injuries and illnesses mean greater profits as workers' compensation premiums and other costs plummet.

- Unions Benefit – Labor-management cooperation on safety and health sets the tone for improved cooperation in other areas.

- Industries Benefit – VPP sites are models of excellence that can influence best practices industry-wide