Task Order Statement of Work (SOW)

Date: 8/27/2020
Task Name: TIRS-2 Systems Engineering and Management
Task No. / Mod: 53 / 8
Task Monitor (TM): Jason Hair
Contract number: NNG15CR66C
Contract SOW Reference: FUNCTION 2- IMPLEMENTATION PHASE SERVICES

I. Scope – Mod 8 in Red

a. Background

The Thermal Infrared Sensor-2 for Landsat 9 (TIRS-2) is an Earth Science mission to continue the Landsat legacy for continuous measurement of the Earth in the Thermal bands for the past 43 years. Landsat 9, and likewise TIRS-2 has been directed to start work immediately on the development of a system that has the same top level requirements at Landsat 8 /LDCM. TIRS-2 is budget constrained to be as much of a copy of the TIRS for Landsat 8 as possible, with the exception of increasing the mission class and reliability for TIRS-2 to Class B from the previous Class C.

To proceed with the development of the TIRS-2 instrument, the TIRS-2 project is proceeding with plans developed as part of PDR to complete the detailed design, improve the reliability to meet the requirements of a Class B instrument, develop the flight hardware, and test the instrument.

TIRS-2 has been successfully delivered to the spacecraft vendor facility and integration. The remaining work is related to post-delivery support integration and test of TIRS-2 with the Observatory system, launch, and commissioning. Some scope from development has been removed with some new scope related to post-delivery work.

b. Summary of work

1. The contractor shall provide technical support to TIRS-2 over a wide range of Systems Engineering and Management activities including: architecture and design development; requirements analysis, identification and management; validation and verification; risk analysis, reduction, and management; and, integration, test, and verification services. The responsibilities include:

i. Review, oversight, and management of design and hardware development activities, including post-delivery support, including ensuring that designs meet

requirements, including sustained on-site support at the spacecraft vendor facility

ii. Review, management, and control of requirements as well as reviewing, developing, planning, and managing verification plans

iii. Planning, preparing, managing and executing verification and test plans and procedures, covering multiple shift work, , including sustained on-site support at the spacecraft vendor facility

iv. Generating, capturing, and tracking verification artifacts and closures.

v. Developing Comprehensive Test Plans and procedures

vi. Management and execution of the PF/PFR process

vii. Failure Review Board participation and oversight, including troubleshooting, failure analysis, and root cause determination

viii. Planning, preparing, executing and managing integration activities, plans and procedures, covering multiple shift work, including sustained on-site support at the spacecraft vendor facility

ix. Defining, tracking, updating, assessing and managing risks

x. Provide project management support for the position of deputy instrument project manager. Support shall include leading the TIRS-2 team in the development, build, test, delivery, post-delivery support, observatory integration and test, launch, and commissioning of the TIRS-2 instrument to meet technical requirements within cost and schedule constraints. This role includes supporting the instrument project manager in all management activities to execute TIRS-2 per NPR 7120.5E, manage technical, cost and schedule control processes, perform periodic reporting to 490, Landsat 9 and Center management, conduct milestone reviews, support risk management, resolve problems, and work with GSFC institutional managers to obtain necessary support.

c. Required skills/knowledge

The requested work requires a broad range of skills and in- depth knowledge of spaceflight instrument systems, requirements, design approaches, hardware development options, integration and test practices and operations. Strong leadership, management, and communication skills.

II. Period of Performance

The period during which the work for this task order shall be performed is from task award through **April 14, 2021**.

III. Subtask Description

None Anticipated

IV. Deliverables/Schedules/Milestones

Ref#	Deliverables	Due Date
1	Status Reports	Weekly
2	Performance Reports	Monthly
3	End-of-task Report	End of task

V. Management Approach

a. Staff Allocation, Expertise, and Skill Mix

The contractor shall staff this work item with the appropriate skill mix and staffing level for the work.

b. Configuration Management

Systems and documents will be covered under the Project Configuration Management Plan.

c. Facilities

Appropriate IT devices to support the analyses, specification development, and report development are required. It shall be the contractor's responsibility to provide and set up local workstations and network connections at the contractor's off-site facilities as required, and to install any required tools and utilities on the contractor's equipment.

d. Risk Management and Best Practices

The contractor shall manage schedule, cost, and technical risk through monitoring and reporting of progress and performance metrics, identifying issues well in advance of

negative consequences, recommending corrective action to the TM, and implementing corrective actions with the compliance of the TM.

e. Performance Metrics

The work performed for this task will be evaluated by the TM based on the technical merit. Technical evaluation of the task performance is a subjective combination of performance metrics, technical quality of deliverables, cost control, significant events, innovations and meeting requirements set forth in the SOW.

Detailed performance metrics:

1. Completion of assigned work in a timely manner
2. Completion of the Comprehensive Performance Test Plan
3. Execution of the PR/PFR process
4. Participation and leadership of TIRS-2 Failure Review Board processes and failure analysis and resolution.
5. Participation and leadership of TIRS-2 risk assessment
6. Participation and leadership of TIRS-2 Integration and Test activities.
7. Participation and leadership of TIRS-2 design and development activities.

f. Government Furnished Facilities, Equipment, Software and Other Resources

The Government will provide account and passwords to government-furnished workstations where existing versions of various relevant software packages shall be maintained. It shall be the contractor's responsibility to complete any GSFC required security-related training courses.

g. Quality Assurance Requirements

The contractor providing technical services shall comply with all CMMI Level 2 processes established for the Project and deliverable products. Applicable requirements include, but not limited to:

1. NPR 7120.5E NASA Space Flight Program and Project Management Requirements
2. NPR 7123.B NASA Systems Engineering Processes and Requirements
3. GPR 7120.99 Goddard Project Management
4. GPR 7120.5A Goddard Systems Engineering
5. GPR 7150.4 Goddard Software Engineering Requirements

VI. ODC (Travel and Procurement)

Domestic travel as needed. Plan for 7 trips to Gilbert, AZ for 1 week duration.

Extended travel is required to provide sustained on-site support at the Spacecraft Contractor's facility in Gilbert, Arizona to complete required tasks per the scope of work. Extended travel costs will be reimbursed in accordance with NASA Procedural Requirements (NPR) 9750.1. The contractor shall assume return travel to GSFC once per year.

VII. *W*ork Location

This work shall be performed primarily at the Goddard Space Flight Center (On-site), but the contractor may be required to perform some work at the contractor's facility (Off-site) or at the Spacecraft Contractor's facility in Gilbert, AZ.

VIII. Reporting Requirements

a. Weekly or Bi-weekly status report

The contractor shall generate Performance Reports every week. The report shall include, as a minimum, a summary of the week's highlights/accomplishments, milestones/schedule/deliverables, risks and customer meetings.

b. Monthly performance report

The contractor shall provide monthly technical and schedule progress reporting to adequately describe the activities of the contractor team to the TM. The contractor shall provide monthly cost reporting in accordance with the WBS. The contractor, including subcontractors, shall be available to attend monthly status meetings.

IX. Security Requirements

The contractor shall comply with Information Technology Security procedures and requirements as defined by NPG 2810.1A in the performance of this task. In addition, the contractor shall comply with all applicable federal rules and regulations and agency directives.

There will be no handling of classified data.

X. Data Rights

This SOW shall adhere to all Data Rights Clauses as stated in the SES II contract.

XI. Applicable Documents

In the performance of this task, the contractor shall comply with the documents as listed in section V.g.

XII. References

None