

Task Order Statement of Work (SOW)

Date: 10/31/2019

Task Name: GDC Systems Engineering

Task No. / Mod: 102/ 0

Task Monitor (TM): Jason Hair

Contract number: NNG15CR65C

Contract SOW Reference: FUNCTION 1

I. Scope

a. Background

The Geospace Dynamics Constellation (GDC) will study the Earth's upper atmosphere, the Ionosphere and Thermosphere, providing data that will allow scientists to develop models of this highly dynamic region to better understand how it responds to changes in forcing to better predict atmospheric drag on orbiting spacecraft, disruptions in communications and navigation, induced currents in power grids, and other features to benefit life on Earth. GDC is managed through the Science Mission Directorate (SMD) Heliophysics Division at NASA Headquarters. GSFC has been directed to start pre-project activities to develop a project and mission design that meets science requirements and cost and schedule constraints.

b. Summary of work

The Contractor shall provide discipline and systems engineering services as required for mission concept development that integrate the aspects of flight systems, ground systems, instrument systems, and launch systems, including: support pre-formulation and formulation phase study inputs for spacecraft, launch vehicles, and instruments; develop preliminary, relative cost and schedule estimates based on design alternatives, and identify and assess high-risk elements in designs; document the history of design, qualification, flight experience, and modifications where existing components or subsystems are to be utilized; provide subsystem requirements for pre-launch, launch, and flight of flight hardware; prepare requirements and specification packages that conform to applicable standards defined within Task Order statement; prepare interface control documents; provide technical inputs for problem-solving and/or design inputs in selected spacecraft, instruments, ground system, and data disciplines; provide liaison and coordination services between the subsystem and project teams; provide design services that include performance of conceptual and preliminary design of the subsystems, components, and assemblies that comprise the instrument/ spacecraft/ platform/ launch system.

c. Required skills/knowledge

The requested work requires a broad range of skills and in- depth knowledge of spaceflight 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 October 14, 2020.

III. Subtask Description

Subtask 1: Systems Engineering

The Contractor shall provide systems engineering support for project development, reporting progress and conformance to appropriate practices and specifications (see the GPR 7123.1 Systems Engineering). These services shall include but not be limited to: operations concept development and support; architecture and design development; requirements analysis, identification and management; validation and verification; interfaces and interface control documents (!CDs); mission environment requirements; technical resource budget tracking; risks analysis, reduction and management; systems milestones review candidates; configuration management and documentation; and systems engineering management plan.

IV. Deliverables/Schedules/Milestones

At a minimum, the contractor shall deliver the items specified below:

<u>Ref#</u>	<u>Deliverables</u>	<u>Due Date</u>
1	Status Reports	Weekly/Bi-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.

1. Completion of assigned work in a timely manner
2. Completion of work and products for milestone reviews to support reviews as scheduled
3. Working in a collaborative environment to develop the design of the project system

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 and international travel as proposed.

VII. Work 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).

VIII. Reporting Requirements

a. Weekly or Bi-weekly status report

The contractor shall generate Performance Reports every week per the format provided by the TM. 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. The format shall be as directed by the TM.

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 TIDES contract.

XI. Applicable Documents

In the performance of this task, the contractor shall comply with the documents applicable documents in the TIDES Contract SOW.

XII. References

None