

Task Order Statement of Work (SOW)

Date: 9/19/2020

Task Name: Lucy Systems Engineering Support For Operations

Task No. / Mod: 116/3

Task Monitor (TM): Jessica Thompson

Contract number: NNG15CR66C

Contract SOW Reference: FUNCTION 2- IMPLEMENTATION PHASE SERVICES (A, B, C, D, E, H, I, J, K, L, M)

I. Scope

- a. Background – This Statement of Work describes the effort expected for this systems engineering task in support of Lucy. Lucy is a Discovery class Trojan Asteroid Mission which flies by 6 Trojans. Project Management and Project Systems Engineering are at Goddard Space Flight Center for this PI-led mission. The PI is at South West Research Institute (SWRI).

II. Areas of Effort

- a. Systems Engineering support for Operations

Summary of work – The Contractor shall support the maintenance of the Ground Systems Receivable/Deliverable (Rec/Del) list. This includes coordinating agreed to deliveries of products and tools from one Ground element to another, tracking the status of each deliverable, and reporting status to the Concept of Operations (ConOps) Lead Engineer.

The Contractor shall support the development of End to End (ETE) testing. This includes design, development and review of testing at several levels, including the Mission Level System Verification Tests (SVTs), Ground Readiness Tests (GRTs) and RF Compatibility tests to assure these ETE tests will properly validate the Lucy Systems against the mission's ConOps.

The Contractor shall participate in weekly Working Groups including the Systems Engineering Working Group and the Concept of Operations Working Group.

The contractor shall develop DOORS DXL scripts and automated verification report templates in support of requirement verifications

The Contractor shall advise the ConOps Lead and the Project Systems Engineer in overall readiness for operations. This shall be done through knowledge gained through discussions with the ground element and spacecraft leads as well as monthly review of the Integrated Master Schedules.

b. Systems engineering support for Verification and Validation

Summary of work –Provide systems engineering support for:

- Development of project-level documentation and reports in support of V&V.
- Interaction on Level 2 and 3 documents with the Lockheed Martin DOORS database.
- Participating in multiple weekly spacecraft engineering meetings via teleconference
- Providing project-level perspective and representing project interests at those meetings
- Identifying system-level issues and bringing them to the attention of the Project Systems Engineer
- Supporting the development of documentation and review packages and presenting as necessary

III. Required skills/knowledge

The contractor shall have a demonstrated knowledge ground system design and development.

IV. Period of Performance

The period during which the work for this task order shall be performed is from **October 15, 2020 through April 14, 2021.**

V. Subtask Description

N/A

VI. 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
4	Mission Requirements Document inputs	As needed
5	Imports and exports of requirements into and out of the DOORS requirements database by project personnel	As needed

6	<i>Inputs into L/VICD and IRD</i>	<i>As needed</i>
7	<i>Inputs into Mission and Level 3 verification methods</i>	<i>As needed</i>
8	<i>Documentation and review presentation material as directed by the Project Systems Engineer (typically monthly)</i>	<i>As needed</i>

VII. 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

The majority of the work will occur onsite at the NASA Goddard Space Flight Center.

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.

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

As deemed necessary, government furnished IT devices and/or equipment will be provided and required to be used in lieu of contractor's equipment.

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*

VIII. ODC (Travel and Procurement)

Travel may be proposed for special training needs and other engineering support task activities as directed by the Project, including but not limited to:

<u>Location</u>	<u>Duration</u>	<u>Dates</u>
<i>Littleton, CO (LM) – 2 Trips</i>	<i>~3 days</i>	<i>Bi-Monthly</i>

IX. 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).

X. Reporting Requirements

a. Weekly or Bi-weekly status report

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

b. Monthly performance report

The contractor shall report status in person or via teleconference to the TM or designated alternates on a monthly basis. Reports shall include informal presentation of interim results, status of development activities, and action item status. The contractor

shall provide all reports at least one day in advance of the monthly meeting via email, and maintain an email distribution list with the concurrence of the TM. The contractor shall also support the TM in the preparation of status reviews for internal and external funding agencies. The contractor shall comply with any and all additional requests for status meetings and reports.

XI. 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.

NOTE: This position should not require the handling of classified data.

XII. Data Rights

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

XIII. Applicable Documents

In the performance of this task, the contractor shall comply with all Lucy Project specific documentation.

XIV. References

N/A