

# Technology and Integrated Discipline Engineering Services (TIDES)

All deliverables and requirements must follow the guidelines in NNG15CR65C with no exceptions

## Task Order Statement of Work (SOW)

Date: 03Nov2016

Task Name: PM/SE SME for LCRD SRB

Task No. / Mod: 47/0

Task Monitor (TM): Wilfredo Blanco

Contract number: NNG15CR65C

Contract SOW Reference: Implementation Phase (Function 2)/Systems Engineering (Sub-function C) Services

### I. Scope

- a. Background – The LCRD is a GSFC managed mission under the Technology Development Missions (TDM) Program Office within the Space Technology Mission Directorate (STMD).

The LCRD mission will demonstrate continuous high data rate optical communications in an operational environment from GEO. The LCRD payload consists of two optical communications terminals that will support bi-directional communications with Optical Ground Terminals as well as enable bi-directional communication with Low-Earth-Orbit (LEO) spacecraft that are equipped with compatible optical communications terminals.

LCRD is a Category-3 Project/Class D Payload as defined in NPR 7120.5 and NPR 8705.4. LCRD will fly on STPSat-6 and the demonstration is expected to operate for two years.

- b. Summary of work –

The purpose of this task is to obtain the Subject Matter Expert (SME) in the area of Project Management (PM) for the Standing Review Board (SRB) of the Laser Communication Relay Demonstration (LCRD) Project. The PM SME will perform the duties associated with the preparation, conduct, reporting and close-out activities for the SRB Life-Cycle-Reviews of LCRD as described in this Statement of Work (SOW).

SRB Life-Cycle-Reviews are denoted in this SOW as LCRs. The SRB is responsible for independently assessing the health of the project during the LCRs as an integrated team under the leadership of the SRB Chair and SRB Review Manager (RM). LCRs are conducted at defined life-cycle milestones and are used to objectively assess the project's progress against the project plan, its readiness to proceed to the next lifecycle phase, compliance with NPR 7120.5E, NPR 7123.1B, GSFC-STD-1001 and SRB Handbook requirements.

The first LCR to be covered under this task is the Critical Design Review (CDR).

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## c. Required skills/knowledge –

- i. Extensive professional experience in the theories, principles, practices and techniques related to the mission level and element level development involving flight and flight support products. Required knowledge includes but is not limited to any combination of the following: requirements capture and analysis, systems architecture and design, functional analysis, interface design and specification, communication protocol design and specification, simulation and modeling, verification and validation/acceptance testing, environmental testing, fault monitoring, project scheduling, costs and budgeting, risk management, project controls, and organizational development.
- ii. Knowledge of all aspects of spaceflight mission (including instruments, spacecraft, launch vehicle and ground support systems) design, development, integration, test, launch, flight/mission operations.
- iii. Demonstrated skill in evaluating scientific processes and programmatic requirements for the implementation approaches of the design, development and testing necessary to meet spaceflight mission objectives.
- iv. Demonstrated insight and judgment in distilling large volumes of expert programmatic and technical information to identify/extract the significant issues and risks.

## II. Period of Performance

The period during which the work for this task shall be performed is from 01Dec2016 thru 01Dec2017.

## III. Subtask Description

The SRB is composed of management, technical, risk, schedule and cost experts from outside the advocacy chain of the project that, under the leadership of the SRB Chair and RM, provide an independent assessment of the project's progress and health in accordance with NPR 7120.5, NPR 7123.1 and GSFC-STD-1001.

SME duties entail exercising recognized systems and technical management leadership in a flight systems specialty by serving as SME on the SRB, and a consultant to GSFC programs, in the area of spaceflight systems.

The key deliverables include the documenting and presenting for each LCR the review findings (strengths, issues, concerns and observations) in the Snapshot Summary Report, Individual

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Continuity of SRB members from one review to the next is critical to the effectiveness and efficiency of each review. SRB members shall commit to participation in every LCR to the extent possible throughout the lifecycle of the mission. A 30-day or greater notification shall be provided by the SRB member (when possible) if participation at a specific LCR is not possible.

Specific LCR support requirements include:

## **LCR Preparation**

- a. Help define agenda and dates for LCR and associated activities, in coordination with the SRB Chair and as required by the RM.
- b. Support project meetings/reviews and SRB meetings to prepare for an LCR, via teleconference or in person, in coordination with the SRB Chair and as required by the RM.
- c. Review LCR materials in advance of the review, as made available by the RM.
- d. Plan travel and implement travel arrangements to support the LCR and associated activities.

## **LCR Conduct**

- a. Attend the LCR as scheduled by the RM in the Appointment Memo the LCR.
- b. Exercise recognized leadership as designated SME during the LCR.
- c. Attend and participate SRB caucus and out-brief to project at LCR.
- d. Prepare and submit Requests for Action (RFAs) and Advisories during the LCR, as needed according to findings from the LCR.

## **Post-LCR Activities**

- a. Attend and participate in follow-up meetings after LCR to complete SRB assessment, finalize associated documentation as well as to assist in reporting findings, in coordination with the SRB Chair and as required by the RM.
- b. Document LCR findings and assessment in the IMIR.
- c. Prepare sections for and/or provide comments for the Snapshot Summary, the LCR Report and briefing charts, in particular sections pertinent to the SME's area of expertise, in coordination with the SRB Chair and as required by the RM.

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- d. Follow LCR actions (RFAs and Advisories) through closure, evaluating responses provided by the project and recording recommended disposition action from the evaluation and supporting rationale using the Goddard Review Management System (GRMS).

The contractor shall keep the SRB Chair and RM apprised of all correspondences and discussions that pertain to the conduct of LCRs and dissemination of results from LCRs. All reports shall be reviewed and approved by the SRB Chair and by the RM prior to release. Official correspondence shall be routed through the SRB Chair and RM.

The contractor shall get approval from the RM to participate on activities for the project outside the direct support for LCRs as described in this section, and shall provide the RM a report summarizing the participation within 72 hours of completing these activities.

## IV. Deliverables/Schedules/Milestones

The Data Deliverables for each LCR

	Data Deliverable	Due No Later Than (NLT)
1	RFAs & Advisories	LCR
2	Key Findings for Snapshot Summary	LCR + 1 day
3	IMIR	LCR + 5 days
4	Comments for the LCR Report	48 hours after request (~ LCR + 5 days)
5	Comments for LCR Briefing charts	48 hours after request (~ LCR + 10 days)
6	RFA & Advisory Evaluation/Recommendation	5 days after Project Responds

The Notional Schedule of LCRD's LCR milestones:

Milestone	Date	Duration	Location
Critical Design Review (CDR)	Dec. 8, 9 & 14, 2016	20 hours	Greenbelt, MD
System Integration Review/Pre-Environmental Review (SIR/PER)	Mar. 2018	16 hours	Greenbelt, MD
Operational Readiness Review (ORR)	Feb. 2019	16 hours	Greenbelt, MD

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## V. Management Approach

### a. Staff Allocation, Expertise, and Skill Mix

One reviewer, as described in Section I to serve as PM SME in the LCRD SRB.

### b. Configuration Management

Shall use Code 300's GRMS for LCR actions. Code 300 will archive Snapshot Report, LCR Reports (containing IMIRs) and briefing materials.

### c. Facilities

Government will provide the contractor access to GRMS and systems to exchange information for the preparation, conduct and post-review activities as described in Section III upon the contractor completing of requirements to access these system. Site-Reviews will be conducted at GSFC where internet access will be provided. Otherwise it shall be the contractor's responsibility to provide facility, equipment and tools to perform the requirements of this task.

### 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

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 that include being prepared for the LCR and LCR related activities, as well as relevant, clear, well organized and timely communication (verbal and written) of findings, recommendations and associated analysis.

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

Government will provide the contractor access to GRMS and systems to exchange information for the preparation, conduct and post-review activities as described in Section III upon the contractor completing of requirements to access these system. Site-Reviews will be conducted at GSFC where internet access will be provided. It shall be the contractor's responsibility to complete any GSFC required security-related training courses.

### g. Quality Assurance Requirements

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(See Clause H.12 1852.216-80 TASK ORDERING PROCEDURE d(4) and QA plan)

## VI. ODC (Travel and Procurement)

LCRD's LCRs will take place at GSFC in Greenbelt, MD.

## VII. Work Location

This work shall be performed primarily at the contractor's facility, but the LCRs will take place at the Goddard Space Flight Center.

## VIII. Reporting Requirements

Deliverables associated with LCRs in Section IV.

The contractor shall get approval from the RM to participate on activities for the project outside the support for LCRs as described in this section, and shall provide the RM a report summarizing the participation within 72 hours of completing these activities.

## IX. Security Requirements

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

The Contractor shall adhere to project requirements regarding SBU and ITAR related information. ITAR related information is controlled by the ITAR, 22 CFR 120-130, by the U.S. Department of State. Any transfer of controlled information to a foreign person or entity requires an export license issued by the U.S. Department of State or an ITAR exemption to the license requirement prior to the export or transfer.

## X. Safety

The contractor shall:

- Follow safety requirements when performing any task, keeping their workplace in a safe manner.

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- Attend all required training, set forth by the TIDES Safety/Mission Assurance Officer, ensuring certifications are current.

## XI. Data Rights

This SOW shall adhere to the following Data Rights clause, as stated in this contract: “the default Data Rights clause under this contract is FAR 52.227-14 RIGHTS IN DATA-GENERAL as modified by NASA FAR Supplement 1852.227-14-Alternate II and Alternate III and GSFC 52.227-90. Any exceptions to this clause will be covered by FAR 52.227-17 RIGHTS IN DATA-SPECIAL WORKS as modified by NASA FAR Supplement 1852.227-17, and, if applicable, GSFC 52-227.93.”

## XII. Applicable Documents

In the performance of this task, the contractor shall comply with the following documents:

1.	NPR 7120.5E	NASA Spaceflight Program and Project Management Requirements
2.	NPR 7123.5B	NASA Systems Engineering Processes and Requirements
3.	NPR 8705.4	Risk Classification for NASA Payloads
4.	GPR 8700.4H	Goddard System Reviews
5.	GSFC-STD-1001A	Criteria for Flight and Flight Support Systems Lifecycle Reviews
6.	GSFC-STD-1000G	Rules for the Design, Development, Verification and Operations of Flight Systems
7.	NASA/SP-2013-02-026-HQ	NASA SRB Handbook

## XIII. References