

SEAS TASK 36 Mod 108

L9 Launch Vehicle Integration Engineer

1. Background:

The Landsat 9 Mission (L9) is the future of Landsat satellites, and is scheduled for launch during 4th quarter of 2020. It will obtain valuable data and imagery to be used in agriculture, education, business, science, and government. The Landsat Program provides operational acquisition of high resolution multispectral data of the Earth's surface on a global basis. The data from the Landsat spacecraft constitute the longest record of the Earth's continental surfaces as seen from space, and is a record unmatched in quality, detail, coverage, and value. L9 will consist of a single observatory in the EOS 705 km sun-synchronous orbit.

The L9 spacecraft bus is built by Orbital ATK. There are two instruments on L9: the Operational Land Imager -2 (OLI-2) instrument is being built by Ball Aerospace Technology Corporation (BATC) of Boulder, CO, and the Thermal InfraRed Sensor-2 (TIRS-2) is an instrument being developed as a GSFC in-house effort. The TIRS-2 is an imaging thermal optical instrument with a cold (~40 K) focal plane.

The ground system for L9 is a partnership between NASA and the United States Geological Survey (USGS) Center for Earth Resources Observation and Science (EROS) of Sioux Falls, SD, who currently operate the existing Landsat-7 and -8 observatories.

Launch services for the L9 mission will be procured and managed by the NASA Launch Services Program (LSP) located at Kennedy Space Center, Florida.

2. Summary of Work:

The Contractor/Stellar Solutions (Stellar) will provide senior systems engineering support to the Landsat 9 (L9) Project Office in the areas of launch vehicle integration and launch services procurement support for the L9 mission. The launch vehicle interface engineer will be a critical senior member of the L9 Mission Systems Engineering team with the primary responsibilities of:

- Assessment and identification of critical launch vehicle interfaces and environments for candidate launch vehicles in support of the L9 mission;
- Development and maintenance of driving launch interface requirements for the L9 spacecraft and instruments;

- Tracking of commercial launch service market trends and configuration changes for candidate launch vehicles;
- Support for the launch services procurement process in coordination with NASA/HQ and the NASA Launch Services Program.
- Support the spacecraft design and development process; review and provide comments to spacecraft CDRLs dealing with Launch vehicle interfaces, support spacecraft milestone reviews, and review requirements across different interface documentation related products.

In addition, the Contractor/Stellar Solutions (Stellar) will provide limited optical engineering support to the Landsat 9 project in area of the Operational Land Imager 2 (OLI-2) instrument. The optical engineer will be responsible for providing optical discipline engineering support for OLI-2 testing with the Calibration Acceptance Test Setup (CATS) and SPatial Acceptance Test Setup (SPATS).

3. Period of Performance

The period of performance for this task shall be between ~~October 15, 2020~~ March 1, 2020 and ~~April 14, 2021~~ October 14, 2020. (67.5-Month Extension.)

4. Specific Tasks

Provide Launch Vehicle Integration Engineering and procurement support including;

1. Assist in the requirements definition, interface definition, flowdown, planning, and risk identification of launch vehicle efforts during the development phase of the L9 Mission.
2. Participate in program status meetings, telecons, peer reviews, and major Project reviews for mission, spacecraft, and launch vehicle.
3. Assist with launch vehicle related requirements definition, flow-down, validation and verification planning;
4. Act as the L9 Project Office focal point for interfacing with the NASA Launch Services Program (LSP) in the procurement and execution of the L9 Launch Services Task Order (LSTO)
5. Maintain the L9 Launch Services Interface Requirements Document Annex throughout the L9 launch service procurement process
6. Work with NASA LSP in the execution of task orders for technical analysis support from the candidate launch service vendors required prior to the award of the L9 LSTO
7. Coordinate the L9 Project Office responses for launch integration action items with external entities
8. Maintain active dialogue with the L9 spacecraft vendor launch integration engineer to ensure launch interface requirements are being accurately implemented by the L9 spacecraft vendor

9. Assist with Project trade- studies related to candidate launch vehicles;
10. Prepare and present technical information for technical meetings / reviews briefings as required;
11. Provide independent technical assessment/evaluations/reviews to ensure full insight into potential launch vehicle candidates to avoid surprises;
12. Provide independent launch vehicle studies/verification/validation of Project's decisions or key trade study results;
13. Identify risk elements, develop and execute mitigation steps; participate in L9 Flight Project risk board

Provide limited Optical Engineering support including;

1. Analysis of and report out on CATS/SPATS test data/results.
CATS/SPATS testing will take place at Ball Aerospace (Boulder, Colorado). Current schedule has the testing starting in July 18, 2018 and ending in December 2018, therefore, the duration of this effort is July-December 2018.
2. Make recommendations to the TR or designated representative as needed

5. Deliverable Items and Schedules

- All launch vehicle review related activities, comments, analytical verifications and trade studies shall be documented in memo form and the deadline(s) shall be in accordance with the L9 Project Mission schedule.
- Support the L9 project mission-level reviews
- Provide Input and guidance to L9 lead engineers (instrument and spacecraft system engineers, I&T manager, Mission Operations Manager, etc.), as appropriate in accordance with the L9 Project Mission schedule
- Provide written report of test activities and recommendations within 1 calendar week of the conclusion of testing.

6. Travel

During this period of performance the contractor is required to travel for reviews, technical exchange, and discussion meetings.

<u>Specific Travel</u>				
<u>No.</u>	<u>Date</u>	<u>Travel location</u>	<u>Purpose</u>	<u>Meeting Duration</u>
<u>1</u>	<u>December 2020</u>	<u>NGIS, Gilbert, AZ</u>	<u>SC Mech Testing with ULA— Part 1</u>	<u>5 days</u>
<u>2</u>	<u>January 2021</u>	<u>NGIS, Gilbert, AZ</u>	<u>SC Mech Testing with ULA— Part 2</u>	<u>5 days</u>
<u>3</u>	<u>January 2021</u>	<u>ULA, Denver, CO</u>	<u>Systems Integration Lab Testing & Mission Integration Working Group</u>	<u>5 days</u>

<u>4</u>	<u>February 2021</u>	<u>Vandenberg AFB, CA</u>	<u>Ground Operations Working Group #5</u>	<u>5 days</u>
<u>5</u>	<u>April 2021</u>	<u>ULA, Denver, CO</u>	<u>LV Mission Specific Systems Acceptance Review</u>	<u>4 days</u>

Specific Travel				
No.	Date	Travel Location	Purpose	Meeting Duration
1	March 2020	ULA, Denver, CO	LV Mission Specific Critical Design Review	4 days
2	April 2020	Vandenberg AFB, CA	Ground Operations Working Group #3	5 days
3	April 2020	NGIS, Gilbert, AZ	Observatory Pre-Environmental Review	5 days
4	May 2020	NGIS, Gilbert, AZ	SC Mech Testing with ULA— Part 1	5 days
5	June 2020	NGIS, Gilbert, AZ	SC Mech Testing with ULA— Part 2	5 days
6	September 2020	Vandenberg AFB, CA	Ground Operations Working Group #4	5 days
7	October 2020	ULA, Denver, CO	LV Mission Specific Systems Acceptance Review	4 days

7. Work Location

This work will be performed at the Goddard Space Flight Center.

8. Reporting Requirements

The contractor shall report status to the L9 project on a weekly basis. No presentation slides are required except for special occasions. The contractor shall report to the Technical Representative (TR) or designated alternates on a tri-monthly basis. Reports shall include, but are not limited to, informal presentation of interim results, and status of launch vehicle related development activities. The contractor shall deliver all documents in electronic document format (PDF or Word) electronic form to the TR.

9. Qualifications and Experience

The contractor shall be a senior systems engineer with 10+ years of experience working with LV interfaces with emphasis on NASA spaceflight missions and instruments requirements, development and verification.