Enclosure 3

Representative Task Order 1
Dual Mission: Sounding Rocket Campaign and Expendable Launch Vehicle (ELV)

Background

NASA, specifically the Wallops Range (the Range) located at the Wallops Flight Facility (WFF), requires range maintenance, sustainment, and operations services in support of a dynamic and constantly changing number of projects and missions occurring at the Wallops Flight Facility and other sites worldwide. Operations and technical activities managed and/or supported by the Range can vary from large flight projects utilizing all elements of launch operations (from integration and testing to launch operations) to small, cutting-edge test or operational activities. These Representative Task Orders (RTOs) are an attempt to capture a broad spectrum of the work expected on the Range Operations Contract (ROC) II.

RTO 1

In recent years, WFF has demonstrated a unique ability to support diverse missions that are geographically separated but nearly concurrent. An example of this type of mission set is a sounding rocket campaign at Poker Flat Research Range (PFRR) in Fairbanks, Alaska, consisting of multiple rockets launched almost simultaneously, and an Antares mission launched at WFF.

The NASA Range and Mission Management Office (RMMO) has been tasked with range services and support in multiple areas for both missions. For the sounding rocket campaign, hardware is designed, fabricated, and tested at WFF then shipped to PFRR for final integration, assembly, and launch. For the Antares mission, the payload and launch vehicle are assembled, integrated, tested, and fueled at WFF facilities by the vehicle owner but with some ground and facilities operations support by RMMO, and then launched from the WFF Range with downrange support sites at Bermuda or other locations depending on the trajectory.

For the campaign mission, RMMO has been tasked as the range instrumentation, operations, and service provider. The campaign will be conducted at PFRR in Alaska and consists of four individual rockets containing payloads to study the aurora. Each rocket will launch sequentially, separated by 30 seconds.

The WFF Range is required to provide the full spectrum of range support, including pre-launch maintenance and sustainment, launch operations, and post-launch data processing and deliverables in the following areas:

- Radar services and operations (including tracking and surveillance)
- Telemetry services and operations
- Communications, timing, and command services and operations
- Surveillance services and operations
- Data handling services and operations (processing and displays)
- Optical services and operations (photo and video)

For the Antares mission, RMMO has been tasked as the range instrumentation, operations, and service provider. RMMO will support processing and integration facilities utilized by the Antares mission, as well as ordnance storage, fueling facilities, and various operational control centers. The Antares mission will be conducted at WFF. The mission consists of an Antares rocket carrying a Cygnus spacecraft loaded with cargo to resupply the International Space Station (ISS). RMMO will have to utilize both on-range and off-range assets to meet the operational support requirements. On-range at WFF, the full spectrum of range support will be required, including pre-launch maintenance and sustainment, launch operations, and post-launch data processing and deliverables in the following areas:

- Radar services and operations (including tracking and surveillance)
- Telemetry services and operations
- Command uplink services and operations
- Communications and timing services and operations
- Meteorological services and operations
- Surveillance services and operations
- Data handling services and operations (processing and displays)
- Optical services and operations (photo and video)
- Ground Operations including commodity services

RMMO will also setup an off-range site in Bermuda. In Bermuda, range support will be required, including pre-launch maintenance and sustainment, launch operations, and post-launch data processing and deliverables in the following areas:

- Radar services and operations
- Telemetry services and operations
- Command uplink services and operations

For purposes of this RTO, assume that this tasking is received in March of Year 2021, that the Antares launch is scheduled for October (the actual day is still shown as "TBD") of Year 2021 and that the Antares launch window is linked tightly to the ISS operational schedule but is a ten day window with a specific 5 minute window on each day of the window. The Contractor is aware that launch dates for ISS Resupply missions have historically varied from initial schedule. The sounding rocket campaign mission window opens on January 10 of the following year (Year 2022) and, driven by a desire for heliophysics phenomena such as aurora effects, will have a launch window every night until all missions in the series are launched/completed. Optimum science conditions vary annually but are usually expected to begin around the January 10 date and, on average, start to diminish at the end of February, though some years have seen launch windows extend into mid-March.

<u>Task Requirements</u>

The Contractor shall provide a detailed maintenance, sustainment, and operations schedule that demonstrates the ability to prepare for and meet both the Campaign mission and Antares mission requirements.

The Contractor shall provide a detailed maintenance, sustainment, staffing, and operations plan that describes how they will ensure that all range support is configured, tested, and ready for both the Campaign mission and Antares mission.

The Contractor shall provide a risk assessment plan that identifies contractor-perceived risks related to the plans developed to support these two missions and the approaches that will be used to mitigate these risks. Risk and mitigation assessments should include technical, schedule, personnel/staffing, logistical, and other factors that the Contractor sees as relevant given the scenario provided.

The Contractor shall provide the following deliverables for each mission, Campaign and Antares, in accordance with the Task Description:

- Mission Requirements Review products
- Mission Operations Plan
- Mission Test and Verification/Validation Reports
- Mission Readiness Review products
- Weekly Status Reports (includes accomplishments, risks/issues, and costs)

Task Parameters

The following Range instrumentation will be provided by NASA (both mobile and fixed):

- Telemetry systems
- Timing systems
- RF monitoring and communications systems
- Voice and data communication systems
- Command systems
- Radar systems (precision tracking, surveillance, meteorological)
- Data processing and display systems
- Meteorological systems
- Optical systems (photo and video)
- Power systems

For additional details on Range instrumentation, see the Wallops Range Users Handbook located here: https://sites.wff.nasa.gov/code840/

NASA will provide all institutional facilities for this effort at no cost to the contractor.

RMMO will provide a Project Manager for the Campaign mission and a Project Manager for the Antares mission.

NASA Provided Documents (provided at task initiation)

- Operational Requirements Document
- Ground Safety Requirements Document
- Flight Safety Requirements Document