

ATTACHMENT J-1
Statement of Work
For
Spacecraft and Auxiliary Propulsion Systems Support

1.0 Scope

The Contractor shall provide specialized engineering support to the Marshall Space Flight Center (MSFC) Engineering Directorate including, but not limited to, the Spacecraft and Auxiliary Propulsion Systems Branch. The contractor shall provide engineering support, project coordination, and propulsion system component and systems engineering for spacecraft and auxiliary propulsion systems for launch vehicle applications.

The Contractor shall provide engineering support, propulsion system research analysis, design, and development support including, but not limited to, propulsion fuel selection, system sizing, liquid system pressure control and propulsion architecture trade studies, and component and thruster selection.

2.0 Task Order Management and Reporting

A. Contractor Management

The Contractor shall provide the planning, coordination, technical direction, and surveillance of the activities necessary to assure disciplined performance of work and timely application of resources for the accomplishment of all sub elements under the task order. The Contractor shall be responsible for maintaining communication with each supported organization and alerting the Task Order Monitor and/or the Contracting Officer immediately of any problems that would prevent meeting established milestones.

B. Data Requirements Descriptions (DRDs)

The contractor shall report and document this work and fulfill the requirements of associated Data Requirement Descriptions (DRD's) as outlined in Data Procurement Document (DPD) 1230 (Attachment J-2). The contractor shall determine the data restriction that applies to each data deliverable and mark or transmit the data restriction in accordance with section 2.3.3 of the Data Procurement Document.

1. The Contractor shall prepare and submit a Monthly Status Report in accordance with DRD1230MA-001. Any presentation, reports, analyses or technical memorandum that is developed during the execution shall be pre-coordinated with the Task Order Monitor and final copies provided to the Task Order Monitor.

The Contractor shall provide NASA with necessary information on project progress to allow the Government to monitor product assurance, identify significant problems, and implement corrective action as applicable based on the Contractor's performance.

The Contractor shall develop and maintain a Work Breakdown Structure (WBS) defining all task elements contained in this Task Order and in accordance with established task order rates per hours worked.

2. The Contractor shall prepare and deliver Badged Employee and Remote IT User Listing in accordance with DRD1230MA-002.
3. The Contractor shall prepare and deliver Contractor Employee Clearance Document in accordance with DRD1230MA-003.
4. The Contractor shall prepare and deliver Position Risk Designation for Non-NASA Employees in accordance with DRD 1230MA-004.
5. The contractor shall establish and implement an industrial safety, occupational health, and environmental program that (1) prevent employee fatalities, (2) reduce the number of incidents, (3) reduce the severity of employee injuries and illnesses, and (4) protects the environment through the ongoing planning, implementation, integration and management control of these programs in accordance with DRD 1230SA-001. The SHE Plan shall address each of the following MSFC SHE core program requirements in detail that are applicable to the contracted effort:
 - a. Management leadership and employee involvement.
 - b. System and worksite analysis.
 - c. Hazard prevention and control.
 - d. Safety, health and environmental training.
 - e. Environmental compliance.
6. The contractor shall report mishaps and safety statistics to the MSFC Industrial Safety Office in accordance with DRD 1230SA-002. The contractor shall submit direct to the NASA Incident Reporting Information System (IRIS) or shall use the forms listed in section 15.4 of DRD 1230SA-002 or electronic equivalent to report mishaps and related information required to produce the safety metrics.

3.0 Technical Requirements

The Contractor shall be responsible for information and information technology (IT) security when physical or electronic access to NASA's computer systems, networks, or IT infrastructure is required or when NASA information is stored, processed generated or exchanged with NASA or on behalf of NASA, regardless of where the information resides.

All data files and reports electronically delivered shall comply with Technical Standard 1194.21 of the Rehabilitation Act of 1973, Section 508.

Tasks shall be defined as follows:

3.1 Upper Stage Reaction Control System (ReCS)

The contractor shall assist the project and IPT leaders with engineering and testing tasks, milestones and product planning to meet the project overall schedules and planning. The contractor shall use prior program experience to identify necessary tasks and products required for successful development and certification of ARES-1 Upper Stage Reaction Control System (ReCS) propulsion elements. The contractor shall define requirements and approaches for early testing of ReCS thruster concepts and designs to identify risks and operational limits and characteristics for ARES-1 ReCS thrusters. The contractor shall provide support at test planning and test readiness reviews. The contractor shall support test data reviews and test analysis. The contractor shall assist the government in the formulation and planning of development, verification and certification plans for human-rated Upper Stage ReCS propulsion systems for ARES-1. The contractor shall assist the government in determining the appropriate level of data requirements documents for development activities versus qualification and certification test activities.

The contractor shall provide specialized engineering support facilitating the design, development, project coordination, and certification of the Ares Launch Vehicle Upper Stage Reaction Control integrated propulsion systems. This also includes tasks associated with successful preparation and execution of major design reviews (e.g. PDR and CDR) and the development of specific engineering documentation associated with the above tasks.

3.2 First Stage Roll Control System (RoCS) – Closed June 2010

The contractor shall assist the project and IPT leaders with engineering and testing tasks, milestones and product planning to meet the project overall schedules and planning. The contractor shall use prior program experience to identify necessary tasks and products required for successful development and certification of ARES-1 1st Stage RoCS propulsion elements. The contractor shall define requirements and approaches for early testing of 1st Stage RoCS thruster concepts and designs to identify risks and operational limits and characteristics for ARES-1 1st Stage RoCS thrusters. The contractor shall provide support at test planning and test readiness reviews. The contractor shall support test data reviews and test analysis. The contractor shall assist the government in the formulation and planning of development, verification and certification plans for human-rated 1st Stage RoCS propulsion for ARES-1. The contractor shall assist the government in determining the appropriate level of data requirements documents for development activities versus qualification and certification test activities.

The contractor shall provide specialized engineering support facilitating the design, development, project coordination and certification of the Ares Launch Vehicle First Stage RoCS integrated propulsion systems. This also includes tasks associated with successful preparation and execution of major design reviews (e.g. PDR and CDR) and the development of specific engineering documentation associated with the above tasks.

3.3 Upper Stage Reaction Control System (ER41) – Closed June 2010

3.4 Upper Stage Roll Control System (ER41) – Closed June 2010

3.5 MSFC-ILN Propulsion Support

The contractor shall provide subject matter expertise to the International Lunar Network (ILN) Team.

3.6 NASA MSFC Propulsion Systems Design and Integration Support *(Authorization to proceed with this subtask will be provided by the Contracting Officer in written direction.)*

The contractor shall provide expertise for performing system level technology and concept evaluation, analysis, and maturation, detailed system development and spacecraft and auxiliary propulsion component integration, test verification planning, evaluation, and certification. This support also includes providing sustaining engineering and operations support for space transportation propulsion systems.

4.0 Travel

The contractor shall travel as requested to accomplish each technical requirement. Any travel must be approved by the Contractor Officer's Technical Representative (COTR) or task order technical monitor, prior to travel.

The contractor's monthly report shall contain travel detail to include travel destination, dates of travel, number of people who traveled, and purpose of the travel.

5.0 Materials

No materials are currently required for this order. However, this may change based on the customer's requirements as directed by the Contractor Officer's Technical Representative (COTR) or task order technical monitor. Any materials being purchased must be approved by the Contracting Officer prior to purchase.

6.0 Reserved

7.0 Personnel Skill Levels

The Contractor shall provide skills at a level to perform the subtasks in this order.

8.0 Technical Milestones and Deliverables

- Bi-weekly status reports on all major activities
- Documentation of all analyses, Trade Studies and Design Assessments (for NASA review and Approval)