

ATTACHMENT J-1

Statement of Work For Thermal and Combustion Analysis 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 Thermal and Combustion Analysis Branch. The Contractor shall provide thermal engineering design, analysis and integration support for the development of propulsion systems, sub-systems, and elements of spacecraft and launch vehicle systems.

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 tasks issued under the order. The Contractor shall be responsible for maintaining communication with each supported organization and alerting the Contracting Specialist immediately of any problems that would prevent meeting established milestones.

B. Data Deliverables

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) 1176 (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 submit a Monthly Status Report in accordance with DRD 1176MA-003. Any presentation, reports, analyses or technical memorandum that is developed during the execution shall be pre-coordinated with the task order lead and final copies provided to the task order lead.

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 GSA rates per hours worked.

2. The Contractor shall submit a Badged Employee and Remote IT User Listing in accordance with DRD 1176MA-001.
3. The Contractor shall submit a Contractor Employee Clearance Document in accordance with DRD 1176MA-002.
4. The Contractor shall submit a Position Risk Designation for Non-NASA Employee in accordance with DRD 1176MA-004.
5. The contractor shall submit a Contractor Information Technology Security Program Plan (CITSPP) that documents how the contractor will be responsible for information and IT security in accordance with DRD 1176CD-001.
6. 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 1176SA-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.
7. The Contractor shall report mishaps and safety statistics to the MSFC Industrial Safety Office in accordance with DRD 1176SA-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 1176SA-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 Ares First Stage Roll Control System – Closed July 2010

The contractor shall coordinate of thermal analyses, conduction of thermal design analyses and providing independent engineering assessments of contractor provided designs for the Ares First Stage Roll Control System.

3.2 Upper Stage Reaction Control System

The contractor shall coordinate of thermal analyses, conduction of thermal design analyses and providing independent engineering assessments of contractor provided designs for the Upper Stage Reaction Control System.

3.3 Ares I-X RoCS Verification

The contractor shall provide verification of hardware for delivery to RoCS.

3.4 Upper Stage MPS Liquid Hydrogen System – Closed August 2009

3.5 Technical Excellence Software Support – Closed May 2010

3.6 Propulsion Structural, Thermal, and Fluid Analysis Support

(Authorization to proceed with this subtask will be provided by the Contracting Officer in written direction.)

The objective of this subtask is to provide engineering analysis and assessment of all propulsion systems and components. This support shall include predicting the performance and life of solid rocket motors and liquid engine systems with detailed analyses. This support also includes characterizing component response to exposed environments, analyzing the material integrity of components and evaluating adequate margins of safety. Expertise will include, but not be limited to, Structural Analysis, Dynamics Loads Analysis, High-Frequency Data Analysis, Computational Fluid Dynamics Analysis, and Thermal Analysis of liquid engines (turbo pumps, combustion devices, valves, lines, and ducts), solid motors, hybrid motors, and advanced 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

Specified under Section 2.B of the SOW; any additional deliverables for specific subtasks are specified under Section 3.0.