

ATTACHMENT J-1
Statement of Work
For
Thermal Support – Engineering and Technical Services

1.0 Scope

The Contractor shall provide thermal engineering support to the Marshall Space Flight Center Engineering Directorate including, but not limited to, the Thermal Analysis and Control Branch. The Contractor shall provide thermal engineering design, analysis and integration support for the development of spacecraft and 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) 1174 (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 1174MA-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 1174MA-001.

3. The Contractor shall submit a Contractor Employee Clearance Document in accordance with DRD 1174MA-002.
4. The Contractor shall submit a Position Risk Designation for Non-NASA Employee in accordance with DRD 1174MA-004.
5. The contractor shall submit a Contract Information Technology Security Program Plan (CITSPP) that documents how the contractor will be responsible for information and IT security in accordance with DRD 1174CD-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 1174SA-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 1174SA-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 1174SA-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, Integrated Structural Assembly

The contractor shall provide senior thermal engineering expertise in support of the Upper Stage Project Element Office with regard to the development of the major structural components of the Upper Stage for the Ares I launch vehicle. This includes

participation in component/assembly-level requirements definition, design analysis, test planning, verification/certification, manufacturing, and flight operations for components/assemblies of the Ares I Upper Stage.

The contractor's support shall include attending Integrated Product Team (IPT) (and associated meetings), participating in project requirements/design reviews, being active in thermal design and numerical analysis activities, and providing work progress statuses.

3.2 Integrated Upper Stage/System Design - Closed July 2010

The contractor shall provide senior thermal systems engineering expertise in support of the Upper Stage Project Element Office with regard to the integration of the Upper Stage for the Ares I launch vehicle. This includes participation in element-level system requirements definition, design analysis, element-to-element interface definitions, test planning, verification/certification, manufacturing, and flight operations for the Upper Stage.

The contractor shall support the Upper Stage Integration activities by attending meetings, participating in project requirements/design reviews, being active in thermal design and numerical analysis activities, and providing work progress statuses. The effort also includes providing contributions to the Upper Stage Thermal Design Data Book and the planning and documentation of regularly scheduled Upper Stage Thermal Working Group meetings.

3.3 Vehicle Integration, Integrated Design and Analysis - Closed June 2010

The contractor shall provide senior thermal systems engineering expertise in support of the Ares I Vehicle Integration Office's Integrated Design and Analysis activities. The Contractor shall participate in vehicle-level interface requirements definition, verification planning and execution, analytical trade studies, thermal model development (and associated analyses), and integrated design approaches with emphasis on vehicle-level thermal performance and interface definition/assessment among the CLV elements, between the CLV and the Crew Exploration Vehicle (CEV), and between the CLV and the Ground Operations Element.

The contractor shall support the Vehicle Integration thermal activities by attending meetings, participating in project requirements/design reviews, being active in thermal interface planning and numerical analysis activities, and providing work progress statuses. The effort also includes the generation/maintenance of the Ares I Thermal Interface Analysis Report.

3.4 Upper Stage Integration of Roll Control System and Reaction Control System - Closed July 2010

The contractor shall provide senior thermal engineering expertise in support of the Upper Stage Project Element Office with regard to the accommodation of the First Stage Roll Control Thruster (RoCS) and Upper Stage Reaction Control Thruster (ReCS) systems. This includes participation in component/assembly-level

requirements definition, integrated upper stage design analysis, test planning, verification/certification, manufacturing, and flight operations.

The contractor's support shall include attending the ReCS/RoCS Integrated Product Team (IPT) (and associated meetings as required), participating in project requirements/design reviews, being active in thermal design and numerical analysis activities, and providing work progress statuses.

3.5 Spacecraft and Launch Vehicle Thermal Design and Analysis
(Authorization to proceed with this subtask will be provided by the Contracting Officer in written direction.)

The Contractor shall provide launch vehicle thermal engineering support to the Spacecraft and Vehicle System Department including, but not limited to, the Thermal Analysis and Control Branch. The effort shall include the support of the development of vehicle stage thermal protection and subsystem thermal control including the integration between the subsystems and vehicle structures. The contractor shall participate in meeting as required, including, but not limited to, project requirements/design reviews, design and analysis activities, and provide work progress status.

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.

