

Statement of Work

Rocket Lab Technician Support Services Mechanical and Aerospace Engineering Naval Postgraduate School

1.0 Background/Introduction

The Naval Postgraduate School Rocket Lab has a requirement for technical support services in the areas of mechanical engineering, electronics, and software programs. The contractor support requires specific knowledge of hardware and software utilized by the students and researchers at the NPS Rocket Lab. The work includes directly assisting with various research areas to include air-breathing engines detonation engines, biofuel testing and solid rocket motor propulsion. This research is to directly support student thesis and sponsored research programs.

2.0 Scope

The Rocket Propulsion Laboratory within the MAE Department has a contractual requirement for technical support services to offer test support via instrumentation and software set up for individual experiments. The mission of the lab is to educate the students and offer valuable hands-on experiments in direct support of the academics to include thesis and lab projects. The support required includes: interfacing directly with the students in support of their experiment which will be over sighted and monitored by government lab staff, working with high pressure gasses and plumbing, fuel delivery systems, ability to operate a machine lathe and drill press (light duty), optics, wiring of diagnostics instruments (i.e. Pressure transducers, Thermocouples, High Speed Cameras), high speed data acquisition systems, and hardware/software interface. The support services will help maintain the facility and ensure operations are completed safely.

3.0 Tasks

The contractor shall perform the following task as follows:

3.1 Operate and modify Data Acquisition Software

Operate and modify existing Labview Vis (Virtual instruments) software to control propulsion-related experiments, read diagnostic instruments receive data via data-acquisition systems for three (3) experimental programs. The contractor shall develop Labview virtual instrument to collect experimental data for academic course labs and thesis work for each of these experimental programs. These experimental programs conduct live fire testing for maximum of 25 days each.

3.2 Modeling Software

Proficient in modeling in Solidworks CAD (Computer Aided Design) for various experimental components and create professional machine drawings. This includes no more than 10 components and drawings per experimental program.

3.3 Design and Install Instrumentation Systems and Sensors

Provide direct technical support for laboratories to support student thesis and sponsored research to include selection of sensor or diagnostic, installation, and troubleshooting of sensors. The contractor shall be proficient in instrumentation diagnostics to include:

- Pressure Transducers
- Thermocouples
- Strain Gauges
- Amplifiers
- Filters
- Analog to Digital converters
- Power Supplies
- Optics

3.4 Experience in Machining

Contractor shall produce no more than 3 components per experimental program at no more than 16 hrs per unit.

3.5 Maintenance and Documentation of Ongoing Projects

The contractor shall maintain laboratory equipment and document Standard Operation Procedures (SOPs) associated with each experiment to include student thesis and sponsored research. This includes one (1) SOP per experimental program (Total of three (3) annually). These SOPs are imperative to maintain continuity between project and safety of operators.

3.6 Completion of Existing Experiments and Projects

The contractor shall operate the two (2) ME4901 Combustion laboratory experiments that have been previously established.

The contractor shall operate the AE4452 Tactical Missile Propulsion laboratory on the Rotating Detonation Engine (RDE)

The contractor shall directly assist with configuring and operating three (3) experimental thesis research projects.

4.0 Deliverables

Task	What will be inspected	Acceptable Quality Level (AQL)	Frequency	Priority Level
3.1	Modify Existing Software for data acquisition	Labview VI and computer hardware to run experiments.	Monthly Lab Briefings	Priority Level 4
3.2 3.3 3.4	Designs and implementation of hardware to meet specs as supplied by faculty and students.	Instrumentation systems that is able to meet requirements, such as frequency response.	Inspected Monthly	Priority Level 3
3.5	Knowledge Transfer Report with listing of personnel present	Informal e-mail or Microsoft office format	Submitted Monthly	Priority Level 5
3.5	Maintenance of Experimental Program Binder	Microsoft Office Format of the contactors choice	Inspected at Completion of Experiments and Projects or Monthly (whichever occurs first)	Priority Level 2
3.6	Completion Write-ups of Existing Experiments, Standard Operating Procedures and Projects	Microsoft Office Format of the contactors choice	Inspected at Completion of Experiments and Projects or Monthly (whichever occurs first)	Priority Level 1

The contractor shall be responsible for preparing deliverables in support of the tasks identified in this SOW.

The surveillance method for the deliverables listed above will be COR observation at NPS. If performance falls below the AQL defined above, the Contracting Officer's Representative (COR) shall document the instance(s), coordinate with the Contracting Officer and advise the Contractor. The Contractor will be requested to review the documentation and provide a written response on how performance will be corrected in the future. Re-performance of any work for failure to perform in accordance with the specified AQL or task requirement shall be completed at the Contractor's own expense and at no additional cost to the Government.

4.0 Minimum Technical Requirements

The Minimum Technical Requirements for the technical support services include the following:

- Minimum education required of an Associate's degree. Minimum two (2) years' of technical experience working with propulsion systems, graduate Students and faculty
- Due to the unique educational curriculum requirements at NPS, experience working with students and faculty at the graduate level on military and defense related topics is required.
- Strong technical background with mechanical hardware (i.e. high pressure plumbing is a must) and wiring and set up of diagnostics (i.e. pressure transducers, thermocouples, strain gauges).
- Experience in Labview (Data Acquisition software) and Solidworks CAD Modeling is strongly desired.
- Experience in light machining, welding, soldering of circuits, electronics and computers.
- Knowledge of DoD policies and procedures for operating equipment and building and safety policies.
- Proficient in modeling simple parts utilizing a machine lathe and drill press. Able to accurately read and execute from a machine drawing. Experience in Welding MIG and TIG.

5.0 Period of Performance

The period of performance of this effort is for one year commencing on 01 August 2015 through 31 July 2016.

6.0 Place of Performance

Naval Postgraduate School Rocket Lab, MAE Department

7.0 Work Week and Hours of Operation:

The Contractor shall provide services during normal working hours excluding federal holidays. Normal working hours are 0730-1630, Monday through Friday, unless requirements dictate otherwise. Exceptions can be permitted by the COR upon request and at the COR's discretion.

Work required on-site at NPS shall be performed by the Contractor, as required.

Following is a list of holidays observed by the Government.

<u>Name of Holiday</u>	<u>Time of Observance</u>
New Year's Day	1 January
Martin Luther King Jr. Day	Third Monday in January
President's Day	Third Monday in February
Memorial Day	Last Monday in May
Independence Day	4 July
Labor Day	First Monday in September
Columbus Day	Second Monday in October
Veteran's Day	11 November
Thanksgiving Day	Fourth Thursday in November
Christmas Day	25 December

If any of the above holidays occur on a Saturday or a Sunday, then such holiday shall be observed by the Contractor in accordance with the practice as observed by the assigned Government employees at the using activity

8.0 Government Furnished Property

The government shall provide appropriate office space, supplies and equipment to perform tasks at NPS. Any Government-provided property and information shall be used for official Government business only. Any applicable documents that are authorized for use in performance of these services shall be provided, in accordance with security and contract terms and conditions.

9.0 Travel

Travel will be in accordance with the Joint Travel Regulations (JTR) and will be reimbursed by the government on an as-incurred basis. Government can modify travel location and times with minimum 5 days in advance. Estimated dates of travel:

1. 09Nov – 13Nov 2015 (Rocket Center, WV)
2. 04Apr – 08Apr 2016 (China Lake Naval Base, Ridgecrest, CA)

10.0 Classification Unclassified

10.1 Privacy Act Statement

“Pursuant to Title 5 United States Code 552a(m)(1), the contractor and all employees of the contractor working under this contract are required to comply with the requirements of 5 U.S.C. 552a (“The Privacy Act of 1974”).”

10.2 Contractor Identification

In accordance with DFAR 211.106, there shall be a clear distinction between Government employees and service contractor employees. Service contractor employees shall identify themselves as contractor personnel by introducing themselves or being introduced as contractor personnel and displaying distinguishing badges or other visible identification for meetings with Government personnel. In addition, contractor personnel shall appropriately identify themselves as contractor employees in telephone conversations and in formal and informal written correspondence.

11.0 Non-Personal Services Statement

Contractor employees performing services under this order will be controlled, directed, and supervised at all times by management personnel of the contractor. Contractor management will insure that employees properly comply with the performance work standards outlined in the SOW. Contractor employees will perform their duties independent of, and without the supervision of, any Government official or other Defense Contractor. The tasks, duties, and responsibilities set forth in the task order may not be interpreted or implemented in any manner that results in any contractor employee creating or modifying Federal policy, obligating the appropriated funds of the United States Government, overseeing the work of Federal employees, or otherwise violating the prohibitions set forth in Parts 7.5 and 37.1 of the Federal Acquisition Regulation (FAR). The Government will control access to the facility and will perform the inspection and acceptance of the completed work.