

STATEMENT OF WORK
SW-ZZ-10-98

FOR

HIGH ENERGY LASER SYSTEMS TEST FACILITY (HELSTF)
OPERATIONS AND MAINTENANCE SUPPORT

WHITE SANDS MISSILE RANGE
HIGH ENERGY LASER SYSTEMS TEST FACILITY

1. SCOPE

The contractor shall perform and/or provide technical support services associated with the operation of the High Energy Laser Systems Test Facility (HELSTF) located at White Sands Missile Range (WSMR), New Mexico. All services shall be provided in accordance with the HELSTF Systems Engineering Management Plan (SEMP). Technical Support Services shall include the operation and maintenance of major technical facilities, which include the Laser Systems Test Center (LSTC), Test Cell areas, laser device systems, ancillary support systems, technical support facilities, and the Downrange Receiver/Target Sites, excluding real estate maintenance. The primary work site shall be at HELSTF. Secondary work sites may include other locations on WSMR or at off-range locations.

The contractor shall participate in the planning, development and execution of all testing performed by HELSTF. The government will retain final approval authority for all test plans. The contractor shall produce documents demonstrating the readiness of the test facilities and their associated equipment for a test, a plan for contractor support of the test, and expected costs of the test. Testing may occur at any hour on any day of the week. Contractor flexibility in test accomplishment is expected.

The contractor shall plan for, develop a schedule for and perform preventive maintenance for all equipment and systems under this contract in accordance with the plan and schedule once approved by the government. This plan will be incorporated into the site operations master schedule. Should conflicts arise between planned test events and scheduled maintenance the government shall retain final authority on conflict resolution.

The contractor shall provide support/liaison as required to the Site Facilities Support, SEA LITE Beam Director (SLBD), and Systems Engineering and Technical Assistance (SETAC) contractors. The contractor shall negotiate associate contractor agreements as directed by the government.

The contractor shall develop a plan whereby the operations and maintenance of the Sea Lite Beam Director (SLBD), and all supporting systems and equipment may be incorporated into this contract upon the government's decision to exercise an option to do so. This plan shall be developed and submitted to the government within 30 days after assignment. The plan shall be submitted in a format consistent with CDRL 00E. This plan will be approved by the government prior to implementation.

The contractor shall develop an Operational Security (OPSEC) Plan and report to the government in accordance with CDRL 00H.

The contractor shall develop and report to the government Innovations Certification and Reports in accordance with CDRL's 00J and 00K.

The contractor shall submit safety information in accordance with CDRL's 001 and 002.

2. REQUIREMENTS

2.1 GENERAL

2.1.1 The contractor shall provide all personnel resources, except where explicitly indicated otherwise, to meet all requirements described herein associated with the operation and maintenance of equipment under the contract.

2.1.2 The contractor shall maintain the expertise required to support HELSTF test and development activities. The allocation of technical skills shall include, but are not limited to, the following disciplines: system engineering, digital and analog electronic signal processing, computer software and firmware programming, control systems, optical engineering, mechanical and optical structures and mechanisms, hydraulic and pneumatic fluids, electro-optical systems design and fabrication, computer-controls systems design and fabrication, control console operations, instrumentation and data reduction, quality control, electro-optical sensors, configuration management, clerical and program management.

2.1.3 The contractor shall provide engineering and technical services including research, analysis, development and installation of equipment and software as specified by a Technical Directive (TD).

2.1.4 The contractor shall maintain all software as defined in this statement of work (SOW), applicable documentation and addendums or as assigned by TD.

2.2 Management and Administration The contractor shall provide the minimum number of management, supervisory and labor personnel necessary to perform the day-to-day requirements of this contract.

2.2.1 Management The contractor shall provide qualified personnel necessary to manage and perform all technical directives in compliance with the terms and conditions of this contract.

2.2.1.1 The contractor shall attend meetings and provide membership on committees as required to control performance under this contract.

2.2.1.2 Reports to the government shall be made as required in accordance with CDRLs 004, 005, 006 and 00F.

2.2.1.3 Reports on government furnished equipment and material (GFE/GFM) shall be made in accordance with CDRL 003.

2.2.2 Contract Administration The contractor shall administer the work in compliance within the requirements of this contract.

2.2.3 Test Program Support The contractor shall perform and is responsible for the operation and maintenance of equipment and systems, furnished by the government, to support HELSTF test programs. The equipment and systems shall include, but is not limited to:

- 1) The Mid InfraRed Advanced Chemical Laser (MIRACL) and supporting systems.
- 2) The Low Power Chemical Laser (LPCL) and supporting systems.
- 3) The Laser Demonstration Device (LDD) and supporting systems.
- 4) Optics associated with the High Power Optical Train (HPOT) and Low Power Optical Train (LPOT) and supporting systems.
- 5) The Hazardous Test Area (HTA) and supporting systems, to include applicable optics.
- 6) The Large Vacuum Chamber (LVC) and supporting systems.
- 7) The Effects Test Area (ETA) and supporting systems.
- 8) The Two Kilometer Site and supporting systems.
- 9) The Five Hundred Meter site and supporting systems.
- 10) The Integrated Target Vehicle (ITV) Site and supporting systems.

- 11) Any future installed (or assigned) equipment or system for test execution.
- 12) The Closed Circuit Television (CCTV) system.
- 13) The magnetic card access system.
- 14) The Hazardous Air Monitoring and Detection System (HAMDS).

2.2.3.1 The contractor shall perform and is responsible for the operation and maintenance of both current and any future installed or assigned HELSTF equipment and systems, furnished by the government, to support HELSTF test programs. The operation and maintenance requirements of any future installed or assigned equipment will be evaluated for compliance with the labor resources provided under this contract. In the event that the contract resources are exceeded by the addition of new equipment and systems, modifications to this contract will be required prior to acceptance by the contractor.

2.2.3.2 The contractor shall perform all operations and maintenance for the SEALITE Beam Director (SLBD) and all supporting equipment and systems upon assignment by exercising of a government option. All other portions of this statement of work and all other portions of this contract shall apply to the SLBD and all supporting equipment and systems once assigned. The contractor shall integrate all SLBD functions, programs, project, schedules, etc. into their planning process once assigned.

Once assigned, the SLBD and all supporting equipment and systems will remain a part of this action and all further options exercised. The SLBD will not be assigned earlier than one year after contract start. Prior to assignment of the SLBD, the government will provide sixty (60) days notice to the contractor.

2.2.4 Test Requirements In accordance with the HELSTF SEMP and COTR approved tasking documents, the contractor shall provide test support services, such as planning, scheduling, coordinating, controlling, performing and reporting, required to support testing of high energy lasers, their associated equipment and various test articles at the HELSTF Site or other locations as specified in the tasking document.

2.2.4.1 The contractor shall prepare system and subsystem test procedures for designated tests; management of pre-test, the test and the post-test activities in accordance with the procedures defined by the HELSTF SEMP.

2.2.4.2 Pre-Test Operations The contractor shall provide pre-test preparation support including the system test scenario, modification and reconfiguration of test equipment; installing and testing of new equipment; developing new or modifying existing Standard Operating Procedures (SOP) and Safety Standard

Operating Procedures (SSOP); designing, configuring and operating data collection systems; and designing, installing and instrumenting test articles and providing data reduction support.

Reports to the government shall be made in accordance with CDRL 00B.

2.2.4.2.1 The contractor shall initiate and prepare all Engineering Change Proposals (ECP) required to configure HELSTF equipment to meet the requirements of the TD.

2.2.4.2.2 The contractor shall prepare a Test Support Plan for each Customer and government approved Test Requirements Document.

2.2.4.2.3 The contractor shall assist the government and other support contractors in test planning activities as defined in the HELSTF SEMP.

2.2.4.2.4 The contractor shall present the equipment readiness status to support a test during test readiness reviews. The contractor shall plan, schedule and provide appropriate resources to support all designated HELSTF tests.

2.2.4.3 Test Operations

2.2.4.3.1 The contractor shall initiate, schedule, prioritize and perform all activities required to execute all scheduled HELSTF test operations.

2.2.4.3.2 The contractor shall perform all tests in accordance with government approved Test Support Plans.

2.2.4.3.3 Following a test, the contractor shall prepare a report of test as required. This report will be submitted in accordance with CDRL 00G.

2.2.4.4 Post-Test Operations

2.2.4.4.1 The contractor shall perform post-test activities such as test cell clearing and re-entry procedures; equipment and test article shutdown; test article disposition; data reduction and analysis; housekeeping and cleanup activities; and test reporting.

2.2.4.4.2 Upon completion of the last test in a series covered by a technical directive (TD) the test system shall remain in the test configuration unless returning to a standard configuration is required to facilitate preventive maintenance, calibration or other activity. When directed by the COTR, the contractor shall return the test system and test articles to the configuration prescribed in the TD. Disposition of test articles and other post-test activities shall be as prescribed in the TD, or as otherwise specified by the COTR.

2.2.5 Technical Directives.

2.2.5.1 Technical Directives will be prepared by the government to task the contractor to perform certain task in support of the HELSTF Site. The contractor shall provide non-binding cost estimates as requested. Examples of anticipated TDs are:

- a. Modification of HELSTF equipment.
- b. Conduct Tests in accordance with government approved test plans.
- c. Equipment integration, validation and verification analyses.
- d. Development and design of proposed changes or new systems.
- e. Perform maintenance on high energy laser systems.
- f. Development of software to support new or existing operational requirements.

The government will issue TDs for MIRACL tests 60 days in advance of the test; other test TDs may be issued a minimum of forty-eight (48) hours in advance of the test.

2.2.5.2 Not later than 10 days after contract award, the contractor shall designate in writing to the contracting Officer (KO) names of individuals who will have the authority to bind their company in the signing of TDs. Changes in designations shall be submitted in writing to the KO as they occur.

2.2.6 Work Scheduling The contractor shall assist the government and other support contractors in scheduling activities as described in the HELSTF SEMP, and/or as prescribed by the government. The government will provide site priorities to provide guidance to the contractor on resolving scheduling conflicts. The government will retain approval authority on all proposed schedules.

2.3 Engineering and Technical Services.

2.3.1 The contractor shall provide engineering and technical services as directed by TD. These services shall include but not be limited to development of plans, specifications and contract drawings, time and cost estimating, inspection of completed and in-progress work, interface control, equipment installation and testing, software development, studies, reviews, analyses,

research, planning, training, cost estimating, and hardware design, development, and fabrication

2.3.2 The contractor shall participate in the Integrated Product Team (IPT) process as defined in the HELSTF SEMP.

2.4 Support Services. The contractor shall provide all technical management, operation, maintenance, repair and related services required to support HELSTF operations and tests.

2.4.1 Maintenance. The contractor shall maintain assigned equipment in a fully operational condition unless otherwise directed by the COTR. Maintenance requirements and related schedules shall be established by the contractor and approved by the government. The government will maintain a supply of spare parts, tools and instruments in support of maintenance.

2.4.1.1 Preventive Maintenance Program. The contractor shall develop and implement a Preventive Maintenance (PM) Plan and Schedule that accomplishes as a minimum the following.

a. The contractor shall identify all periodic maintenance, repair, replacement, calibration and other like tasks (defined as PM tasks) necessary to maintain and otherwise keep HELSTF systems in a fully operational condition.

b. The contractor shall develop Detailed Maintenance Procedures (DMP) describing the work to be accomplished on each system or facility by the contractor in the performance of all periodic maintenance, repair, replacement, calibration and other like tasks. The use of manufacturer's procedures in lieu of contractor-developed procedures is acceptable.

c. The contractor shall develop lists of material and equipment required to support the PM task and establishment of a minimum and maximum stock level of tools, material and equipment required to support the PM tasks.

d. The contractor shall develop a recommended list of critical spare parts and equipment for all HELSTF equipment applicable under this contract.

e. The contractor shall implement, maintain and conduct a program for performing initial certification and periodic re-certification of pressure worthiness of all HELSTF pressure vessels and systems applicable under this contract.

f. The contractor shall develop and adhere to a calibration program for all equipment requiring calibration. The number of items out of calibration shall not exceed two percent (2%) of the total number of calibration items. The contractor shall maintain a system for tracking calibratable items and their calibration status on site. This will be subject to government verification at unscheduled intervals.

g. The contractor shall conduct regular inspections for damage to, and for maintenance of, optical surfaces and windows. The contractor shall clean optical surfaces, check out electrical and electronic components and perform calibration checks. To assure the quality of the maintenance of the optical systems and components, the high standards of the optical industry for handling and preserving optical systems and components shall be followed. This includes clean room conditions and temperature and humidity control for precision work, handling of optical components with protective gloves, use of experienced, skilled personnel, use of proper cleaning agents and procedures, and storage in a protective environment. The success of maintenance procedures shall be verified by appropriate tests conducted with standard instrumentation used for beam diagnostic work.

NOTE: This plan shall be submitted by the contractor in accordance with CDRL 00B.

2.4.2 Repair. The contractor so as to keep assigned equipment fully operational unless directed otherwise by the COTR shall initiate repair of equipment. The contractor shall be responsible for all repair, and return to serviceability of all non-expendable and recoverable components except as provided herein. Repaired items shall be returned to service or placed in stock as appropriate. Equipment shall not be cannibalized unless approved in writing by the COTR.

2.4.3 Equipment Logbooks. The contractor shall maintain manual or automated histories of all major systems and equipment listed in paragraph 2.2.3 to record repair, maintenance and operational activities. The histories shall be available for government review in accordance with CDRL 00A.

2.4.4 Systems Services.

2.4.4.1 The contractor shall operate and maintain assigned HELSTF systems in an operationally ready state.

2.4.4.2 The contractor shall use existing SOPs for all operations.

2.4.4.3 The contractor shall develop SOPs for government approval for operations for which procedures do not exist that are not already addressed by an existing procedure in accordance with manufacturers' manuals and applicable documentation. SOP's shall be submitted to the government in accordance with CDRL 00E. Assigned systems shall include, but not be limited to:

- a. Air Curtains
- b. Air Flow System (AFS) .

- c. Beam Diagnostic Instrumentation (BDI)
- d. Bench Isolation Systems
- e. Chemical Analysis Lab and Instrumentation
- f. Closed Circuit Television (CCTV)
- g. Cooled and Un-cooled Optics
- h. De-Ionized (DI) Water Systems
- i. ETA Data Acquisition System
- j. ETA Power Meters
- h. Fluid Supply System (FSS)
- i. Fuel Storage and Distribution System
- j. Gas Conditioning Systems (GCS)
- k. Hazardous Test Area
- l. HEL Data Acquisition and Processing System (HELDAPS)
- m. HELSTF Executive Controller (HEC)
- n. Low Power and Passively Cooled Optics
- o. Power Meter Calorimeter System (PMCS)
- p. Pressure Recovery Systems (PRS)
- q. Water System
- r. Target Diagnostic Instrumentation
- s. Test Cell 4 De-Ionized Water
- t. Vacuum Test Systems

2.4.5 Additional Services. The contractor shall provide the following additional services:

2.4.5.1 The contractor shall provide optical, electronic, and mechanical expertise to operate and maintain to optical, radiometric, and ancillary equipment. Contractor support shall include but not be limited to the following typical services: radiometric and optical alignment, interferometry for optical alignment in mirror quality determination, measurement, repair, and provide refurbishment services required to all HELSTF equipment such as equipment from the MIRACL, Effects Test Area, Beam Diagnostic Instrumentation, Fluid Cooled Optics, and Low Power and Passively Cooled Optical Train to the government.

2.4.5.2 The contractor shall perform optical alignment, optical and radiometric equipment set-up, calibration and measurement, optical and radiometric system calculations, data analyses, and instrumentation programming.

2.4.5.3 The contractor shall operate any ancillary equipment incident to the operation of radiometric and optical laboratory equipment such as vacuum pumps, oscilloscopes, and similar items.

2.4.5.4 The contractor shall operate and maintain the HELSTF component cleaning facility.

2.4.5.5 The contractor shall operate and maintain the HELSTF Chemistry Laboratory.

2.4.5.6. The contractor shall provide and electronic shop services for maintenance, repair, and modification of equipment

and components. These services may include repair and modification of subsystems, circuit boards, computers, CAMAC equipment, transducers, PCM telemetry, detectors, switches, flow meters, automatic trackers, interface equipment, alarm systems, counters, strip chart recorders, digital recorders, digital playback equipment, remote controllers, encoders, decoders, AC to DC converters and linear amplifiers.

2.4.6 HELSTF Automatic Data Processing Equipment. The HELSTF Automatic Data Processing Equipment (ADPE) consists of three categories:

- 1) Data Acquisition and Processing Systems
 - a. High Energy Laser Data Acquisition and Processing System (HELDAPS)
 - b. Field Data Acquisition Systems (FDAS)
 - c. Follow on System Upgrades.

These systems support test data acquisition, data reduction, and test reporting. They are accredited for processing classified data.

- 2) Process Control Systems
 - a. Executive Control System (HEC)
 - b. Sea Lite Executive Control System (SLEC)
 - c. Imbedded Process Control systems such as the Fluid Supply System, the Vacuum Test Systems, and CAMAC microprocessor control systems.
 - d. Follow on Control System Upgrade systems.

- 3) Workplace Information Systems

An administrative LAN network connects personal computers in individuals' offices and file and printer servers and is used for general information storage, office automation, project management and analysis.

HELSTF ADPE Operations and Maintenance

2.4.6.1 Data Acquisition and Processing Systems and Process Control Systems. The contractor shall perform routine computer hardware, network, and software functions as necessary to support all HELSTF ADPE activities in accordance with DA PAM 18-4, AR-380-19, CSSD-HD SOP 380-380, the HELSTF Configuration management Program (CMP) and CSSD-HP SOP 70-18. This shall include pre-test setup and checkout, real time mission support, and post-test data

processing and data distribution. The contractor shall provide routine hardware, network and software modifications and development as directed by government TDs. The contractor shall develop and maintain sets of documentation for all systems assigned and for changes implemented. Upgrades and Modernization activities will be directed by the government and done in accordance with government provided or approved plans.

2.4.6.1 Workplace Information Systems. The contractor shall maintain the personal computers, network, and peripheral hardware and software as directed by the government. (Network administration is not included in this SOW.)

2.4.7 Training and Certification. The contractor shall establish and maintain a continuing operator training program for employee development, certification, and re-certification. The contractor shall develop and implement a certification program that provides for the training and certification of achievement of the required level of qualification of personnel who must perform critical or hazardous operations. The contractor shall update the certification program to reflect new critical skills or functions. This training shall be recorded in a HELSTF training database and shall include the following training plus any other training identified either by the contractor or the COTR and approved by the Contracting Officer:

a. Safety training, including the use of full protection suits; handling of propellants and cryogenics; use of personnel protective equipment; industrial safety; construction safety and use of fire protection equipment.

b. Special processes including the performance of soldering, crimping, induction brazing, welding and particle counting.

c. Hazardous materials and processes employing these materials.

2.4.8 Security Requirements The contractor shall comply with the approved DD-254 applicable to this contract.

2.5 Configuration Management The contractor shall participate in configuration management activities as set forth in the HELSTF SEMP. The contractor shall deliver items as required consistent with CDRL's 00C and 00D.

2.6 Mission Unique Equipment. For normal, day to day operations and maintenance tasks the government will provide equipment and facilities necessary to perform this contract including maintenance except as specifically required by tasking documents. This equipment and facilities shall include, but is not limited to:

a. All telephone, intercom and Emergency Paging Unit Systems to include cabling.

b. The IRIG timing signals to all instrumentation and computers at the site, which require time correlation of data, to include interfacing with contractor systems.

c. Cryptographic support equipment used for transmission of classified data.

d. All intrusion alarms.

e. All fire protection.

3. QUALITY ASSURANCE.

The contractor shall maintain a Quality Assurance Program.

3.1 Workmanship The quality of workmanship in the maintenance and modification of equipment shall be consistent with the workmanship established by the manufacturer of the item(s) or other applicable industry standard.

3.2 Inspection and Acceptance The contractor shall be responsible for the inspection of his work and shall establish and maintain a documented inspection program.

4. NOTES.

4.1 Abbreviations.

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| ADPE | Automatic Data Processing Equipment |
| AFTS | Air Flow Test Stand |
| BDI | Beam Diagnostic Instrumentation |
| BTA | Beam Transfer Area |
| BTS | Beam Transfer System |
| CAD/CAM | Computer Assisted Design/Computer Assisted Manufacturing |

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| CAMAC | Computer Automated Measurement and Control |
| CCB | Configuration Control Board |
| CCTV | Closed Circuit Television System |
| CDRL | Contractor Data Requirements List |
| CF | Cleaning Facility |
| CHEMLAB | Chemistry Laboratory |
| CMP | Configuration Management Program |
| COTR | Contracting Officer's Representative |
| CPR | Cardio Pulmonary Resuscitation |
| DI | De-Ionized |
| DII | Data Item Index |
| ECP | Engineering Change Proposal |
| EPA | Environmental Protection Agency |
| ETA | Effects Test Area |
| FTCB | Fluid Transfer Control Building |
| FSS | Fluid Supply System |
| G&A | General and Administrative |
| GFE | Government Furnished Equipment |
| GFP | Government Furnished Property |
| GSA | General Services Administration |
| HAMDS | Hazardous Atmosphere Monitor and Detection System |
| HEC | HELSTF Executive Controller |
| HELDAPS | High Energy Laser Data Acquisition and Processing System |
| HELSTF | High Energy Laser Systems Test Facility |
| HPOT | High Power Optical Train |
| HVAC | Heating, Ventilating, and Air Conditioning |
| ID-O | Instrumentation Directorate - Optics Division |
| IRIG | Inter-Range Instrumentation Group |
| KO | Contracting Officer |
| LPOT | Low Power Optical Train |
| LSTC | Laser Systems Test Center |
| MIRACL | Mid-Infrared Advanced Chemical Laser |
| MIS/TMIS | Management Information System/Technical Management Information System |
| NEPA | National Environmental Policy Act |
| NFPA | National Fire Protection Association |
| NMEID | New Mexico Environmental Improvement Division |
| NMGRT | New Mexico Gross Receipts Tax |
| O/H | Overhead |
| O&M | Operations and Maintenance |
| OSHA | Occupational Safety Health Act |
| PMCS | Power Meter Calorimeter System |
| PRS | Pressure Recovery System |
| PV | Public Voucher |
| QA | Quality Assurance |

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| RCRA | Resource Conservation and Recovery Act |
| SEMP | Systems Engineering Management Plan |
| SLBD | SEALITE Beam Director |
| SLEC | SEALITE Executive Controller |
| SOP | Standard Operating Procedure |
| SSOP | Safety Standing Operating Procedures |
| SOW | Statement of Work |
| TC1 | Test Cell 1 |
| TC3 | Test Cell 3 |
| TC4 | Test Cell 4 |
| TD | Test Director |
| TSA | Technical Support Area |
| USASMDC | U.S. Army Space and Missile Defense Command |
| WSMR | White Sands Missile Range |