FA9101-15-C-0500

Attachment 8

Performance Work Statement (PWS)

Test Operations and Sustainment

1 OCTOBER 2021

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AEDC TEST OPERATIONS AND SUSTAINMENT (TOS)

VISION STATEMENT

In 2024, Arnold Engineering Development Complex (AEDC) will continue to be headquartered at Arnold AFB, TN, but will have a nationwide footprint that is expanded from todays. It will have active collaborations with personnel assigned to AF Research Laboratory, various strategically chosen academic institutions, AF Life Cycle Management Center, Test Resource Management Center, and the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. Its facilities, business models, and processes will be designed to facilitate those collaborations. It will be widely externally recognized as both the leader in analysis of aerodynamic and propulsion test data as well as a key developer of technology for ground-test systems.

1.0 INTRODUCTION

The Air Force Test Center's AEDC is a national aerospace ground test facility that conducts tests, engineering analyses, and technical evaluations for research, system development, and operational programs of the AF and DoD, other Government agencies, and industry. Using ground test facilities and computational engineering, AEDC supports propulsion, aerodynamic, reentry, trans-atmospheric, and space-flight systems testing. This testing underpins the technical knowledge required for the development and qualification of key warfighter aerospace weapons. Testing is performed in an environment that simulates operational conditions. AEDC also performs research to develop new test technology for advanced test facilities, test techniques, and measurement methodologies associated with ground tests.

1.1. MISSION

AEDC exists to test and evaluate weapon, propulsion, aerodynamic and space systems at realistic conditions for the nation through modeling, simulation, and ground test facilities.

The mission is essential to developing and fielding weapons systems for the nation's warfighters.

The TOS Contractor will execute this mission, while smoothly integrating with the other AEDC contractors and Government personnel, in a manner that makes AEDC the most effective ground test and evaluation (T&E) complex in the world – suitable for supporting the best AF in the world.

1.2. BACKGROUND

The AEDC Test Operations and Sustainment (TOS) Contract provides the contractor workforce necessary to successfully operate and sustain AEDC's test facilities at Arnold AFB, TN, and geographically separated units (GSUs) at White Oak, MD and Moffett Field, CA. This PWS accounts for the need to interface with multiple contractors providing other mission essential services for AEDC.

A Deliverable is a document, form, report, log, or other type of submittal with an associated Contract Data Requirements List (CDRL) and Data Item Description (DID) that is provided to the Government per the CDRL requirements. In many cases, a Deliverable will be used to

oversee Contractor progress, verify compliance with requirements and regulations, or may be necessary as part of a formal review.

Through the Contractor's daily operations, many forms, logs, reports, inspection records and other similar documents will be produced which may be of interest to the Government. To maintain consistency and alignment with the approach to implement processes that add value and incorporate commercial best practices, there are many of these documents that may not be formally presented and/or transmitted to the Government through the CO as a Deliverable. However, these documents will be input and filed in the Contractor's document database and will be available to the Government at any time. These types of documents are not considered Deliverables and are not included in the PWS.

In addition, if the Government determines that any Deliverable needs to be added or removed, the Contractor will work to ensure the Deliverable is addressed appropriately to meet the needs of AEDC.

1.3. SCOPE

The TOS contract acquires test operations, technology development, equipment and facility sustainment, capital improvements and some support services for AEDC. AEDC provides the most comprehensive set of aerospace ground test facilities in the world. Many of the individual test facilities are unique in the country or in the world. At its three operating sites, AEDC facilities include very large- to medium-sized wind tunnels which cover the entire flight envelope from subsonic to hypersonic speeds. Simulated altitude testing for very large commercial-type turbofan engines and the world's most powerful fighter engines as well as large rocket motors can be conducted at AEDC. Facilities at AEDC can further simulate space environments and space vehicle reentry speeds and temperatures.
AEDC Test Capabilities include: Arnold AFB:

- Turbine Engine Altitude Ground T&E simulated altitude testing of jet engines
- Turbine Engine Ram / Sea Level Ground T&E testing of jet engines at sea level, with and without pressurized inlet air
- Hypersonic Propulsion Ground T&E ground testing of propulsion systems designed for flight at hypersonic speeds
- High Mach Number Engine Altitude Ground T&E simulated altitude testing of very high supersonic jet engines
- High-Temperature Material Characterization and Evaluation testing of material characteristics at atmospheric reentry temperatures
- Hypervelocity Flyout, Impact, and Lethality Ground T&E ground testing of projectiles and their lethality characteristics at missile intercept velocities
- High-Altitude / Space Environmental Effects and Sensor Ground T&E testing of components and systems performance in space environments
- Multi-Spectral Signature Measurement & Analysis Measurement and analysis of signal signatures of objects such as missiles, aircraft, etc.
- Super / Hypersonic Aerodynamic / Aerothermal Ground T&E High speed wind tunnels for making aerodynamic and aerothermal measurements on aerospace system models
- Transonic Aerodynamic / Propulsion Ground T&E medium and large aerodynamic wind tunnels for making aerodynamic measurements on aerospace system models. The large wind tunnel also has propulsion capability

- Solid Rocket Motor Ground T&E - simulated altitude testing of solid rocket motors.
- White Oak Site (Tunnel 9)
- Hypervelocity Ground T&E, a specialized wind tunnel for performing very high speed measurements on aerospace system models
- National Aeronautics and Space Administration (NASA) Ames Site (National Full Scale Aerodynamics Complex (NFAC))
- Subsonic Aerodynamic Ground T&E - Low speed, very large aerodynamic wind tunnels
- All sites have similar missions, although different facilities and specialties. All require similar support but obtain that support from a variety of sources. GSUs obtain some of these services through leases and support agreements as tenants on the property of other Government activities. Requirements provided by the TOS contract include:
- Test project management and analysis support necessary to execute the AEDC mission
- Analysis, evaluation, and reporting of foreign scientific and technical information
- Project management and technical support necessary to accomplish effective test technology development in support of the AEDC mission
- Advancing test capability by advancing techniques in modeling and simulation, instrumentation, and test techniques
- Capital improvement planning, programming, and execution of projects / programs to repair, modernize, improve, and acquire Research, Development, Test, and Evaluation (RDT&E) assets
- Maintenance and repair activities on all RDT&E and Test Support assets
- Operation and maintenance of all shop and laboratory assets including the Machine and Fabrication Shop, the Metrology / Non-Destructive Examination Laboratory, and the Chemistry Laboratory
- Development and application of a Quality program in accordance with (IAW) Government requirements
- Maintenance, repair, improvement, modernization, and acquisition of all AEDC base support assets, including real property consisting of over 300 buildings, 700 facilities, and 40,000 acres
- Purchasing of supplies, equipment, and services for all authorized Complex operations including tenant organizations
- Management of the requisition, receipt, storage, issuance, quality, and accounting of petroleum fuels and cryogenic products IAW Defense Logistics Agency (DLA) requirements
- Defining, planning, managing and executing projects / programs to repair, modernize, improve and acquire instrumentation, data acquisition, and control systems
- Providing performance management, business management, process management in support of the performance of this contract(s)
- Integrated Analysis in support of test data analysis, Program Office analysis, and digital engineering transition within the Complex

2.0 GENERAL REQUIREMENTS

The effort will be performed primarily at the AEDC site at Arnold AF Base in Tennessee. Performance will also be required at AEDC facilities housed as tenants on sites in White Oak, MD and on the NASA Ames Research Laboratory grounds at Moffett Field, CA. Requirements listed in this PWS are assumed to be AEDC-wide unless specifically noted otherwise. Period of performance

is expected to start the first day of July 2016 and extends eight years if all options and Award Fee Terms are exercised. All referenced instructions, manuals, and other mandatory documents referenced in the PWS are the versions current and applicable as of 1 July 2016. Any changes to applicable documents will require a contract modification.

2.1. BUSINESS RELATIONS

The Contractor shall:

- Successfully integrate and coordinate all activity needed to execute the requirement
- Manage the timeliness, completeness, and quality of problem identification
- Provide corrective action plans, proposal submittals, timely identification of issues, and effective management of subcontractors
- Coordinate and cooperate closely with associate contractors involved in the execution of AEDC's mission.
- Seek to ensure satisfaction of all internal and external customers and professional and ethical behavior of all Contractor personnel
- Form and chair an Associate Contractor Board (ACB), initially chaired by the Contractor's Deputy General Manager (DGM), with representation from all associate contracts

2.2. CONTRACT ADMINISTRATION AND MANAGEMENT

The Contractor shall:

- Perform all contract management functions required to ensure proactive and sustained contract excellence in providing accurate, safe, secure, timely, and efficient contract test and mission support to meet the Government's established requirements
- Implement a Risk and Opportunities Management System

2.2.1. Contract Management

The Contractor shall:

- Designate a responsible corporate official, to be located at AEDC, with no responsibility other than for this contract and empowered to make and implement all decisions regarding the performance of this contract
- Establish a Board of Managers at no cost to the Government that shall provide support, facilitate corporate reach back, and ensure parent company resources and best practices are made available to the NAS leadership team; Government personnel will be invited to attend a wrap-up session at the conclusion of each meeting

2.2.2. Contract Administration

The Contractor shall:

- Develop proposals and negotiate annual workload and supplemental contract

modifications

- Ensure performance of the business and administrative aspects of the contract
- Report all Full-Time Equivalents (FTEs) IAW Section 8108 of Public Law 112-10 of the DoD and Full-Year Continuing Appropriations Act, 2011
- Ensure resources are efficiently and effectively managed and contract status (including Government-furnished resources) is reported to Government representatives as required
- Recommend AEDC Instructions and changes to existing instructions as needed to assist in managing and executing this contract and to facilitate the efficient operation of AEDC
- Develop, implement, and manage formal associate contractor agreements as required
- Implement a Contractor Assurance System (CAS) that will include documented self-performed risk based audits and surveillances
- Maintain transparent, accurate, and timely data and information, such as cost, schedule, quality, safety, risk, test operations, and performance measures for work efforts across the contract
- Provide a reporting system compliant with DI-MGMT-81861, Integrated Program Management Report (IPMR)

2.2.3. Personnel Administration

The Contractor shall:

- Maintain a qualified work force able to perform the broad spectrum of functions necessary to operate, support, and sustain AEDC facilities; Plan and administer a wage and salary structure, using position classification, standards, and grade levels and adapted to the appropriate geographic locations
- Provide and administer a fringe benefit program, which may include an insurance program associated with worker's compensation and employee health, vacation, sick leave, holidays, and a retirement program
- Continue and administer a defined benefit pension program for legacy Operations, Maintenance, Information Management, and Support (OMIMS) employees on the TOS and FSS contracts at Arnold AFB
- Maintain staffing records identifying company organizational designations, a brief description of the functions, and the number and types of personnel assigned
- Report personnel strength to include hiring and termination trends, number of personnel employed by pay category and organization, number of additions and deletions to the payroll
- Provide and administer an Equal Opportunity Affirmative Action Program that complies with all Federal statutes. Implement annual employee performance reviews for non-manual (non- CBA) personnel with established annual performance goals that are aligned with the Contractor’s approach, and AEDC’s mission and SOOs

Deliverables:

OT-2014-30000 Personnel Strength Report

OT-2014-30001 Wage and Salary Management Plan

2.3. SUBCONTRACT MANAGEMENT

The Contractor shall award and administer subcontracts IAW the Contractor's established policies, procedures, and approved purchasing system.

This PWS element focuses on establishing policies and procedures to award and administer subcontracts while maintaining a DCMA-approved purchasing system. Subcontracts is one of the functional elements of the Contractor's organization that maintains effective and compliant procedures and processes and qualified acquisition resources to support mission elements and is essential to helping achieve AEDC Strategic Goals.

The Contractor shall:

- Implement and maintain policies, procedures, and an approved purchasing system to effectively execute the TOS scope
- Award and administer subcontracts in accordance with the Contractor's established policies, procedures, and approved purchasing system
- Establish a self-assessment program to ensure that integrity and compliance is maintained on an annual basis
- Implement a program for effective technical oversight of subcontracts
- Train and certify personnel on the programs requirements and receive official appointment letters upon satisfactorily meeting those requirements

Deliverables:

OT-2016-30046 Acquisition Self-Assessment Report

2.4. CONTRACTOR PERSONNEL, DISCIPLINES, AND SPECIALTIES

This PWS element focuses on improving and developing integrated training programs and creating opportunities for Contractors, Government personnel, craftsmen, and a new generation of scientists, engineers, and technical experts that will be required to develop critical skills, enhance teamwork, improve productivity and maintain global aerospace superiority. It is essential to helping achieve AEDC Strategic Goals.

The Contractor shall:

- Conduct craft, supervision, and management training programs, such as performance-based leadership training, Foreman and Supervisory training, and professional development
- Provide opportunities for graduate-level education for employees to the extent permitted by the Federal Acquisition Regulation, Part 31
- Accept Government personnel for assignment to positions within the Contractor's organization for immersion or other purposes approved by the Contracting Officer and offer NAS mentorship, training, and development opportunities

- Coordinate joint training programs for all Contractor and Government personnel, as appropriate
- Make select online courses available to NAS employees
- Coordinate with the Government in replacing critical Key Personnel in accordance with special clause H125, to include providing adequate written justification for changes related to these positions. Changes must be coordinated in advance with the CO

3.0 PERFORMANCE REQUIREMENTS

The following section specifies the Performance Objectives and Performance Elements for the contract. Unless otherwise specified, all requirements apply to all AEDC locations (AEDC Arnold AFB, AEDC White Oak, and AEDC Moffett Field).

3.1. TEST AND EVALUATION

This PWS section outlines requirements to direct, manage and support test and analysis projects and is essential to helping achieve AEDC Strategic Goals. The Contractor shall support all phases of testing, as defined in the following subsections, recognizing the Government's specific management role for testing at AEDC Arnold AFB and AEDC White Oak; and the contractor's specific management role in testing at AEDC Moffett Field.

A test customer engages AEDC with the intent to generate data and acquire knowledge needed in the development, qualification, and/or sustainment of an aerospace system or system of systems. Technical direction and management are focused on ensuring that the data and information acquired during testing is suitable for decision making and for supporting technical risk management for acquisition programs and other test customer needs. This is a collaborative process that engages the expertise of the testers and the test customer to fully understand the capabilities and limitations of the proposed test program. Careful test planning, including test plans and cost and schedule estimates, participated in by AEDC and its test customer, is an important element of successful testing.

3.1.1. The Contractor shall support the development of the rough order of magnitude (ROM) cost estimates for testing.

ROMs provide the test customer a cost and schedule estimate based on preliminary information available from the test customer. The level of detail that the test customer provides varies and usually includes test duration and specific requirements, including test conditions and instrumentation. The ROM shall restate to the test customer the requirements as provided, any assumptions used in estimating, and a range in possible costs with rationale. Emphasis shall be applied to determining analysis requirements needed to support the customer's test.

Deliverables:

OT-2014-30027 Rough Order of Magnitude Estimate

3.1.2. The Contractor shall support the development of the Statement of Capability (SOC) for tests.

SOCs provide the programmatic and technical approach being proposed for a test and analysis project based on the test customer's known requirements. SOCs are detailed documents which

effectively act as a contract for tests conducted for Government customers.

The Contractor shall:

- Deliver a completed SOC for testing conducted at AEDC Moffett Field. Support the Government in development of the SOC for tests conducted at AEDC Arnold AFB and at AEDC White Oak

Deliverables:

OT-2014-30048 SOC Report

3.1.3. The Contractor shall develop test plans for testing when a test plan is not provided by the test customer.

Test plans include test article configurations, test environmental conditions, test points, required instrumentation, test article operating limits and other information directly required to conduct the test.

The Contractor shall:

- Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be performed by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak, with support from the TOS Contractor in performance of scope defined in PWS Sections 3.3 and 3.6

Deliverables:

DI-NDTI-80566A Test Plan

3.1.4. Baseline test and analysis project plans.

The following subparagraphs outline the requirements for the project plan for all tests.

3.1.4.1. The Contractor shall assess the suitability of the test, develop the analysis requirements, develop the best approach to meeting the test objectives, and support test technical review boards IAW Air Force Instruction (AFI) 99-103 and AEDC Instruction (AEDCI) 99-100.

A determination of the test suitability shall be accomplished in coordination with the test customer. The assessment shall address the intent of the test (e.g. demonstration, qualification, developmental) and shall address the technical approach, method of test, and objectives. The test facility capabilities required to conduct the test must be identified and determined to be available for use. Analysis requirements will either be qualitative or quantitative based on the customer's test objectives. The analysis requirements for quantitative results shall incorporate the following items at a minimum: a) pre-test measurement uncertainty assessment, statistical assessment of the suitability of the test for each test objective, and uncertainty propagation to test customer required results; b) the requirements for configuring the test data systems to meet the customer's test objectives including the implementation of custom algorithms and data reduction necessary to meet the customer's test objectives; c) data validation approach to ensure data integrity. The assessment of the test shall be documented in an engineering report IAW AEDC Operating Instruction (AEDCOI) 99-10. The analysis requirements include defining the delivery schedules for data, analysis products, and technical reports shall

be included in the project plan.

The Contractor shall:

- Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be performed by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak, with support from the TOS Contractor in performance of scope defined in PWS Sections 3.3, 3.6 and 3.7

Deliverables:

OT-2014-30049 Test and Analysis Project Plan

3.1.4.2. The Contractor shall review and coordinate instrumentation and control system requirements for the provided customer test plan for tests.

This requires coordination and communication with the test customer and the Original Equipment Manufacturer (OEM) of the test article should they be different organizations. This can involve confirming and clarifying sampling rates, data time skew, installation requirements for specific instruments, channel counts, instrumentation mortality concerns, test article control interfacing, and other technical requirements not listed here. The scope of work for the first entry of a test article to configure the test data acquisition system and test data acquisition systems database configuration will be greater than for a repeat entry of the same or similar test article with respect to form, fit and function of the test article. The data acquisition systems and controls systems requirements shall be defined for fulfillment IAW paragraph 3.6.3.

The Contractor shall:

- Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be met by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak, with support from the TOS Contractor in performance of scope defined in PWS Sections 3.3, 3.6 and 3.7

Deliverables:

OT-2014-30049 Test and Analysis Project Plan

3.1.4.3. The Contractor shall define and document requirements for buildup, installation, modification, and removal for test articles.

This requirement can vary in the scope of work depending on the customer's test requirements and if it is a first or repeat entry for the test article. First entries will usually require the development of support test equipment, test article unique interface hardware, and definition of the operating requirements for preparation of the initial procedures to operate the test article and test facilities. This includes planning to procure and to fabricate necessary test support equipment and includes equipment that shall be supplied by the test customer or their designated representatives. A second or repeat entry of the same or similar test article, with respect to form, fit and function, will generally require minor modifications or reuse of the support test equipment previously procured, fabricated, or provided by the test customer or their designated representatives. The fulfillment shall be IAW section 3.3.9 and 3.3.10.

The Contractor shall:

Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be

met by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak, with support from the TOS Contractor in performance of scope defined in PWS Section 3.3 and 3.6

Deliverables:

OT-2014-30049 Test and Analysis Project Plan

3.1.4.4. The Contractor shall develop test period run programs, test article configuration requirements, and test installation configuration requirements for customer provided test plans for tests.

The test period run programs shall account for any test sequence or prescribe translations for the test article or test support equipment, the test article configuration, test environment including stabilization time, efficient use of power, requirements for acquiring data, and shall be linked directly to the test plan provided by the test customer.

The Contractor shall:

- Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be met by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak, with support from the TOS Contractor in performance of scope defined in PWS Sections 3.3 and 3.6

Deliverables:

OT-2014-30045 Test Period Run Plan

3.1.4.5. The Contractor shall identify resource requirements, including materials, utilities, and labor required to perform TOS test scope.

The definition of resources shall include the identification of support from other AEDC contractors for work required to complete planning, design of installation, fabrication, installation, and test operations, including facilities and data systems, and removal. Location specific data requirements are identified in the DID.

Deliverables:

OT-2014-30049 Test and Analysis Project Plan

3.1.4.6. The Contractor shall provide requested information to the Government to support project planning, reviews, and execution.

Information may include but is not limited to resource estimates for labor, materiel, and utilities, schedules, configuration, operational options and recommendations to meet required test conditions. Information may be used to develop ROM Estimates, Test Project SOCs, Test Plans, Test Readiness Reviews (TRRs), and other project documentation.

3.1.4.7. The Contractor shall prepare and organize required documentation for the Safety Review Board.

The test and analysis project safety assessment and the documentation of the assessment shall be accomplished IAW PWS 3.14.2.

3.1.5. The Contractor shall provide test and technology project management support.

3.1.5.1. The Contractor shall support TRRs for tests conducted at the GSUs and at AEDC Arnold AFB.

Refer to AFI 99-103, Capabilities Based Test and Evaluation, AFMCI SUP 99-103, Capabilities Based Test and Evaluation, and AEDCI 99-100, Test and Evaluation Project Management.

3.1.5.1. The Contractor shall track, manage, and report project cost, schedule, and technical performance for tests.

The Contractor shall:

- Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be met by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak

Deliverables:

DI-MGMT-81861 Integrated Program Management Report

3.1.5.2. The Contractor shall identify and document project scope changes and incorporate Government-approved scope changes and project deviations.

The Contractor shall:

- Complete this requirement for testing as directed by the Government. This requirement is normally performed by the Government with support from the TOS Contractor in performance of scope defined in PWS Sections 3.3, 3.6 and 3.7.

Deliverables:

OT-2014-30004 Project Change Agreement

3.1.5.3. The Contractor shall document and maintain project records and project reviews for tests.

Provide access to the following: test requirements, project and analysis plans, test analysis, test reports, test plan, test requirements information, test configurations, deliverable reports, operating logs for test article and test article support equipment, and test data used for reports, test and facility data associated with anomalous events, and test productivity metrics. This database will incorporate existing data and accessibility will be limited to the Government, TOS Contractor, and Test Services Contractor.

The Contractor shall:

- Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be met by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak for test analysis, test reports, test plan, and test requirements information

- Meet this requirement for test configurations, operating logs for test article and test article

support equipment for testing conducted at AEDC Arnold AFB and AEDC White Oak

3.1.6. The Contractor shall prepare and deliver data packages and technical reports for tests.

This section outlines the requirements for technical reporting identified in the SOC and the approved test and analysis project plan. Data validation and fault checking, to the extent feasible, shall occur in real time for test programs to accomplish the test objectives; this shall be accomplished to ensure the ability to deliver data real-time and / or at the end of each test period. The data shall be analyzed and evaluated with respect to the test objectives and analyzed for performance with respect to test objectives. The data evaluation shall at a minimum include the definition of the overall uncertainty for steady state data for the designated performance parameters and associated measurements. Uncertainty analysis traceable to test data and calibration information will be performed. All test objectives will be addressed. Reports shall be formatted IAW AEDCOI 99-10, Technical Reporting.

The Contractor shall:

- Complete this requirement for testing conducted at AEDC Moffett Field. This requirement will be met by the Government for tests to be conducted at AEDC Arnold AFB and AEDC White Oak, with support from the TOS Contractor in performance of scope defined in PWS Sections 3.3, 3.6, and 3.7

Deliverables:

OT-2014-30044 Technical Reports

3.1.7. The contractor shall provide test customer support.

Test customer support requires close coordination with the Test Manager, the test customer and other AEDC contractors to assist the customer with base access, network access, AEDC safety information and any other general support to help prepare the test customer for arrival at AEDC

3.1.8. The Contractor shall provide recommendations, conclusions, and lessons learned for continuous test capability and test process improvement. The information requested shall be entered into a lessons learned data base provided by the Information Technology Support Contractor following every test project.

3.1.9. The Contractor shall respond to Government developed requirements to identify, design, develop, and execute Analysis and Technology projects that will eliminate requirements gaps in facility and plant hardware, software, instrumentation, analytical methods, computational modeling and simulation, and test methodology improvements.

Analysis and Technology projects will be captured and prioritized in the Integrated Technology Investment Plan (ITIP), which is managed by the Government and supports the AEDC strategic plan. Topic candidates for ITIP inclusion and funding will be submitted to the Government by the Contractor. The ITIP will have detailed plans for the upcoming year's projects and 5-year plans for additional topics, as funding allows, in support of the Future Years Defense Program (FYDP). These topics will be identified in collaboration with other DoD T&E complexes and

developers, academic institutions, and industry. A continual professional interchange will be maintained with technology oriented representatives from industry and Government, consistent with AEDC Agreements, by attending and being involved with technical conferences and seminars. The ITIP shall include a "gap analysis" which includes facility and plant hardware, software, personnel skills, instrumentation, analytical methods, modeling and simulation, and test methodologies. The Contractor will propose suggestions to the Government for approval in order to eliminate requirement gaps. Yearly Analysis and Technology Program reviews will be provided by the Contractor. These program reviews shall include highlights of the major projects, a review of the transition candidates and a listing of TRs, papers, and presentations, made during the year, that are a result of the Analysis and Technology Program activities.

This PWS conforms to the Government's approach to technology development and the Contractor will support the Government's efforts for all programs by performing the tasks in this section as directed.

The Contractor shall:

- Maintain a prioritized list of execution ready projects, coordinated with the Government, which can be accomplished with year-end or other unexpected fund sources.

Deliverables:
OT-2014-30023 ITIP Candidate Topic List
OT-2014-30026 Technology Progress Report

3.1.10. The Contractor shall assure the transition of technology products to the intended environment with operational and maintenance activities identified, as required.

Technology product transition will be coordinated with and approved by the Government, including proof-of-concept, prototypes, incremental development products, and SBIR products. Transition activities should assess the need for training, operators' manuals and maintenance requirements. Software product requirements, technology software product transition, and technology instrumentation and control product transitions will be IAW with Section 3.6 requirements. Technology products requiring calibration will be coordinated with the PMEL Contractor. Technology transition projects will be visible in the Integrated Master Schedule.

Documentation of the Contractor's plans for transition of the technology products to users will be in the form of a "Technology Transition" section that will be a part of each activity description in each Technology project plan. These Technology Transition sections will identify the intended recipient of the technology product; the intended verification, validation, and acceptance processes for that transition, as applicable; and will include a notional timeline for transition. If Technology transition does not apply to a particular activity, if for example the activity involves infrastructure or management but not development, then a transition section is not required for that activity.

3.1.11. The Contractor shall conduct measurement and troubleshooting services using developmental instrumentation and systems.

The AEDC Technology program supports measurements and troubleshooting for on- base test activities, and off-base customers including commercial and other Government groups. The advanced measurement and troubleshooting activities may require Contractor operation of

specialized measurement equipment, innovative data gathering tools, technical evaluations and / or data analysis.

Examples of this activity include gaseous emissions sampling and analysis, exhaust particulate measurements, non-contact Stress Measurement System (NSMS) testing, and multispectral signature data gathering. The off-base testing support requires packing and shipping of equipment, travel for personnel, and operation and maintenance of equipment in a field environment, which the Contractor will provide as required by the Government.

3.1.12. The Contractor shall provide engineering support for SBIR programs.

The SBIR program allows for awarding contracts to small business with the intent of developing a new test technique, instrumentation package, modeling and simulation capability, or sustainment activity that would benefit the Government and allow for the commercialization of the product by the small business. These awards are based on proposals on topics that are identified and broadcast by the Government.

The Contractor shall support the Government SBIR Program Manager in identifying candidate topic ideas and supporting transition of SBIR developments into operation. Transition activities include training, operation and maintenance of the product.

Deliverables:

OT-2014-30019 SBIR topics candidate input

3.1.13. Applicable Documents (Mandatory)

AFI 99-103	Capabilities Based Test and Evaluation
AFMCI SUP 99-103	Capabilities Based Test and Evaluation
AEDC SUP to AFTCI 91-202	Test Safety
AEDCI 99-100	Test and Evaluation Project Management
AEDCOI 99-10	Technical Reporting

3.2. AEDC GSU SUPPORT NOT OTHERWISE DEFINED

The intent of this section is to include AEDC GSUs that were not included at contract start but have since been realigned functionally under AEDC. This specific requirement is only to be accomplished on a non-interference basis with any other contracts, e.g. the Eglin AFB, Operations and Maintenance Services (E-OMS) contract. At no time will TOS contractors perform work already required by other contracts. This requirement is intended to provide a contract mechanism that enables AEDC to utilize TOS contractors at all AEDC GSUs. Additionally, no requirements shall be accomplished that are not already part of the scope on this contract.

3.2.1. The Contractor shall provide support to AEDC GSUs not otherwise defined in this PWS (i.e. White Oak, MD and NFAC, CA) on an as needed basis when funded and directed by the Government.

3.3. OPERATION OF TEST ASSETS AND TEST ARTICLES

This PWS section defines objectives and requirements for safe, efficient, and effective operations of test cells, process air plants, test utilities (steam, electrical, and raw water), and their associated systems, including Test Instrumentation, Data, and Controls (ID&C) assets, test articles, and other non-AEDC test peculiar support equipment and Technology development labs and equipment used to conduct testing, checkouts, and general operations activities. Unless otherwise specified, this section includes operations at AEDC Moffett Field and AEDC White Oak. Fuel operations requirements are covered in Section 3.9. The test and test support assets are listed in Appendix A.

3.3.1. The Contractor shall provide requested test conditions during operation of test assets, test articles, and non-AEDC test support equipment.

Specific test conditions will be requested prior to the test via test period directives or via other designated communication methods, and may also be requested during the actual test period execution. These requests may originate with the customer, but are communicated to the operators via designated AEDC personnel depending on the location.

3.3.2. The Contractor shall direct the accomplishment of the test objectives during testing at AEDC Moffett Field.

The direction of test objectives includes ensuring that the test is executed according to the test period run plan and does not include providing specific instruction for the operation of the test facility and test article; these requirements are met in other sections of 3.3 and in 3.6 of this PWS.

The Contractor shall:

- Support the Government to complete this requirement for testing conducted at the AEDC Arnold AFB and AEDC White Oak
- Provide a Test Report for tests at AEDC Moffett Field

3.3.3. The Contractor shall monitor, investigate, report, and take corrective action for all test data anomalies. Data anomalies include but are not limited to, individual channels that exceed the tolerance for measurement noise, dynamic and transient data that exhibit noise or signal characteristics that are inconsistent with the phenomena being measured, and other indicators that would indicate faulty test data.

3.3.4. The Contractor shall provide operational data for test facilities and test utilities.

Logs provide operational use data for analysis, historical record, and compliance with laws and regulations.

Deliverables:

OT-2014-30021 Daily Operating Time Log

OT-2014-30047 Title V Major Source Operations Log

3.3.5. The Contractor shall maintain data logs for maintenance and operation activities related to test articles and test peculiar support equipment.

Test peculiar support equipment is items that are either customer-supplied or AEDC-procured, such as a waterbrake, to support a specific test project or program. Logs are used to track operational usage, configuration changes, and maintenance actions.

The Contractor shall:

- Provide the test customer access to the Test Article Activity Log

Deliverables:

OT-2014-30021 Daily Operating Time Log

OT-2014-30039 Test Unit Status Log

OT-2014-30053 Test Article Activity Log

3.3.6. The Contractor shall develop and document work instructions for operation and maintenance of test articles and test peculiar support equipment.

Operations or maintenance work instructions are required for customer-supplied equipment and test articles as well as procured test peculiar equipment that will be operated by the TOS Contractor when procedures are not supplied. Any equipment to be added to the AEDC inventory as new Configuration Items upon test completion shall be accepted and conformed to the requirements in AEDC-STD-CM-1 Configuration Management.

The Contractor shall:

- Develop work instructions for activities not currently addressed by existing work instructions
- Ensure operational work instructions reflect current asset configuration(s)

Deliverables:

OT-2014-30018A Operations and Maintenance Work Instructions

3.3.7. The Contractor shall provide and document requested maintenance for test articles and test peculiar support equipment.

Test article maintenance is typically performed by the customer or customer's representative. The customer may request AEDC to perform or support a maintenance activity on their test article or test peculiar support equipment. This requirement may be documented in project documentation such as a SOC, or may be a real-time request from the customer. Examples of maintenance activities: oil changes, borescope inspections, and failed customer-installed sensor change out.

Deliverables:

OT-2014-30053 Test Article Activity Log

3.3.8. The Contractor shall conduct and document receiving, receipt inspections and conduct preparation for return shipment or storage and return shipment for test articles and test peculiar support equipment.

This requirement includes any special inspections performed upon delivery to test article buildup areas or test areas and preparation activities conducted in test areas in order to prepare the test article or test peculiar support equipment for shipping. This requirement includes the initial receipt inspections at Arnold AFB, TN; White Oak, MD; and Moffett Field, CA and return shipments at AEDC White Oak, and through special agreements with NASA at AEDC Moffett Field and excludes return shipments performed by the FSS Contractor at AEDC, Arnold AFB.

Deliverables:

OT-2014-30053 Test Article Activity Log

3.3.9. The Contractor shall provide test article and test peculiar support equipment installation designs, hardware, and software as required by the Statement of Capability (SOC) for the project.

Designs, hardware, and software shall comply with applicable AEDC Engineering Standards, AEDC Safety, Health, and Environmental (SHE) Standards, AEDC Configuration Management Standard, and AEDC Systems Engineering requirements and standards.

3.3.10. The Contractor shall build-up, install, re-configure, and remove test articles and test support equipment for test projects.

This requirement defines work in the fabrication, installation, test, and removal phases of a project including preparing for test execution, making required changes during testing, removing the test article, and returning test cell systems to a baseline configuration. Buildup, installation, re-configuration, and removal applies to all assets associated with the test including the test article, test peculiar support equipment, and test cell assets (e.g. thrust stands, data acquisition systems, model support systems). Specific requirements for these actions may come from the Test Manager, the Test Engineer, the test customer, or project documentation.

The Contractor shall:

- Document test article repairs or modifications not addressed in the SOC.

Deliverables:

OT-2014-30053 Test Article Activity Log

3.3.11. The Contractor shall operate steam plants IAW UFC 3-430-02 FA Central Heating Boiler Plants and AFI 32-1068, Heating Systems and Unfired Pressure Vessels; at AEDC Moffett Field, the Contractor shall also operate IAW the Bay Area Air Quality Management District.

The Contractor shall:

- Notify and coordinate with the Government of pending boiler inspections
- Develop and utilize steam plant-specific work instructions for operation of the steam plants
- Add Boiler inspection activities into the IMS requirement 3.3.11 does not apply to AEDC White Oak

3.3.12. Applicable Documents (Mandatory)

AFI 32-1068	Heating Systems and Unfired Pressure Vessels
AEDC-STD- CM-1	Configuration Management
AEDCOI 99-1	Lost Test Time
UFC 3-430-02	Central Heating Boiler Plants
TO 1T-38A-2-6	Org. Maint., T-38A Aircraft Powerplant
TO 1T-38A-6WC-4	T-38 Power Pack Installation and Inspection
TO 2J-J85-9	Nondestructive Inspection Procedures
TO 2J-J85-54	J-85 Turbojet Engine IPB
TO 2J-J85-102	Corrosion Control / Cleaning Manual
TO 2J-J85-111 (1-2)	Test, Troubleshooting, and Handling Maintenance Manual
TO 2J-J85-113-CD-1	Turbojet Engine J85 Technical Manual Set
TO 2J-J85-113-(1-10)	Depot Maintenance Manual
TO 2J-J85-116-(1-11)	Interim Maintenance Manual
TO 2J-J85-154	Support Equipment for J85 IPB
TO 6J3-2-16-13	Afterburner Control Overhaul Manual
TO 6J3-2-16-14	Afterburner Control IPB
TO 6J3-4-73-3	Main Fuel Control Overhaul Manual
TO 6J3-4-73-4	Main Fuel Control IPB
TO 33D4-6-264-1	Engine Control Kit Ops and Service Manual
TO 33D4-6-264-4	Engine Control Kit IPB

3.4. INTEGRATED SCHEDULING

The Integrated Scheduling process shall be used by the Contractor to schedule test, maintenance, capital improvements and civil engineering efforts, from all AEDC contracts and Government sources. The execution and coordination of this PWS is a major contributor in supporting achievement of AEDC Strategic Goals.

The outage process gives visibility to activities that impact the AEDC mission. A planned outage represents a specified period of time that an asset or assets will be unavailable for operations due to maintenance or curtailment of utilities. These assets include Test Cells, Plants, Buildings, Utilities, Resources and Networks.

AEDC White Oak and AEDC Moffett Field will provide test, maintenance, and support activity

information to the Integrated Schedule for location activity visibility. The performance standards do not apply to these locations.

The Contractor shall:

- Implement the use of a scheduling program and maintain an IMS, which incorporates logic-based activities to determine impacts to other activities

3.4.1. The Contractor shall manage the integrated scheduling process for test, maintenance, and all support activities.

Performance Standards:

a) STD: Ninety (90) per cent or greater test scheduling effectiveness

b) STD: Ninety (90) per cent or greater outage scheduling effectiveness

Deliverables:

OT-2014-30013 Schedule deviation report

OT-2014-30015 90-day Outage Report

OT-2014-30020 Integrated Schedule

3.4.2. Applicable Documents (Mandatory)

AEDCOI 21-205	Tactical Integration Group

3.5. LIFECYCLE SUSTAINMENT OF TEST AND TEST SUPPORT ASSETS

This section includes specific requirements related to providing lifecycle sustainment of test cell, process air plant, test utility (electrical power, steam, and raw water) systems (including Test ID&C), machine and fabrication shop equipment, and laboratory equipment including Technology Laboratories that are essential to meeting Strategic Goals. Fuel system sustainment requirements are covered in Section 3.9. In-place calibration and removal for calibration of TMDE is covered in Section 3.7. The test and test support assets are listed in Appendix A.

The Contractor shall:

- Implement a program focused on reliability and on defect elimination
- Standardize the execution of the lifecycle sustainment processes and procedures for test and test support assets across the organization
- Plan, implement, and manage sustainment activities throughout an asset's lifecycle
- Balance sustainment with cost, schedule and performance requirements
- Identify a point of contact (POC) for the Lifecycle Sustainment program for test and test support assets
- Implement and Apply Reliability-Centered Maintenance (RCM) strategy, Condition-Based Maintenance (CBM) approach, and Predictive Maintenance (PdM) tools
- Develop customized Preventive Maintenance Optimization program
- Maximize the use of existing information, such as Computerized Maintenance Management System (CMMS) and Pressure and Hazardous Material Systems (PHMS) data

- Provide data in the CMMS and other databases to provide accurate asset and maintenance historical records and data for analysis

3.5.1. The Contractor shall develop, execute, sustain, and continuously improve an efficient and effective Reliability Centered and Conditioned Based Maintenance Program.

This section includes specific objectives and requirements for developing, executing, sustaining, and continuously improving an efficient and effective Reliability Centered Maintenance and Condition Based Maintenance Program for sustainment of AEDC test and test support assets. RCM is a life cycle management (LCM) tool and shall be applied to an asset from design through disposal. RCM shall serve as the overall maintenance and reliability strategy for test, operations and maintenance scope. CBM is a programmatic approach that shifts efforts from time-based to condition-based inspection and monitoring. PdM refers to the actual tools utilized within the CBM program.

The Contractor shall:

- Provide periodic audits and evaluations of RCM process by certified internal AEDC and external personnel
- Develop Equipment Maintenance Plans that includes the test and inspection strategy
- Ensure the RCM strategy complies with SAE ARP 5580 – Recommended FMEA Practice for non-automotive applications and SAE JA1001 – SAE Standard for RCM
- Use Proactive Maintenance (PM) Optimization methodology to upgrade proactive maintenance from time-based to condition-based
- Provide a training/certification program for RCM facilitators and a recertification program
- Conduct RCM "best practices" workshops when applicable

The Contractor's RCM Program shall:

- Determine which failure management strategies should be applied to ensure systems achieve the desired levels of safety, reliability, and operational readiness in the most cost-effective manner
- Incorporate CBM processes with PdM tools
- Bring commercial best practices, methodologies, tools, and RCM walk down and asset registry software
- Identify actions that will reduce unplanned downtime
- Integrate systems engineering to optimize failure management strategies
- Increase use of PdM technologies to replace time-based inspections with condition-based tasks to improve efficiency and reduce costs
- Provide pre-populated failure modes database to streamline the analysis process
- Require sustainment throughout the lifecycle and work as a continuous process

The Contractor's CBM program shall:

- Enable AEDC to achieve the required levels of readiness in a cost-effective manner.
- Implement the best value mix of maintenance, including run-to-failure, CBM, and time-based maintenance
- Target process improvements and diagnostic capabilities

- Incorporate use of hand-held, route-based PdM technologies as approved by the Government.
- Use online condition monitoring tools as practicable

The Contractor shall utilize PdM tools to:

- Leverage the categorization of the failure modes previously identified via RCM analysis as time-based or random
- Shift the mitigation task discussion to one of probability or detection and the time window to execute corrective work

3.5.1.1. The Contractor shall develop and deliver status reports for maintenance program execution.

To support the RCM strategy, the Contractor shall:

- Use the CMMS and other databases as necessary to track maintenance execution and maintenance forecasting

Deliverables:

3.5.1.2. The Contractor shall perform and report analysis of operation and maintenance data for continual improvement of reliability-centered maintenance program.

The Contractor shall:

- Deploy RCM strategy designed to produce continuous improvement over the life of the AEDC test and test support assets; track and report lifecycle improvements to the Government

Deliverables:

OT-2014-30050 RDT&E Asset Sustainment Program Analysis Report

3.5.1.3. The Contractor shall perform and document condition (health) assessments for AEDC test and test support assets.

The Contractor shall:

- Perform and document health assessments on test and test support assets per DID / CDRL and Government direction. These are point-in-time condition assessments and projected (forecasted) future condition assessments to aid in lifecycle sustainment planning, not real-time daily condition of assets due to current failures or repair activities
- Maintain existing Asset Condition Assessments and update them every two years
- Develop and implement Asset Condition Assessments as systems are modified or as new systems are put in place

Deliverables

OT-2014-30028 Asset Condition Assessment

3.5.1.4. The Contractor shall document analyses used for development and execution of the maintenance program.

3.5.1.4.1. The Contractor shall perform root cause failure analyses as directed by the Government.

3.5.1.4.2. The Contractor shall ensure that all analysis documentation including input data and results that are used in the development, implementation, and performance measurement of the lifecycle sustainment program are available for review by the Government (e.g., Failure, Modes, Effects and Criticality Analyses (FMECA), failure analyses, etc.).

3.5.1.4.3. The Contractor shall submit to the Government for approval new and revised Equipment Maintenance Plans(EMP)

Deliverables:
OT-2017-30043 Equipment Maintenance Plan

3.5.1.5. The Contractor shall submit to the Government for approval all proactive maintenance program changes that may increase risks to equipment, personnel, capability, or data quality or increase lifecycle costs.

This requirement includes deferrals and waivers of scheduled proactive maintenance.

The Contractor shall:

- Ensure changes are coordinated and approved by the Government before deployment

Deliverables:

OT-2016-30048 PM Waiver – Deferral Request

OT-2017-30045 PM Program Change Request

3.5.1.6. The Contractor shall maintain AEDC test and test support assets in Government- specified sustainment status.

Government specified sustainment statuses are defined in AEDC-STD-CM-1 Configuration Management. Current directed sustainment status for AEDC test and test support assets are provided in AEDC-STD-CM-1, Appendix D.

The Contractor shall:

Use Asset Management best practices in the area of Item Management, which include:

- Replacement and Renewal Schedules
- Equipment Obsolescence Plan

3.5.1.7. The Contractor shall plan, conduct and document inspections, repair/replace and sustain assets in support of the Pressure and Hazardous Material System (PHMS) program.

The Contractor shall:

- Plan a program that assures the integration and coordination of system access and availability, workforce availability to include the required skills mix, equipment and training requirements
- Identify assets to be included in the PHMS program
- Annually support updates/recommendations for the PHMS priority list
- Develop new starts and provide Project Plans.

- Evaluate the integrity of the existing system in meeting required design characteristics and document results in Evaluation Reports.
- Perform asset deficiency corrections and document corrections in Deficiencies Correction Reports.
- Assess the deficiency correction efforts to assure deficiencies identified have been resolved per applicable Codes and Standards requirements and the system is safe to operate at the design pressure and temperature
- Prepare and submit In-Service Inspection Plans in order to ensure that the PHMS are inspected and certified according to the program requirements
- Enter the In-Service Inspection Plan into the Computerized Maintenance Management System (CMMS) for scheduling the detailed requirements for execution
- Perform ISI's in a timely manner as scheduled in the CMMS or as deemed necessary per engineering judgment to assure continued safe operations of certified PHMS
- Review the inspection and test reports to assure the system has been certified safe in accordance with applicable Codes and Standards
- Participate in bi-monthly project resource and system access scheduling meetings with the Government program manager, , as well as other required meetings scheduled as necessary to provide certification status updates
- Review all technical documentation, system schematic(s), configuration drawing(s), weld maps, inspection and test reports to determine any gaps, once gaps have been rectified, assure documentation created is sufficiently detailed to support the ISI plan
- Upload all certification reports into the CMMS, maintain all certification records, drawings, reports, and documents via Configuration Management process
- Follow NASA Ames Research Center (ARC) Pressure Vessel instruction for AEDC Moffett Field PHMS

3.5.1.8. The Contractor shall perform and document troubleshooting and repairs performed for failed, failing, and malfunctioning systems or equipment to restore functional capabilities.

3.5.1.8.1. The Contractor shall coordinate with the Government asset manager approval before proceeding with procurement/execution of repairs, refurbishments, and replacements with material only procurement cost > $5,000 or material plus labor procurement cost > $10,000. This requirement does not apply to procurement of designated spares nor for assets that are in the repairables program.

3.5.1.8.2. The Contractor shall ensure that component and part-level repairs, refurbishments, and replacements that increase risks to equipment/personnel/environment/data quality/downtime, decrease capability, or increase lifecycle costs are coordinated with the Government before procurement/execution.

3.5.1.8.3. The Contractor shall enter data in the Computerized Maintenance Management System (CMMS) including failure code and specific work performed.

Deliverables:
OT-2014-30046 Maintenance Management Information OT-2017-30016 ID&C Morning Report

3.5.1.9. The Contractor shall execute and document Proactive Maintenance (PM) for AEDC test and test support assets.

3.5.1.9.1. The Contractor shall enter data in the CMMS including findings and specific work performed/not performed.

Performance Standards:

a) STD: PM Schedule Compliance > 90%

b) STD: PM Schedule Compliance > 95% (Test Utilities)

c) STD: PdM Schedule Compliance > 90%

d) STD: Proactive Maintenance Ratio > 80% Deliverables:

OT-2014-30046 Maintenance Management Information

3.5.2. The Contractor shall develop and submit lifecycle sustainment plan(s) for AEDC test and test support assets.

This requirement is for the Contractor to provide lifecycle sustainment plans for test and test support assets, including test cell, plant, utilities, fuels, shops, laboratories, technology, and Test ID&C assets.

Deliverables:

OT-2014-30038 Shops and Laboratory Management Plan (does not apply to AEDC Moffett Field or AEDC White Oak)

OT-2014-30060 Integrated RDT&E Asset Management Plan

3.5.3. The Contractor shall develop and deliver plans for transitioning from one sustainment status to another and sustaining a specified status (other than active) when directed by the Government.

By direction of the Government, active test assets shall be placed in a non-operational state or vice-versa, and shall be transitioned and maintained in the new status by the Contractor. Plans shall be developed that document options for actions, costs, and risks for the given scenario.

The Contractor shall:

- Partner with the Government to develop a Sustainment Status Transition Plan that will define the operational states and the methodology for transitioning between statuses, as defined in AEDC–STD-CM-1

Deliverables:
OT-2016-30047 Sustainment Status Transition Plan

3.5.4. The Contractor shall perform assessments of asset downtime and data compromise risk for AEDC Test and Test Support Assets.

The Contractor shall:

- Assess asset downtime and data compromise for all mission phases when performing baseline and test safety hazard analyses as directed in AEDC Supplement to AFTCI 91-202, Test Safety

3.5.5. The Contractor shall support the conduct of Operational Readiness Reviews (ORR) to determine the readiness to perform checkouts or initial operations for systems that have been inoperative for extended periods or which have undergone modification or maintenance.

The Government shall determine the need for an ORR and shall chair the ORR.

3.5.6. The Contractor shall perform proactive and reactive maintenance on generator/start carts.

The Contractor shall:

- Maintain -60A per Technical Orders and -60B per manufacturer recommendations.

3.5.7. Applicable Documents (Mandatory)

AEDC-STD-CM-1	Configuration Management
T.O. 35C2-3-372-11	Operations, Maintenance and Overhaul Instruction W/IP

3.6. ID&C ENGINEERING SERVICES AND LIFECYCLE SUSTAINMENT

The Contractor shall provide and support instrumentation, data acquisition systems, control systems and the life cycle management of each category. Instrumentation, Data and Control Systems may be referred to collectively as "ID&C", and Information Technology may be referred to as “IT”. Requirements for sustainment of test support assets in section 3.5 and configuration management in section 3.13 fully apply to sustainment of IT and ID&C assets. Additionally, the following requirements apply to IT and ID&C operations and sustainment. The IT and ID&C assets are listed in Appendix A Table A-1. Successful execution of IT and ID&C Engineering Services and Lifecycle Sustainment element is essential to helping achieve AEDC Strategic Goals.

Deliverables:
OT-2017-30015 ID&C Monthly Unfunded Requirements Report

3.6.1. The Contractor shall manage data produced by test operations, system logs, and diagnostics for archival, retrieval, and delivery to contractor, Government, or customer personnel as required. Data shall be archived and maintained IAW AEDCI 99-104, Data Retention Instruction.

3.6.2. The Contractor shall document, manage, and maintain ALL existing, newly developed, and revised / re-engineered AEDC software using the Government provided version control system, Developing and Versioning Environment (DaVE). Waivers for use of other configuration management tools or exclusion from entry into a configuration management tool must be obtained from the Government.

AEDC software includes all locally in-house or contracted-out software and COTS (modified or unmodified software). Any version control system used shall contain at a minimum:

- Latest production baselined source code for all Government-owned source code
- All previous versions of source code for all Government-owned source code
- Configuration information and custom developed components for AEDC GOTS / COTS software systems (HMI Screens, Network switch configurations, etc.)
- Version history
- ID of committer
- Log of changes
- CMMS change request information

The Contractor shall:

- Integrate DaVE (software CM tool) into the Contractor's overall CM system
- Archive all retired S/W code in DaVE, including full code documentation and version information for potential code reuse

Performance Standards:

STD: 100% of software used in production systems is under configuration control in DaVE, or has a documented and Government-approved waiver.

3.6.3. The Contractor shall identify, report, analyze, and document instrumentation and control system measurement uncertainties IAW paragraph 3.1.4.2 and paragraph 3.1.6.

3.6.4. The Contractor shall input and track to completion ALL bug tracking and modifications to ID&C software using the Government provided tracking system "Trac".

ID&C software includes all software used in data acquisition systems, control systems, and processing systems. In addition to software source code, items to be vaulted also include scripts, ladder logic, COTS software and hardware configurations, and Human Machine Interface (HMI) screens maintained and developed for use at AEDC.

The Contractor shall:

- Use Trac to input and track all ID&C software, including software used in data acquisition systems, control systems, and processing systems. In addition to software source code, items to be vaulted also include scripts, ladder logic, COTS software and hardware configurations, and HMI screens maintained and developed for use at AEDC

Deliverables:

OT-2014-30046 Maintenance Management Information

3.6.5. The Contractor shall maintain and modify as required a system allowing the entry, coordination, revision, archival, and retrieval of test ID&C system requirements.

This system shall be available for use by Government, Contractor, and customer personnel during all work shifts.

3.6.6. The Contractor shall design, develop, prepare, update, and maintain drawings, schematics, manuals, installation and operating instructions, calibration records, maintenance and repair records, and reliability statistics programs for test unit instrumentation and control and data processing systems installed in the test facilities.

Deliverables:

OT-2014-30046 Maintenance Management Information

3.6.7. The Contractor shall provide spare parts management and determine stock level requirements. Additionally identify critical spare parts (items which cannot be replaced / repaired, or that have fallen below stock level requirements) in the CMMS.

Spare parts management and stock level requirements apply for all AEDC ID&C assets.

The Contractor shall:

- Track the inventory of spare parts for test and test support assets
- Conduct and monitor the inventory of critical spare parts

Deliverables:

OT-2014-30046 Maintenance Management Information

OT-2014-30050 RTD&E Asset Sustainment Program Analysis

OT-2017-30014 Monthly Critical Spares Parts List

3.6.8. The Contractor shall ensure that all calibration data entered into ID&C systems are current and accurate.

Calibration data are vital to ensure quality of data delivered to test customers, and are required to be input as part of all test configurations.

3.6.8.1. Applicable Documents (Mandatory)

AEDC-STD-CM-1	Configuration Management
AEDCI 99-104	Data Retention Instruction

3.6.9. The contractor shall plan and track program / project cost, schedule, technical performance, and approved project changes during execution.

Performance Standards:

STD: Complete the project scope within +/-10%, excluding contingency, for cost and schedule.

This performance standard, as defined, applies to project estimates provided to the Government.

Deliverables:

OT-2014-30012 RDT&E Program and Project Management Plan Data

OT-2017-30008 ID&C Monthly PMR Charts

OT-2017-30012 ID&C Progress Report

OT-2017-30009 ID&C Monthly CSSR

OT-2014-30004 Project Change Agreement

OT-2017-30020 ID&C Project Schedule

OT-2014-30046 Maintenance Management Information

3.6.10. The Contractor shall plan and maintain an Enterprise ID&C program to support AEDC and GSU requirements to ensure all personnel, hardware and software resources are available to support testing and maintenance.

Deliverables:

OT-2017-30019 ID&C Enterprise Integrated Resource Schedule

3.6.11. The Contractor shall develop and maintain the unclassified AEDC Defense Research and Engineering Network (DREN), Public Affairs networks, and the classified Secret Defense Research and Engineering Network (SDREN) and Joint Worldwide Intelligence Communications System (JWICS) networks to include all local infrastructure and systems which use these networks. The support shall include system administration, vulnerability and patch management, Security Technical Implementation Guide (STIG) compliance and all activities required in accordance with DoDI 8510.01, Risk Management Framework; DoDI 8500.01, *Cyber Security*, AFPD 17-1, *Information Dominance*.

a) STD: Remain compliant with HPC Cyber Security Support Provider (CSSP) requirements. Report status of compliance to Wing Cybersecurity Office (WCO) Weekly.

b) STD: Network availability maintained at 99.6% or higher.

3.6.11.1. The Contractor shall notify the Government if a trouble ticket for any network is escalated outside of AEDC.

3.6.12. **The Contractor shall document and maintain configuration management of the FASTENAL Network.**

3.6.13. The Contractor shall develop and maintain AEDC Business Systems capabilities which reside on Non-Classified Internet Protocol Router Network (NIPR).

3.6.13.1. The Contractor shall provide qualified personnel to perform server administration to include Operating System maintenance, Middleware, Runtime, Database and Application support. This support shall also include patching and STIG compliance, performing software development, testing, database management and application administration for server-based business systems.

3.6.13.2. The Contractor shall provide end user support (Tier 3) to users.

3.6.13.3. The Contractor shall manage related Interface Agreements, Service Level Agreements and Memorandums of Understanding in regards to the business systems.

3.6.13.4. The Contractor shall perform the appropriate tasks to ensure proper lifecycle management including but not limited to:

- Software License Management
- Annual Software Maintenance Renewal Procurement
- Maintaining currency and continuous Software and Automation Improvement
- Itemize version migration and upgrade to new major software versions.
- Follow best practices (i.e. ITIL, Agile, etc.) for software development.
- Manage and maintain account access records (DD2875)
- Ensure timely data migration to/from other systems.

3.6.13.5. The Contractor shall identify and evaluate AF Enterprise and commercial software solutions available for AEDC applicability to replace or compliment AEDC Test Mission Support System (ATMSS) systems.

3.6.13.6. The Contractor shall design electronic role-based training courses for enterprise systems in conjunction with AEDC processes (including but not limited to Oracle Work and Asset Management (WAM), PeopleSoft Financials (PSF) and ENOVIA) using AF training delivery tools such as milSuite.

3.6.13.7. The Contactor shall identify and evaluate options to automate business system processes to allow for automated data entry to improve overall efficiencies of operations.

a) STD: All business systems shall be maintained to be no more than two versions behind the most current released software version

3.6.14. The Contractor shall maintain and provide a list of contacts for support of AEDC Business Systems and Networks (JWICS, Public Affairs, Fastenal, DREN, and SDREN) to the Arnold Communications Focal Point for routing of Air Force Remedy customer service tickets.

3.6.15. The Contractor shall ensure Cybersecurity requirements are consistently documented, maintained, evaluated and met for IT systems and IT networks, components of systems, and attached active devices IAW TO 00-33A-1001, *General Cyberspace Support Activities Management Procedures and Practice Requirements*.

a) STD: Obtain and maintain a minimum vulnerability index score of <= 1.5 vulnerabilities per host (minimal or no concern) with a minimum of 95% credentialed scan results monthly on IT systems and IT Networks full Assured Compliance Assessment Solution (ACAS) credentialed

scans. Report Weekly ACAS and Host Based Security System (HBSS) status to AEDC WCO.

b) STD: Substantiate a 90% Security Technical Implementation Guide (STIG) compliance rate of minimal or no concern within each asset category (e.g., Server, Workstation Switch, Router, Printer, Application, etc.) for each three month period, or within one month after a STIG change is promulgated. Report Status Quarterly to WCO.

c) STD: Obtain and maintain a minimum score of "Excellent" (80% or higher) on any Cyber Security Service Provider (CSSP) Inspection, or other cybersecurity-focused inspection, evaluation, or assessment (announced or unannounced, e.g. Management Internal Control Toolkit (MICT)) IT systems and IT Networks.

d) STD: Maintain Approval to Operate on Public Affairs on all IT systems and IT Networks from respective Authorizing Official (e.g. AFMC, Special Access Program (SAP), Defense Intelligence Agency (DIA), PA) 100% of the time.

e) STD: All IT systems and IT Networks Accreditation and Authorization (A&A) packages submitted to the WCO 150 calendar days prior to expiration for coordination/quality review, and submitted to the Authorizing Officer (AO) for approval 120 calendar days prior to expiration date.

f) STD: A&A package submissions will adhere to respective AO guidance for processing and timeline.

3.6.16. The Contractor shall resolve customer service tickets in accordance with priorities and response times as defined in Appendix E. For tickets which require modification of Business System applications or other IT/ID&C assets, the ticket must be documented as a Change Request in accordance with AEDC-STD-CM-1.

Performance Standards:

a) STD: At least 85% of all trouble tickets opened prior to or within the month are initiated and resolved within business hour timeframes defined in Appendix E.

b) STD: The remaining 15% of trouble tickets are completed no later than the next lower priority unless otherwise authorized and documented before the timeline is exceeded.

c) STD: Priority #4 tickets shall not exceed 15 business days.

3.6.17. The Contractor shall operate and maintain computer systems and associated equipment for High Performance Computing (HPC) and serve as a liaison between the AEDC and the HPC Modernization Office, as well as perform account administration, user orientation and training.

3.6.17.1. The Contractor shall provide utilization reports to external organizations, gather and document computational/network requirements and support preparation of proposals submitted to the HPC Modernization Office.

3.7. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE) MANAGEMENT

This section includes the specific objectives for managing calibration of TMDE. The Contractor shall develop and maintain policies and procedures to meet with the requirements of TO-00-20- 14, Air Force Metrology Calibration Program and contribute to meeting AEDC's Strategic Goals. The Contractor must ensure TMDE is properly managed throughout its lifecycle to include needs and requirements, acquisition, operation / maintenance, and disposal as necessary to accomplish the T&E requirements. For AEDC Arnold AFB TMDE, calibration services shall be provided by the PMEL Contractor. At AEDC's White Oak and Moffett Field, the Contractor shall use the PMEL Contractor, other AF PMELs, or commercial calibration sources which are ISO 17025 accredited and whose measurements are traceable to the National Institute of Standards and Technology (NIST). In addition, this section includes requirements for managing TMDE which is designated as USER calibration responsibility.

3.7.1. The Contractor shall not use TMDE for measurements after the calibration due date has expired unless a calibration extension has been approved by the Government IAW TO 00-20-14.

3.7.1.1. The Contractor shall maintain measurements traceable to the NIST at all times.

3.7.1.2. The Contractor shall maintain records of all NIST traceable certificates such that the records can be accessed electronically and shall be sorted based on the vendor name for the specific TMDE.

3.7.1.3. The Contractor shall, prior to shipping an item for calibration to NIST, send a purchase order to the address listed in the appropriate technical section identified from direct communication with NIST or from the NIST Calibration Program Calibration Services User Guide, SP 250 Appendix Fee Schedule

3.7.1.4. The Contractor shall, for TMDE that is due for calibration, have the TMDE calibrated by the calibration due date as specified in 33K-1-100-2 and in the local Enterprise Applications MIS (Management Information System), CMMS (Oracle WAM), and Reporting Tool (Oracle BI). The Contractor shall identify, to the owning organization, TMDE that is due for calibration 30 days prior to the due date to avoid any late notices.

3.7.1.5. The Contractor shall assess any requests for calibration extensions to determine the amount of data/measurement risk resulting from extending a calibration. The assessment shall be forwarded to the Government for approval.

3.7.1.6. The Contractor shall document all calibration extension requests in a database accessible by the Government. The request shall describe the TMDE, the calibration due date, the specific reasons calibration cannot be accomplished as scheduled, the estimated date calibration action can be initiated, actions taken to locate a suitable alternative or substitute item, and the calibration history of the TMDE.

3.7.1.7. The Contractor shall maintain warranty information on all TMDE including start/stop dates and other warranty conditions.

Deliverables:

DI-QCIC-880278B Calibration Measurement Requirement Summary

OT 2014-30040 TMDE Report

OT-2017-30018 NIST Traceable Certificates

3.7.2. The Contractor shall provide removal, proper care, handling, transportation, delivery, pick-up, storage, and reinstallation of TMDE requiring calibration and / or repair.

3.7.2.1. The Contractor shall ensure Government approval is documented in the MIS for any Lost, Damaged, Destroyed, or Theft (LDDT) TMDE before any disposition actions.

Deliverables:

OT-2014-30040 TMDE Report

3.7.3. The Contractor shall ensure TMDE designated as a PMEL calibration responsibility is calibrated by the PMEL Contractor IAW published calibration schedules.

At AEDC's White Oak and Moffett Field, the Contractor shall use Arnold's PMEL Contractor, other AF PMELs, or commercial calibration sources which are accredited by ISO 17025 and traceable to the NIST.

Deliverables:

OT-2014-30040 TMDE Report

OT-2017-30018 NIST Traceable Certificates

3.7.4. The Contractor shall notify the PMEL Contractor and the Government of any data quality issues or delays which result from the services provided by the PMEL Contractor.

3.7.5. The Contractor shall request and obtain approval from the Government (AEDC) and AFMETCAL through local PMEL prior to obtaining calibration of Air Force TMDE from non-Air Force sources.

3.7.6. The Contractor shall perform and document in-place calibrations and repairs designated as USER responsibility in TO 33K-1-100-2 or any applicable Calibration Measurement Requirement Summary (CMRS) using approved technical data and PMEL Contractor certified TMDE.

"In-place calibrations" refer to TMDE which are part of control systems, data acquisition systems, or TMDE which is stand-alone. Measurement traceability shall exist from these systems, through the PMEL Contractor, and eventually to NIST. The calibrations shall be performed with procedures developed by the contractor. The calibrations and repairs shall be documented in the CMMS in order to describe work performed and track calibration due dates. No test data shall be acquired using improperly USER calibrated TMDE and no lost test time shall be attributed to

improperly calibrated TMDE.

3.7.7. The Contractor shall accomplish and use applicable forms, labels and alternate methods of certification IAW Section 5 of TO 00-20-14.

Deliverables:

OT-2014-30040 TMDE Report

OT-2017-30018 NIST Traceable Certificates

3.7.8. The Contractor shall develop, document, and submit a Calibration and Measurement Requirement Summary and a Calibration Instruction to the Government, and develop, document, and submit corresponding Calibration Requirements Listings to the Government to go to AFMETCAL for inclusion in the AEDC Calibration Measurement Summary (CMS).

The CMRS shall describe the calibration concept and calibration support necessary to ensure the measurement traceability and readiness of each system and be structured in the format prescribed in DID DI-QCIC-80278B. The CMRS identifies all measurement requirements within a specific system or item of equipment and provides the contractor's proposed solutions for maintaining the system measurement requirements within the stated limits. The CMRS is delivered to and is locally approved bythe Government.

The CI describes the calibration methodology for models of TMDE based on measurement function. It is used in conjunction with system specific CMRS(s) to provide AFMETCAL with information necessary to approve AEDC's TMDE calibration processes. The CI is provided to the Government for approval and is sent to AFMETCAL by the Government along with a copy of the appropriate CMRS(s). AFMETCAL approves the CI and provides a signed copy of the CI back to AEDC. The approved CI indicates that the calibration process is in order, is officially approved, and allows AEDC to use the TMDE as identified in the CMRS. The CI is not a locally developed work instruction that is identified in section 3.3.6 of the PWS.

Deliverables:

OT-2014-30040 TMDE Report

DI-QCIC-80278B Calibration Measurement Requirements Summary

OT-2017-30018 NIST Traceable Certificates

OT-2017-30029 Calibration Instructions

3.7.9. Applicable Documents (Mandatory)

AFI 21-113	Air Force Metrology and Calibration Program
TO 00-20-14	Air Force Metrology Calibration Program
TO 33K-1-71	USAF Calibration and Measurement Summary and Work Unit Code Manual For Test System Support Equipment (SE) Located at Arnold Engineering Development Center

TO 33K-1-100-1	Calibration Procedure for Maintenance Data Collection Codes and Calibration Measurement Summaries
TO 33K-1-100-2	TMDE Calibration Notes, Calibration Interval, Technical Order and Work Unit Code Reference Guide

3.8. CAPITAL IMPROVEMENTS

This PWS element focuses on eliminating capability gaps, ensuring that AEDC possesses the capability to satisfy future test customer requirements, and restoring / sustaining current capability and is essential to helping achieve AEDC Strategic Goals. The types of projects under this PWS element include instrumentation, data acquisition, process control, mechanical systems, structural systems, utility systems, facilities (interior and exterior), horizontal structures (roads, parking lots, earthen structures), dams, cranes, machining equipment, fabrication equipment, laboratory equipment, and computer systems for all AEDC assets listed in Appendix A, B, C, and D. Future test capability planning and programming responsibilities include concept development, technology applications, validation of requirements, incremental development plans of identified technical shortfalls, and assessment of solution alternatives. Work performed in this PWS will include, but is not limited to, efforts funded by Military Construction, T&E Improvement & Modernization (I&M), Major Range and Test Facility Base (MRTFB), RDT&E Sustainment- Restoration & Modernization, O&M Sustainment-Restoration & Modernization, Non-Appropriated Fund Projects, Defense Logistics Agency (DLA), and Centralized Test and Evaluation Investment Program (CTEIP).

This PWS conforms to the Government's approach to executing capital improvement programs and projects for RDT&E assets, which includes dividing the portfolio into two groups: large, complex programs / projects and smaller, less complex projects. The Government will serve as the lead program manager for large, complex programs and projects.

The Contractor shall:

- Support the Government's efforts for all capital projects by performing the tasks enumerated in this section as directed by the Government; however, the Contractor will serve a greater role in the management of projects of lesser magnitude and complexity as directed by the Government. For all RDT&E asset programs and projects, the Government will have the lead role in requirements definition and planning efforts prior to Milestone A
- Have the lead role in the design, fabrication, and installation efforts executed by the TOS Contractor. The Government will have the lead role in verification and validation efforts to ensure that the program meets technical requirements
- Have documented, disciplined processes from needs identification through project close-out.
- Ensure a strong focus on requirements, risk, and expectation management
- Implement tailored process to meet varying project requirements, acquisition strategies, and roles and responsibilities between the Government and Contractor
- Ensure all projects are fully vetted in the work planning/integrated scheduling process and reflected in the IMS

3.8.1. General Requirements

3.8.1.1. The Contractor shall document cost, schedule (milestones), performance objectives, deliverables, resource requirements, verification and validation plans, and risk analysis data required to produce Comprehensive Program Management Plans (CPMP) as directed by the Government for each major effort.

The CPMP will address technical, fiscal, and resource issues and be structured to satisfy user requirements despite identified boundaries, risks, and constraints. The CPMP will employ a systems approach to define program delivery interface boundaries, ascertain potential implementation risks, identify innovative means to meet requirements within recognized constraints, create cost estimates, and integrate risk mitigation measures to ensure implementation success while adhering to cost and schedule requirements. Operational suitability and effectiveness requirements will be validated and documented in the planning phase.

Deliverables:

OT-2014-30012 RDT&E Program and Project Management Plan Data

3.8.1.2. The Contractor shall provide technical data packages to meet project requirements and Government standards.

AEDC Engineering Standards T-1, T-2, T-3, T-4, and T-5 are the governing standards for these activities.

Deliverables:

OT-2014-30006 Technical Data Package

3.8.1.2.1. The Contractor shall provide asset knowledge, subject matter experts, and stakeholder involvement to support planning and design efforts and reviews.

The Contractor shall:

- Coordinate operations and maintenance requirements for RDT&E assets, TMDE, and tools

Deliverables:

OT-2014-30005 Project Review Comments

3.8.1.3. The Contractor shall execute or support execution of capital improvement programs or projects, from need development through project completion, as indicated in the project plan.

The Contractor shall:

- Provide appropriately skilled resources to successfully deliver a quality capability within the dynamic AEDC environment and within cost and schedule constraints
- Provide supporting expertise and tasks for efforts contracted separately by the Government which include, but are not limited to, facility access, technical subject matter and facility input, design review participation, material submittal reviews, test facility operations to enable verification / validation, and construction inspection

Performance Standards:

a) STD: Meet all negotiated milestone and delivery dates for Test Mission Support (ID&C) Projects

b) STD: Meet all negotiated milestone and delivery dates for General Support Projects
c) STD: Meet all negotiated milestone and delivery dates for Base Support Asset Projects

3.8.1.3.1. The Contractor shall plan and track program / project cost, schedule, technical performance, and approved project changes during execution.

Deliverables:

OT-2014-30004 Project Change Agreement

3.8.1.3.2. The Contractor shall apply Earned Value Management for capital improvement projects as directed by the Government.

Deliverables:

DI-MGMT-81861 Integrated Program Management Report

3.8.1.3.3. The Contractor shall inspect and document status, compliance with approved plan, and potential issues daily for active construction projects with on-site activity.

Deliverables:

OT-2014-30003 Construction Inspection Record

3.8.1.3.4. The Contractor shall create and maintain digital photographic records for pertinent activities during capital improvement projects.

3.8.1.4. The Contractor shall transition Capital Improvement programs and projects to operations and maintenance by providing "as-built" drawings, operations and maintenance manuals, and final configuration documentation to the Government.

AEDC-STD-CM-1 is the governing standard for configuration management processes and documentation.

Deliverables:

OT-2014-30002 As-Built Documentation

OT-2014-30011 Technical Manuals

OT-2014-30018A Operations and Maintenance Work Instructions

3.8.1.5. The Contractor shall apply Life Cycle Management methodology to all AEDC assets IAW AEDC instructions.

AEDCI 63-101 Life Cycle Systems Engineering of Test Capabilities and Infrastructure and AEDC Configuration Management Standard CM-1, as tailored for each project in an approved plan developed in Section 3.8.1.1, are the governing instructions for life cycle management of AEDC RDT&E assets.

3.8.1.5.1. **The Contractor shall support capabilities-based planning in accordance with AEDCI 90-700 Capabilities-Based Planning, during need development, as requested by the Government. This includes documenting project requirements, scope interfaces, risks, hazards, planning data and analysis of alternatives. The Contractor shall support the Alternative System Review (ASR), when requested by the Government.**

3.8.1.5.2. The Contractor shall implement a technical requirements management program to capture hardware and software requirements to be satisfied by capital improvement projects.

3.8.1.5.3. The Contractor shall implement a technical risk management program that identifies, tracks, analyzes, mitigates and communicates project technical risks.

3.8.1.6. The Contractor shall implement system safety and develop Baseline Hazard Analyses (BHA) for Test and Test Support Assets as part of the Capital Improvement system development lifecycle.

Baseline Hazard Analyses shall be iteratively developed throughout the Capital Improvement project lifecycle as system design, operation, and maintenance information are known with culmination of the BHA development process being an approved BHA prior to entry into operations that require an approved system safety analysis or prior to project closeout.

3.8.2. Base Support Asset Requirements

Requirement 3.8.2 and subparagraphs do not apply to AEDC Moffett Field or AEDC White Oak.

3.8.2.1. The Contractor shall provide planning, programming, execution, and technical support to Military Construction, Minor Construction, and Test Facility Construction programs IAW AFI 32-1020 AFI 32-1023 Designing and Constructing Military Construction Projects, and AFI 32-7062 Comprehensive Planning.

The Contractor shall:

- Develop and maintain a current list of Base Support Asset Backlog Maintenance and Repair (BMAR) requirements
- Maintain separate funding source identity for projects
- Assess, document, and communicate potential environmental impacts in accordance with environmental management guidelines and in coordination with the FSS contractor
- Develop and maintain an acquisition plan for each project
- Execute projects in accordance with the approved and agreed-upon baseline plans
- Comply with applicable safety provisions and procedures during project execution and checkout operations

3.8.2.1.1. The Contractor shall provide analysis and supporting data for Requirements and Analysis Management Plans (RAMP) and DD Forms 1391 / 1391c (Military Construction Project Data).

Deliverables:

OT-2014-30057 Military Construction Project Data

OT-2014-30058 Requirements and Analysis Management Plan (RAMP)

OT-2014-30059 Requirements Document

3.8.2.1.2. The Contractor shall use and maintain the Automated Civil Engineer System - Project Management (ACES-PM) module to prepare project listings and automated work requirement reports.

3.8.2.1.3. The Contractor shall submit final project documentation to Real Property records, along with the DD1354, Transfer and Acceptance of Military Real Property.

Deliverables:

OT-2014-30007 Transfer and Acceptance of Military Real Property

3.8.3. Applicable Documents (Mandatory)

AEDC- ENGR-STD-T-1	AEDC Standard Pressure Vessels
AEDC- ENGR-STD- T-2	AEDC Standard Pressure Piping
AEDC- ENGR-STD- T-3	AEDC Standard Engineering Drawing and Drafting Practices
AEDC- ENGR-STD- T-4	AEDC Standard for Procurement Documentation
AEDC- ENGR-STD- T-5	AEDC Standard Welding Practices
AEDC-STD- CM-1	Configuration Management
AEDCI 63-101	Life Cycle Systems Engineering of Test Capabilities and Infrastructure
AFI 32-1020	Planning and Programming Built Infrastructure Projects

3.9. FUEL MANAGEMENT SERVICES

This section defines specific requirements to distribute, store, inspect, and account for fuels and cryogenics products to include ground fuels, aviation fuels, hypergolic fuels and both liquid and gaseous nitrogen and oxygen, which are essential to helping achieve AEDC Strategic Goals 3, 4, and 9. This activity requires interaction with the Defense Logistics Agency – Energy (DLA-Energy) for purchasing, to project maintenance requirements for capitalized infrastructure, and for execution of preventive and corrective maintenance. It includes bulk and operational storage, the base service station, the gasification plant and all supporting infrastructure.

The Contractor shall, in order to meet the Strategic Goals to reduce fuel and electricity requirements:

- Incorporate the use of tablets to gain real-time information on fuel usage statistics and other operating information

3.9.1. The Contractor shall assign a Terminal Manager (TM) IAW the qualifications and requirements of DLA-Energy P-7.

3.9.2. **The Contractor shall supply all necessary Personal Protective Equipment (PPE) IAW AEDC SHE STD F2, Personal Protective Equipment, and assure tools, TMDE, instrumentation and all gauges / meters are calibrated IAW T.O. 37A-1-101, para 4.1.12 and T.O. 37-1-1. Para 3.1.11(d) as necessary to accomplish Fuels Management operations.**

3.9.3. The Contractor shall ensure that the primary and alternate fuels accountants use the most current accounting program provided by DLA-Energy for the distribution and tracking of fuel issues, accounting of fuel transactions, inventories and daily/monthly account reconciliations within the with DLA Enterprise Business System IAW DLA Energy P-1.

The accountant shall operate and maintain all other current information on locally developed customized spreadsheets and systems capable of nightly back up. All aviation fuel issues and transactions will be documented on the appropriate forms as directed by DLA policy. Accounts must remain within established tolerances. Deviations must be investigated and errors corrected.

3.9.4. The Contractor shall utilize a Secret Internet Protocol Router Network (SIPRNET) account to complete the Joint Chiefs of Staff Bulk Petroleum Contingency Report (JCS REPOL) IAW AFI 23-201, para 5.10.2.3.

3.9.5. The Contractor shall review and maintain fuel levels found on the Inventory Management Plan (IMP) located on the DLA Energy SIPRNET IAW AFI 23-201, para 5.12.2.

3.9.6. The Contractor shall ensure that sufficient aviation fuel, ground products, Liquid Nitrogen (LIN) and Liquid Oxygen (LOX) are on hand, on order, or in transit to meet mission demands.

3.9.6.1. The Contractor shall, for tank truck deliveries, escort tank trucks to and from base gate and appropriate storage facilities IAW Arnold AFB Integrated Defense Plan 31-101 (AAFB IDP 31-101).

3.9.7. The Contractor shall operate the high pressure GN2 gasification plant to produce gaseous nitrogen and the high pressure cryogenics distributions system for use at the test facilities.

3.9.8. The Contractor shall fill cryogenic trailers and k-bottles that are not part of the distribution system for use at test facilities IAW AEDC SHE STD E13, Cryogenic Fluids.

3.9.9. The Contractor shall issue Vehicle Identification Link (VIL) keys for authorized base vehicles IAW applicable DLA Energy P-5.

3.9.10. The Contractor shall sign and file all responsible accounting documents for all products IAW DLA Energy P-1, P-3, and P-7 for the management of assigned petroleum, propellants, cryogenics, and ground fuels products.

3.9.11. The Contractor shall administer the Fuels Quality Control & Inspection Program IAW T.O. 42B-1-1 and all other applicable American Society for Testing and Materials (ASTM) methods.

Product shall be maintained by the Contractor to preclude degradation, contamination,

commingling, or other occurrences which render the product unsuitable for its intended use. The TM shall perform quality control procedures on the R-11 aircraft mobile refueling unit IAW T.O. 42B-1-1. The TM shall maintain all required fuel sample requirements and results, system caution and danger tag status, and equipment / system sample due dates in locally developed customized spreadsheets and systems capable of nightly back up.

3.9.12. The Contractor shall maintain and inspect all operational and bulk fuel distribution systems including storage tanks, cryogenic facilities and equipment, the gasification plant and the base service station IAW T.O. 37-1-1, Chapter 3.

3.9.12.1. The Contractor shall provide for and document the completion of inspections, servicing, and preventive maintenance of equipment/facilities at their specified intervals IAW T.O. 37-1-1, Chapter 3 for specific inspections and timelines. For the R-11 use T.O. 36A12-13-2CL-1 Chapter 1, to complete checkpoint inspections. The Contractor shall also identify and maintain all fuels systems markings IAW MIL-STD-161H.

3.9.13. The Contractor shall immediately notify the Government of any suspected fuel contamination such as those described in T.O. 42B-1-1, para 3.8. Facilities or equipment in question shall be isolated to prevent cross contamination until guidance is received from the appropriate organization to either reclaim or dispose of the fuel IAW T.O. 42B-1-23.

3.9.14. The Contractor shall ensure that a two-person policy is applied IAW AFI 23-201, para 5.19 during any fuel or cryogenic operation.

The Contractor shall:

- Ensure the individual acting as a second person is knowledgeable of the hazards involved and corrective actions to take in an emergency. Two people must be present when:
  - Conducting mobile refueling unit operations
  - Issuing fuel to organizational tanks
  - Entering confined spaces (See AEDC SHE STD B5, Confined Spaces)
  - Gauging and sampling above ground tanks
  - Receiving, generating or transferring cryogenic fluids and high pressure gases
  - Transferring and receiving fuel. Requires one person at the transfer point and one person at the receiving point. (NOTE: Ensure two-way communication is maintained between pumping and receiving stations for all fuel transfers)
  - Collecting fuel samples from fixed fuel systems

Deliverables:

OT-2014-30018A Operations and Maintenance Work Instructions

3.9.15. The Contractor is responsible for locking electrical control panels, gauge hatches and other access points, etc. on all fuels equipment when not located within a secure area IAW AFI 23-201. Para 6.2 and AAFB IDP 31-101.

3.9.16. The Contractor shall establish proper key control.

The Contractor shall:

- Ensure all locked equipment have keys and their spares located in the Control Center. A semi-annual inspection shall be performed by the Contractor on all keys and documented IAW AFI 23-201. Para 7.2.18.
- Ensure each grade of fuel shall have a different keyed lock preventing the commingling of products. When required, a Lock Out / Tag Out (LOTO) program will be executed by the Contractor IAW AEDC SHE Standards

3.9.17. The Contractor shall provide personnel to perform the following functions:

- Alternate TM who shall perform all functions of the TM if the TM is absent from the duty location for more than five consecutive work days. The Contractor may delegate signatory authority IAW DLA-E contract provision I119.05
- Fuels Product Distribution
- Fuels Bulk Storage
- Base Service Station should automated system fail
- Fuels Accounting. The Primary Fuels Accountant must have completed the SEI 040 AF Accounting Joint BSM-E course. An alternate fuels accountant must be trained by a qualified accountant who has been awarded the SEI 040 and participate in quarterly refresher training
- Fuels Administration
- Compliance and Environmental tracking (See AEDC SHE STD E17, Spill Response)
- Fuels Service Center (FSC) operations
- Checkpoint / Preventive Maintenance
- Fuels Laboratory. A minimum of one employee must complete the Fuel Quality Course J3AZP2F051-01AA. Employees that have completed the original Air Force Quality Control course, J3AZR2F051-001 also satisfy this requirement.

The Contractor shall:

- Ensure all personnel performing the requirements have the appropriate training, qualifications, and/or certifications
- Ensure a minimum of two personnel have completed Special Experience Identifier (SEI) 036 AF Cryogenics Maintenance Course J3AZR2F051 04AA

3.9.18. The Contractor shall ensure that only task-qualified personnel with AFSC 2F051 qualifications graduating from the AF Fuels Apprentice Course J3ABR2F03100AB or sister service equivalent, IAW AFI 23-201. Para 5.20.3, are permitted to perform local fuels operational functions.

These fuel functions include but are not limited to, receipt, issue, storage, transfer operations, cryogenic systems operation and storage, operating mobile refueling equipment, documenting fuels transactions for computer processing, and performing laboratory analysis on petroleum products. The Contractor shall also ensure that all personnel comply with federal, state, and local laws and regulations.

3.9.19. Applicable Documents (Mandatory)

AAFB IDP 31-101	Arnold AFB Integrated Defense Plan 31-101
AEDC SHE STDs	AEDC Safety, Health, and Environmental Standards
AFI 23-201. Para 5.10.2.3, 5.12.2, 5.19, 5.20.3, and 6.2	Fuels Management
AFMAN 91-203, para 14.4	Air Force Consolidated Occupational Safety Instruction
DLA-Energy Interim Policies and Procedures	
MIL-STD-161H	Identification Methods for Bulk Petroleum Product Systems
T.O. 36A12-13-2CL-1 Chapter 1	Air Force Refueling Vehicle Checkpoint Checklist
T.O. 37-1-1, Chapter 3	General Operation and Inspection of Installed Fuel Storage and Dispensing System
T.O. 37A-1-101, para 4.1.12	USAF Fuel, Water, and Lubricant Dispensing System
T.O. 42B-1-1	Quality Control of Fuels and Lubricants
T.O. 42B-1-23	Management of Recoverable and Waste Liquid Petroleum Products

3.10. MACHINING / FABRICATION AND CHEMICAL/MATERIAL ANALYSIS

This section includes the objectives and requirements for safe, efficient, and effective machining and fabrication, support and analysis of chemicals and materials for support of test and base operations and sustainment, and is essential to helping AEDC achieve Strategic Goals. Work includes but is not limited to machining, fabrication, maintenance, installation, removal, certifications, testing, inspections, and analyses using AEDC Standards and the latest published methods including those published by the Environmental Protection Agency (EPA), National

Institute for Occupational Safety and Health (NIOSH), ASTM International, American Society of Mechanical Engineers (ASME), American Welding Society (AWS), Aerospace Material Specifications (AMS), and American Water Works Association (AWWA). Work may range from simple tasks performed in a shop or lab requiring less than one man-hour to major on-site activities involving several hundred man-hours. Available assets at AEDC Arnold AFB include a machine shop, valve repair shop, fabrication shops, and dimensional measurement, chemical, metallurgical, and x-ray laboratories (including x-ray film processing) for performing this work but field work outside the shops and labs is also required to support operations and maintenance activities. In addition, there is a machine shop at AEDC White Oak. At AEDC Moffett Field, machining / fabrication are typically completed using the NASA ARC machine shop. The specific requirements for machining, fabrication, and laboratory asset sustainment are found in section 3.5.

Requirements 3.10.3 and 3.10.4 do not apply to AEDC Moffett Field or AEDC White Oak.

3.10.1. The Contractor shall perform fabrication processes in support of testing, maintenance, capital improvements, and overall base support.

Work shall be IAW applicable AEDC-ENGR-T-STDs and may involve field activities such as demolition, removal, modification, on-site fabrication / assembly, and installation of components and assemblies.

Deliverables:

OT-2014-30032 Monthly Machine and Fabrication Report

3.10.2. The Contractor shall analyze and document chemical and material properties for various samples.

Materials and chemicals include but are not limited to components and assemblies, welds, fuels, oils, soil, drinking water, wastewater, groundwater, fish tissue samples, air, and other gases, liquids, and metals. Analysis methods include but are not limited to radiographic inspections, magnetic particle inspections, liquid penetrant inspections, helium mass spectrometer leak testing, ultrasonic inspections, trace metal, wet chemistry, and organic chemistry. This requirement applies only to AEDC Arnold AFB. Analysis services shall be provided to AEDC White Oak and AEDC Moffett Field as needed.

- Ensure the NDE Specialists are trained, qualified, and certified in accordance with ASNT Recommended Practice SNT-TC-1A

Deliverables:

OT-2014-30031 Monthly Chemistry Laboratory Report

OT-2014-30033 Monthly Material Testing and Welding Report

3.10.3. The Contractor shall store and maintain inspection documentation and certification records in an electronic database for samples analyzed.

3.10.4. The Contractor shall maintain the following accreditations for performing analyses: American Industrial Hygiene Association (AIHA) for solvents, metals, bulk asbestos, and asbestos fibers; State of Tennessee Department of Environment and Conservation (TDEC**) Drinking Water Laboratory Accreditations Program for trace metals, wet chemistry, and organic chemistry; DoD Joint Oil Analysis Program (JOAP) for new and used oils.**

3.10.5. The Contractor shall perform / document material testing, in-process and final weld inspections, develop / document processes and procedures for welding of materials, and conduct / document a welder qualification program IAW AEDC-ENGR-STDs T-1, T- 2, T- 3, and T-5.

At AEDC Moffett Field, welding requirements are also covered by the AF / NASA ARC lease agreement. Welding requirements shall meet both the AEDC T-Stds as well as the lease agreement at AEDC Moffett Field.

The Contractor shall:

- Ensure all personnel performing welding are qualified and trained to meet applicable codes and standards outlined in AEDC ENGR STD T-5
- Ensure welds are inspected per the requirements of the code of construction.
- The Contractor shall ensure the following are used in the performance of work:
  - ASME Code Pressure Vessels U-stamp procedure and quality manual for fabricating ASME Code pressure vessels
  - National Board Pressure Vessels R-stamp procedure and quality manual for repairing ASME Code pressure vessels
  - Radioactive Materials License for the control of radioactive sources used in radiographic NDE operations

Deliverables:

OT-2014-30033 Monthly Material Testing and Welding Report

3.10.6. Applicable Documents (Mandatory)

AEDC- ENGR-STD-T-1	AEDC Standard Pressure Vessels
AEDC- ENGR-STD- T-2	AEDC Standard Pressure Piping
AEDC- ENGR-STD- T-3	AEDC Standard Engineering Drawing and Drafting Practices
AEDC- ENGR-STD- T-5	AEDC Standard Welding Practices
	AF / NASA ARC Lease Agreement

3.11. OPERATIONS AND LIFECYCLE SUSTAINMENT OF AEDC BASE SUPPORT ASSETS

A comprehensive base support asset operations and lifecycle sustainment program is required for facilities (buildings, structures, fixed cranes, etc.), linear infrastructure (railroads, roads, fences), bridges, Elk River Dam, Woods Reservoir, AEDC landfill, and base support utilities (potable water, wastewater). These assets are listed in Appendices B, C, and D. The Contractor shall use AF instructions, directives, memoranda, and other DoD, AF, GSA, and NASA regulations as applicable to operate and maintain base support assets. The Contractor's Lifecycle Sustainment Program for Base Support Assets is one of the key elements in helping AEDC achieve Strategic

Goals.

Direction is provided in AFPD 32-10, AFI 32-1001, Vol 3, AFMAN 32-1084, Standard Facility Requirements UFC 3-401-01, AFI 32-1051, UFC 3-601-02, AFI 48-144, and AFMAN 10-246.

3.11.1. The Contractor shall operate and maintain base support utilities owned by the Government IAW federal, state, and local regulations and meet industry standards.

Government-owned base support utilities include the Potable Water Plant and Distribution System, and the Wastewater Treatment Plant and wastewater collection system. The Natural gas supply and distribution system is a privatized utility, owned and operated by Elk River Public Utility District (ERPUD).

Requirement 3.11.1 does not apply to AEDC White Oak or AEDC Moffett

Field. The Contractor shall:

- Ensure work is performed by qualified, certified, and/or licensed personnel as required

3.11.2. The Contractor shall develop long range plans for sustainment, restoration, and modernization (SRM) of base support assets.

The plan development shall support the CARA schedule. The timeframe for long-range plans is defined as the FYDP plus two additional years.

Requirement 3.11.2 does not apply to AEDC White Oak or AEDC Moffett

Field. Deliverables:

OT-2014-30056 Base Support Asset Sustainment Program Plan

3.11.3. The Contractor shall perform lifecycle sustainment of base support assets.

Requirement 3.11.3 and its subparagraphs do not apply to AEDC White Oak or AEDC Moffett Field.

The Contractor's Lifecycle Sustainment program shall:

- Ensure planning, implementation, management, and oversight activities throughout an asset's lifecycle
- Focus on balancing sustainment with cost, schedule and performance requirements
- Develop customized Preventive Maintenance Optimization program
- Support the CARA process
- Use CMMS to track performance and cost to the task level

3.11.3.1. The Contractor shall execute and track preventive and emergency corrective maintenance and all other scheduled sustainment work for AEDC base support assets IAW the work prioritization system provided in AFI 32-1001.

The Contractor shall:

- Respond to all Emergency Work Requests immediately with emergency close-out within 24 hrs

Note: Emergency close-out indicates that the issue is no longer an emergency, even though the

final repair may not have been made. (typical examples: Stopped water overflowing onto floor, temporarily restored HVAC to a building, temporary electrical repair to restore office lights).

Performance Standards:

a) STD: 95% of preventive maintenance completed by required completion date

b) STD: 100% of Emergency Work Requests responded to and closed out within 24 hours

Deliverables:
OT-2014-30046 Maintenance Management Information

3.11.3.2. The Contractor shall provide and operate a 24-hour, seven-day-per week maintenance service call program.

The maintenance service call program provides a means for building maintenance requirements to be managed efficiently and effectively to provide building occupants with a functional environment in which to perform their duties. The service program will receive calls, document the maintenance task, and make the necessary communication to dispatch maintenance personnel to resolve issues in a timely manner. The program will provide comprehensive coverage including, but not limited to: HVAC, electrical systems, roof leaks, restrooms / break rooms, lighting, and many other general facility-type issues.

The Contractor shall:

- Respond to 100% of calls in a timely manner
- Input service call data into CMMS in a timely manner
- Coordinate after-hours service calls with the FSS Contractor

Deliverables:

OT-2014-30046 Maintenance Management Information

3.11.3.3. The Contractor shall administer, document, and track maintenance and repair activities in the CMMS.

Deliverables:

OT-2014-30046 Maintenance Management Information

3.11.3.4. The Contractor shall execute and document a predictive maintenance (PdM) program for Base Support and Real Property Installed Equipment (RPIE) utilizing CMMS to administer.

- The AF requires predictive maintenance programs for base support assets in order to effectively and efficiently control maintenance costs. One of the AF Civil Engineer's Transformation goals is to "Build Sustainable Installations" using asset management principles to reduce the risk to mission. These goals also put more emphasis on preventive maintenance. The Contractor shall:
- Implement a CBM program that incorporates PdM tools to enable AEDC to achieve the required levels of readiness in a cost-effective manner

The Contractor's CBM program shall:

- Implement the most effective mix of maintenance, including run-to-failure, PdM, CBM, and time-based maintenance
- Target process improvements and diagnostic capabilities
- Incorporate use of hand-held, route-based PdM technologies
- Increase use of online condition monitoring tools as practicable
- Provide cost reductions and improved asset reliability

Deliverables:

OT-2014-30046 Maintenance Management Information

3.11.3.5. The Contractor shall identify and submit to the Government requests for approval of deferrals and waivers of preventive maintenance.

Deliver request for approval of deferrals and waivers prior to preventive maintenance required completion date.

Deliverables:

OT-2016-30048 PM Waiver – Deferral Request

3.11.4. The Contractor shall perform and document facility and infrastructure condition health assessments for base support assets.

These infrastructure condition health assessments will support long range budgeting and planning for Sustainment, Restoration, and Modernization (SRM) project requirements utilizing the ERDC-CERL developed Sustainment Management System (SMS) suite of decision-support software and support tools as the facility and infrastructure condition assessment methodology for the DoD.

The Base Support Asset condition data validation cycle will be performed on no less than a 5 year cycle or as required due to completion of SRM activities that change the asset condition.

Requirement 3.11.4 does not apply to AEDC White Oak or AEDC Moffett

Field.

The Contractor shall:

Maintain the existing Government databases and update them as required.

3.11.5. Pest Control Services Program

The Contractor is required to provide a comprehensive pest management program while complying with all state / federal (EPA) regulations to ensure a safe environment for residents and employees at AEDC. Pest Management shall be accomplished IAW AFMAN 32-1053.

Requirement 3.11.5 and its subparagraphs do not apply to AEDC White Oak or AEDC Moffett Field.

The Contractor shall:

- Comply with the Endangered Species Act
- Coordinate Pest Control activities with the Associate Contractors

- Emphasize long-term pest suppression by improving sanitation measures, providing occupant education, reducing pest access to food, water, and entrance to facilities

Deliverables:

DI-MISC-80228 Pest Control Summary Report

3.11.5.1. The Contractor shall provide a Pest Control and Management Plan for AEDC.

Deliverables:

OT-2014-30055 Integrated Pest Management Plan

3.11.5.2. The Contractor shall execute a pest control program IAW applicable Federal, State, and EPA directives, and the Government-approved "Integrated Pest Management Plan". The Contractor shall notify TSD-SG (Industrial Health (IH)/Occupational Health (OH) office) prior to applying pest control chemicals inside buildings.

Deliverables:

DI-MISC-80228 Pest Control Summary Report

3.11.6. Energy Management Program

This requirement describes the assistance required by the Contractor to support Base Civil Engineering in the planning, execution, and continuous improvement of AEDC's Energy Management Program.

The Contractor shall:

- Support AEDC's Energy Management Program tasks including providing inputs to and providing support for a comprehensive/integrated execution of the Energy Management Plan. Contractor support includes, but is not limited to, energy related data collection, information request, review / update of the AEDC Energy Plan as well as participation in Energy Action Month and Energy Working Groups
- Reference and use AFMAN 32-1061, *Providing Utilities to U.S. Air Force Installations*, Engineering Technical Letter (ETL) 11-6, Energy Management Policy Memorandum: AEDC Commander: Energy
- Program Governance, Energy Policy Act (EPAct) of 2005, and the Energy Independence and Security Act (EISA) of 2007

3.11.6.1. The Contractor shall support AEDC's Energy Management Program.

Assistance includes supporting the Government in performing energy evaluations as described in the Energy Independence and Security Act of 2007.

3.11.6.2. The Contractor shall identify and develop energy conservation opportunities.

The Contractor shall:

- Engage its LSS Organization to perform a process analysis and develop process improvements in this area

- Plan, coordinate, staff, and conduct a series of Energy Advisory Workshops with an objective to identify opportunities for AEDC to reduce its power costs
- Complete a minimum of two LSS energy improvement initiatives annually
- Conduct a minimum of three (3) Energy Advisory Workshops
- Implement an Energy Advisory Task Force by 4Q FY2016 that will focus on Energy Savings during Test Operations Start-Up, Conduct, and Shutdown. Perform no less than two LSS initiatives annually that are focused on Energy Management

3.11.6.3. The Contractor shall develop, plan, program, and execute energy conservation projects, technologies, retrofits, etc., that reduce facility utility and water consumption and provide documentation to the Government demonstrating the savings and methodologies used to accomplish the goals. This shall include Building Life Cycle Cost (BLCC) analysis.

The Contractor Shall:

- Develop energy conservation projects and submit to the Government for CARA and ECIP input. These projects can coincide with the LSS energy improvement initiatives.

3.11.7. The Contractor shall develop and execute a Key Control and Facility / Secure Container Lock Program in conjunction with the FSS Security Office.

The Contractor shall:

- Provide a comprehensive Key Control Program and facility/secure container lock program including a strategy to establish positive control of all keys issued to all personnel
- Execute the key control and facility/secure container lock program in accordance with the approved Key Control Plan

The Key Control and Facility / Secure Container Lock Program are not required at AEDC White Oak.

At AEDC Moffett Field, the program includes management / assignment of proximity cards and cypher lock access to secure areas.

3.11.7.1. The Contractor shall provide a trained and appropriately cleared locksmith to provide services including supervising and changing combinations, instructing personnel in changing combinations, making keys, opening locked containers and vaults, and preparing items for reuse without degrading protection.

3.11.8. Applicable Documents (Mandatory)

AFI 32-1001	Operations Management
AFI 32-1002	Snow and Ice Control
AFI 32-1041	Pavement Evaluation Program
AFI 32-1052	Facilities Asbestos Management
AFI 32-1054	Corrosion Control
AFI 32-1064	Electrical Safety Practices
AFI 32-1062	Electrical Systems, Power Plants and Generators

AFI 32-1065	Grounding Systems
AFI 32-1067	Water and Fuel Systems
AFI 32-1051	Roof Systems Management
AFI 48-144	Drinking Water Surveillance Program
AFMAN 32-1040	Civil Engineer Airfield Infrastructure Systems
AFMAN 32-1053	Integrated Pest Management Program
AFMAN 32-1084	Standard Facility Requirements
ETL 11-6	Utilities Reporting for Air Force Facilities
NFPA 70	National Electrical Code
UFC 3-401-01	Mechanical Engineering
UFC 3-430-07	O&M: Inspection & Certification of Boilers & Unified Pressure Vessels
UFC 3-470-01	Lonworks Utility Monitoring & Control
UFC 3-501-01	Electrical Engineering
UFC 3-540-01	O&M: Generators
UFC 3-550-01	Exterior Electrical Power Distribution
UFC 3-575-01	Lightning & Static Electricity Protection Systems

3.12. UTILITIES GENERAL SUPPORT

This PWS element describes the requirement for the Contractor to provide general support for utilities at AEDC, including both Test Support Utilities (Raw Water, Electric, Steam) and Base Support Utilities (Potable Water, Waste / Storm Water). The Contractor's general support of utilities is critical in helping AEDC achieve Strategic Goals. It is understood that the Natural gas supply at AEDC is privatized (up to the point of demarcation) and the Contractor will provide general support as needed. The specific requirements for utilities operation and sustainment are found in sections 3.3 and 3.5 for test support utilities, and 3.11 for base support utilities. The utility support assets are listed in Appendices A and C.

3.12.1. The Contractor shall provide general utilities support to the Government.

Support includes, but is not limited to, supporting the Government utilities manager in contract acquisition of supplied utilities (electricity, natural gas, fuels, and water), recommending changes to utility contracts to optimize utility and test operations, maintaining registration of AEDC Arnold AFB as a liaison member of the Tennessee Valley Industrial Committee (TVIC), maintaining liaison with NASA Ames Power Manager and High Pressure Air Manager at AEDC Moffett Field, and maintaining liaison with GSA at AEDC White Oak.

The Contractor shall:

- Establish a point of contact (POC) for the Government that is versed in utility contracts
- Provide expertise with knowledge of and relationships with utility companies

3.12.2. The Contractor shall provide support for utilities data collection and reporting.

It is understood that Installations and major commands (MAJCOM) must track the cost and consumption of utilities, water, and renewable energy sources for all facilities.

The Contractor shall:

- Ensure meter readings and consumption calculations are accurate based on previous meter readings and historical consumption trends
- Include in the meter report all meter readings, meter changes and deviations from the normal system configuration along with an explanation of their impact to the meter readings and consumption calculations; note any inoperable meters or inaccurate readings

Additional support of the Contractor is required to:

- Evaluate utility provider rates
- Read meters, validate meter data, and report meter readings
- Develop utility pool rates (per AFI 65-601V1, Chapter 7 and DoD FMR Vol 11a, Chapter 12)
- Validate electrical, natural gas, and other (if required) utility bills
- Report utility usage at metering points and what the utility usage is billed to

Direction is provided in Engineering Technical Letter (ETL) 11-6: Utilities Reporting for Air Force Facilities, AFMAN 32-1061: Providing Utilities to U.S. Air Force Installations, UFC 3-470-01: Lonworks Utility Monitoring & Control Systems (UMCS); AFMAN 10-246: Food and Water Protection Program.

3.12.3. The Contractor shall provide technical support for privatized utility services or supplied utilities.

It is understood that Utility Privatization is a DoD initiative to privatize military base utilities when it makes sense to do so. At Arnold AFB, the Natural Gas distribution system is privatized and others are undergoing the privatization review process to determine feasibility.

The Contractor shall:

- Support the Government's initiatives in this area as directed
- Provide courteous, prompt, responsive, cost effective and professional support in all areas

Requirement 3.12.3 does not apply to AEDC White Oak or AEDC Moffett Field.

3.12.4. The Contractor shall provide forecasts for utility requirements.

Utility providers include but may not be limited to TVA (electrical power) and ERPUD (natural gas) for AEDC Arnold AFB. The utility forecast at AEDC Moffett Field shall be reported to NASA ARC. AEDC White Oak coordinates with local utilities and their host organization.

Deliverables:

OT-2014-30054 Utility Forecast

3.12.5. Applicable Documents (Mandatory)

AFI 65-601v1	Budget Guidance and Procedures, Chapter 7

AFMAN 10-246	Food and Water Protection Program
AFMAN 32-1061	Providing Utilities to U.S. Air Force Installations
ETL 11-6	Utilities Reporting for Air Force Facilities
DoD FMR v11a	Reimbursable Operations Policy, Chapter 12
UFC 3-470-01	Lonworks Utility Monitoring & Control

3.13. DATA AND DOCUMENTATION FOR AEDC CONFIGURATION ITEMS

This section includes the specific objectives and requirements for developing and maintaining complete, current, and accurate data and documentation for AEDC configuration items, as defined in AEDC–STD-CM-1, Configuration Management. CM is a system's engineering management discipline that spans across the entire lifecycle of a project and is a key element of design, procurement, construction, installation, testing, and sustainment. It is essential to helping achieve AEDC Strategic Goals.

3.13.1. The Contractor shall provide configuration identification, configuration change management, configuration status accounting, and configuration verification for AEDC Configuration Items.

The Contractor shall:

- Integrate CM into the LCS Process
- Integrate the Asset Management best practice process improvements: (Item Management, R&R Schedules, and Equipment Obsolescence) into CM
- Improve the TDP process
- Ensure that CM requirements are addressed in Engineering, Procurement, Installation, Construction, Operations, and Maintenance Instructions
- Conduct assessments to ensure the adequacy of CM implementation
- Provide procedures and work instructions that identify the roles, responsibilities, and process for implementing AEDC-STD-CM1
- Maintain Test Configuration Baselines as they are identified in the Consolidated Test System (CTS) process

Deliverables:

OT-2014-30046 Maintenance Management Information

3.13.2. The Contractor shall maintain asset management information for AEDC configuration items IAW AEDC-STD-CM-1, Configuration Management.

This requirement includes maintaining asset hierarchy, sustainment status, configuration status, and other asset management fields in the CMMS.

The Contractor shall:

- Implement an Item Management Program to manage assets at AEDC

Deliverables:

OT-2014-30046 Maintenance Management Information

3.13.3. The Contractor shall provide data in the Computerized Maintenance Management System for maintenance actions.

Deliverables:

OT-2014-30046 Maintenance Management Information

3.13.4. The Contractor shall create and maintain drawings for AEDC configuration items IAW AEDC-STD-T-3 and AEDC-STD-CM-1.

Deliverables:

OT-2014-30002 As-built Documentation

3.13.5. The Contractor shall develop and maintain operational performance maps and models for AEDC Test Units and major test support assets identified by theGovernment.

Specific requirements for models or maps will vary by test unit.

3.13.6. Applicable Documents (Mandatory)

AEDC- ENGR-STD-T-3	AEDC Standard Engineering Drawing and Drafting Practices
AEDC-STD-CM-1	Configuration Management

3.14. AEDC GROUND, WEAPONS AND SYSTEM SAFETY PROGRAMS

The Ground, Weapons and System Safety programs are administered by the Government, with assistance from the FSS Contractor, and implemented by TOS, within TOS. The Safety program shall follow OSHA, AEDC Safety, Health and Environmental (SHE) Standards, AEDC Instructions and other applicable safety standards, i.e., NIOSH, NFPA, and ANSI. Although it is not the sole responsibility of the TOS contractor, systems safety programs are critical to mission success and essential to helping achieve AEDC Strategic Goals.

Deliverables:

OT-2014-30111 Safety Program Management Plan

3.14.1. The Contractor shall implement the AEDC Contractor mishap prevention program.

The Contractor Shall:

Measure and record injury statistics and conduct trend analysis and recommend corrective action to eliminate / reduce reoccurrence.

Performance Standards:

a) STD: Zero Class A or B injury or chargeable property mishaps.

b) STD: Zero chargeable Class C property damage mishaps.

c) STD: Develop a Corrective Action Plan for any Class D/E property damage mishap within 30 calendar days of the incident

d) STD: Injury rates at or below TRIR and DART per NAICS code assigned.

Deliverables:

OT-2014-30041 Injury Mishap Report

3.14.2. The Contractor shall support and execute the AEDC System / Test Safety Program IAW MIL-STD-882E, sections 3 & 4, and AFTCI 91-202 AEDC Supplement.

The Contractor shall:

- Conduct routine assessments on the implementation of the system / test safety program to ensure compliance

3.14.2.1. The Contractor shall identify system / test safety life cycle phases and apply system safety principles, tools, and techniques from the conceptual to the disposal phase for each asset.

3.14.2.2. The Contractor shall conduct job safety analyses for applicable day-to-day operations IAW AEDC-SHE-STD-A10.

The Contractor shall:

- Ensure work is performed with an approved Job Safety Analysis (JSA)
- Develop and implement the use of pre-job briefings, safety task analysis, and/or risk reduction checklists for every work activity

3.14.3. The Contractor shall support and execute the AEDC Weapons Safety Program which incorporates AFMAN 91-201, Explosives Safety Standards.

Execute the TOS portion of the program including explosives/rocket motor movement from storage facilities to test facilities and conduct explosives test-related tasks. Duties do not include completing explosive site plans. At least one member of TOS must have completed the USAF Weapons Safety Officer School or equivalent.

Deliverables:

OT-2014-30109 Pre-task Checklist

3.14.4. The Contractor shall support the FSS Safety Office with the Semi-Annual Environmental, Safety and Occupational Health Council (ESOHC).

The ESOHC is currently required semi-annually. The TOS Contractor is required to support FSS with information to brief the ESOHC. The ESOHC is mandated by AFI 90-801 and is chaired by AEDC/CC. Topics include trends identified and remediated, inspections completed, issues that require the council's direction, traffic issues, safety program status, etc. See AFI 90-801 for a detailed list. All information required by AFI 90-801 is supplied to the FSS Contractor when required.

3.14.5. The Contractor shall ensure applicable OSHA safety training is identified, conducted, tracked, and documented.

No personnel without documented training shall operate equipment.

Contractor personnel at AEDC Moffett Field must also complete NASA ARC safety training.

The Contractor shall:

- Establish a Learning Management Database to identify, track and document training
- Develop a system to identify current training for personnel in the field, such as training stickers on lanyard cards

3.14.6. The Contractor shall provide input to AEDC Safety, Health and Environmental Standards and other safety-related documents.

FSS Contractor has the lead on the SHE Standards review process, but all other AEDC Contractors will have an opportunity for input.

AEDC Safety, Health and Environmental Standards and other safety-related document review inputs shall be delivered on or before dates required by the Government.

The Contractor shall:

- Provide a point of contact list for AEDC Safety, Health and Environmental Standards and other safety-related document reviews

3.14.7. The Contractor shall provide support to safety inspection agencies, e.g. FSS Contractor, AF, and OSHA.

The FSS Contractor will conduct annual and spot inspections of TOS facilities. AF and OSHA may arrive at any time to conduct unannounced inspections. A TOS point of contact (POC) shall accompany inspectors when the FSS Contractor is conducting annual inspections and shall be available to support unannounced inspections.

3.14.8. The Contractor shall support AF or FSS Safety with property damage mishap investigations to prevent reoccurrence.

The FSS Contractor will investigate Class D and E mishaps and near misses / close calls. TOS Contractor is responsible for TOS personnel injury-type mishap investigations when property damage is not involved.

3.14.8.1. The Contractor shall conduct mishap investigations when TOS Contractor injuries have occurred to prevent reoccurrence.

The Contractor shall:

- Review all incident investigations for completeness and appropriateness of corrective actions
- Implement a corrective action system to track all corrective actions
- Provide status updates on a monthly basis until action is closed

Deliverables:

OT-2014-30041 Injury Mishap Report

3.14.9. The Contractor shall implement and manage a Confined Space program IAW applicable AEDC SHE Standards and AFMAN 91-203, Air Force Consolidated

Occupational Safety Instruction, Chapter 23.

The Contractor shall:

- Ensure all confined space personnel are trained
- Ensure all CS equipment is routinely inspected
- Ensure CS monitors are calibrated

3.14.10. The Contractor shall implement and manage a Lock Out / Tag Out program IAW applicable AEDC SHE Standards and AFMAN 91-203, Air Force Consolidated Occupational Safety Instruction, Chapter 21.

The Contractor shall:

- Ensure all LOTO employees are trained
- Ensure that all LOTO actions involving multiple energy sources have specific LOTO procedures
- Review all LOTO operations annually

3.14.11. The Contractor shall review and evaluate baseline hazard analyses (BHA) for changes in hazards, causes, effects, targets, mitigations, and risk whenever changes in asset properties are planned or occur including changes in physical properties, documentation, and processes; and revise BHA as necessary to document the changes.

3.14.12. Applicable Documents (Mandatory)

AFI 90-801	Environment, Safety, and Occupational Health Councils
AFMAN 91-201	Explosives Safety Standards
AFMAN 91-203	Air Force Consolidated Occupational Safety Instruction, Chapters 21 and 23
AFTCI 91-202, AEDC Supplement	The US Air Force Mishap Prevention Program
T.C.A. 68-23-101	Rules of Department of Environment and Conservation, Division of Radiological Health, Chapter 1200-2-9
All AEDC-SHE-STDs	Safety, Health, and Environmental Standards
MIL-STD-882E, Sections 3 & 4	System Safety

3.15. SENSITIVE COMPARTMENTED INFORMATION (SCI) SECURITY AND ASSOCIATED SCI INFORMATION ASSURANCE (IA) SUPPORT

This section defines requirements for supporting the management, administration, and sustainment of an SCI security program and an SCI IA Program.

The Contractor shall:

- Coordinate with other Government offices and contractors to ensure security support

services such as security forces, intrusion detection systems, and information technology services meet SCI security policy

3.15.1. The Contractor shall provide SCI Security support to the Government Special Security Office in managing, administering, and sustaining all aspects of an SCI security program compliant with all applicable DoD, AF, and Director of National Intelligence (DNI) directives.

The Contractor shall:

- Provide security support, physical security, information security, operations security, and provide SCI security education and training
- Ensure qualified and experienced security personnel are available to meet the day-to-day AEDC SCI security requirements including after-duty hour's support as necessary

These tasks will be accomplished at AEDC White Oak and AEDC Moffett Field through coordination with representatives from the AEDC Arnold AFB Special Security Office.

Performance Standards:

a) STD: Receive an average rating of 4.5 on the AEDC Government SCI Security Office evaluation criteria with no single rating less than 3.0.

Deliverables:
OT-2014-30034 SCI Accredited Area Standard Operating Procedure
OT-2014-30036 SCI Accreditation Package
OT-2014-30037 SCI Test Security Plan

3.15.2. The Contractor shall provide IA support, technical support, and system administration support to the Government SCI IA Office in managing, administering, and sustaining an SCI IA Program compliant with all applicable DoD, AF, and DNI requirements.

The Contractor shall:

- Provide SCI IA support, as provided in PWS 3.19.19, with Facility Security Officer (FSO) and IA personnel supporting the Government offices responsible for SCI and associated IA
- Provide IA support for test IT requirements, configuration management, lifecycle sustainment and budgeting, system accreditation, and day-to-day system administration including hardware and software requisition, installation, and maintenance
- Maintain a continuous monitoring program to ensure the state of the systems' environments do not change from the accredited configurations
- Ensure qualified and experienced IA personnel meeting DoD 8570 certification requirements are available to meet the day-to-day AEDC SCI IA and system administration requirements including after-duty hours support as necessary
- Provide IA artifacts and maintain updated Certification and Accreditation (C&A) packages for SCI Information Systems

These tasks will be accomplished at AEDC White Oak and AEDC Moffett Field through

coordination with representatives from the AEDC Arnold AFB Special Security Office.

Performance Standards:

STD: Receive an average rating of 4.5 on the AEDC Government SCI IA Office evaluation criteria with no single rating less than 3.0.

Deliverables:

OT-2014-30035 SCI Certification and Accreditation package

3.15.3. Applicable Documents (Mandatory)

DoD 5105.21, Volume 1	Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Information and Information Systems Security
DoD 5105.21, Volume 2	Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Physical Security, Visitor Control, and Technical Security
DoD 5105.21, Volume 3	Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Personnel Security, Industrial Security, and Special Activities
AFMAN 14-304	The Security, Use, and Dissemination of Sensitive Compartmented Information
Intelligence Community Directive Number 503	Intelligence Community Information Systems Security Risk Management, Certification, and Accreditation
Intelligence Community Directive Number 700	Protection of National Intelligence
Intelligence Community Directive Number 701	Security Policy Directive for Unauthorized Disclosures of Classified Information
Intelligence Community Directive Number 702	Technical Surveillance Countermeasures
Intelligence Community Directive Number 704	Personnel Security Standards and Procedures Governing Eligibility for Access to Sensitive Compartmented Information and Other Controlled Access Program Information
Intelligence Community Directive Number 710	Classification and Control Marking System
Intelligence Community Policy Guidance Number 704.1	Personnel Security Investigation Standards and Procedures Governing Eligibility for Access to Sensitive Compartmented Information and Other Controlled Assess Program Information
Intelligence Community Policy Guidance Number 704.2	Personnel Security Adjudicative Guidelines for Determining Eligibility for Access to Sensitive Compartmented Information and Other Controlled Access Program Information

Intelligence Community Policy Guidance Number 704.3	Denial and Revocation of Access to Sensitive Compartmented Information, Other Controlled Access Program Information, and Appeals Processes
Intelligence Community Policy Guidance Number 704.4	Reciprocity of Personnel Security Clearance and Access Determinations
Intelligence Community Directive Number 705	Sensitive Compartmented Information Facilities
Intelligence Community Standard Number 705-1	Physical and Technical Security Standards for Sensitive Compartmented Information Facilities
Intelligence Community Standard Number 705-2	Standards for the Accreditation and Reciprocal Use of Sensitive Compartmented Information
	Joint Security Implementation Guide (JSIG)
CNSSAM TEMPEST/1-13	Red/black Installation Guidance
ICD 503	Intelligence Community Information Technology Systems Security Risk Management, Certification, and Accreditation
	Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities, Version 1.2
National Institute of Standards of Technology Special Publication 800-37	Guide for Applying the Risk Management Framework to Federal Information Systems
	Sensitive Compartmented Information Facility Accreditation Documentation Security Classification Guide
	Security Classification Guides as required for AEDC mission requirements

3.16. FINANCIAL MANAGEMENT

The Contractor shall perform financial management consistent with applicable regulations and upload to or directly input to the Government-provided Management Information System (MIS). Financial management must be executed in a manner that is auditable consistent with Generally Accepted Accounting Principles, applicable regulations, and local policies and instructions. The system must provide timely, accurate, and transparent data required to make sound financial decisions. The number of individual projects will vary from year to year depending on actual workload. On average, expect about 500-600 projects per year and 4-5 formal contract modification and/or workload revisions per year. Each formal contract modification and/or workload revision may include re-allocation of resources from one project to another, increases or decreases in work effort within projects, fund code changes based on Government direction, and other miscellaneous project changes as directed by the Government.

The Contractor shall:

- Deliver formal contract modification and/or workload revisions on or before thenegotiated

delivery date.

Deliverables:

OT-2018-30120, Workload Revision Files

3.16.1. The Contractor shall track budget, authorization, and cost information either by using or by uploading financial data to the Government-provided enterprise-wide MIS for all projects and activities.

The Contractor shall:

- Populate, track, manage, and report all projects and activities in the enterprise financial management system
- Provide tracking of billable costs, actual costs and expenditures by the key appropriation data elements (Contract Year (CY), Government budget period, Government fiscal year, fund code, Program Element Code (PEC), Element of Expense Identification Code (EEIC), Work Breakdown Structure (WBS), capability, and Job Order Number (JON))
- Provide data on an accrual, cash, and Governmental appropriated basis for budgeting, general accounting, payroll accounting, cost accounting, cost estimating, customer billing, workload planning, analysis and reporting, contract management, and contract vouchering
- Upload or directly input to the Government-provided financial system time-phased workload (budget) and actual labor, materials, and consumables (Commitments, Obligations, Payables, and Expenditures). Update labor weekly and non-labor costs daily
- Account for project cost consistently with the basis used in estimating the SOC or project plan and identify and allocate all overhead and indirect costs to specific projects
- Immediately notify the Government of any material errors that impact work or costs reported in a given period
- Close monthly accounting periods in the MIS NLT the 3rd business day of each month. Coordinate with Government financial management personnel on the closing schedule for needed adjustment for monthly accounting periods and end of year accounting periods
- Provide monthly financial reviews on overall contract status
- Provide monthly reconciliation reports which identify the invoice amounts to specific fund cites and projects
- Provide detailed report(s) on remaining prior year obligations validity as needed
- Other reports as required

Deliverables:

OT-2014-30043 Financial Management Reports

3.16.2. The Contractor shall develop and propose Allocation Rates for application throughout the enterprise.

The Contractor shall, as part of the annual workload process:

- Develop and propose allocation rates for various items including utilities, labor fringe,

material surcharge, and others as required. Allocation rates may include TOS Contractor costs and in some cases, Government costs, but will not include any components from other operating contracts. See AFI 65-601v1, Chapter 7 and DoD FMR v11a, Chapter 12

- Provide a basis of all allocation rates. Rates must de designed to recover costs to within 5% of actual cost for the service/product provided, not to exceed $2.5M surplus.

3.16.3. The Contractor shall provide an annual assessment of the effectiveness of accounting processes and internal control procedures of both the financial system and organizational management controls to safeguard and assure data accuracy.

Deliverables:

OT-2014-30024 Annual Statement of Assurance

3.16.4. Applicable Documents (Mandatory)

AFI 65-601v12	Budget Guidance and Procedures, Chapter 7
DoD FMR v11a	Reimbursable Operations Policy, Chapter 12
OMB Cir A-123	Management's Responsibility for Internal Control

3.17. ACQUISITION OF SUPPLIES, SERVICES, AND EQUIPMENT

The Contractor shall acquire supplies, services, and equipment for all authorized Complex operations including tenant operations.

This PWS element focuses on implementing and maintaining a DCMA approved purchasing system in support of acquiring supplies, services, and equipment for all authorized complex operations including tenant operations and is essential to helping achieve AEDC Strategic Goals. This CWPS conforms to the Government's approach to acquiring goods and services in support of the TOS scope.

JOINT USE/LIABILITY FOR GOVERNMENT FURNISHED PROPERTY

The Contractor may temporarily loan Government-furnished property (GFP) to another contractor in the performance of work on Government installations during the performance of this contract. The Contractor may allow such use of GFP on a non-interference basis, with the understanding that the Contractor is under no obligation to make such items available at particular times or locations. The Contractor will not be entitled to an equitable adjustment if such GFP are not available when needed by the Contractor.

The Contractor's risk of loss due to physical damage or loss to any temporarily utilized or operated GFP shall be pursuant to the Government Property clause contained in the contract.

The types of GFP authorized for use by another contractor under this clause are as follows: forklifts, Polaris utility vehicle, chemical sprayer, and tow-behind blower.

The Contractor shall:

- Use the USAF procurement system (OWAM) when requisitioning the acquisition of goods and services
- Actively coordinate communications with other AEDC contractors and the Government for

receiving and other material management activities and on-site product demonstrations

- Implement a program to provide oversight and support the successful planning and execution of all subcontracts
- Promote acquisition personnel knowledge and capability by providing access to the Contractors training and certification program including their online training database, engage in continuous improvement of processes and procedures by utilizing LSS and lessons learned from other projects, centralize acquisition activities, use best value commercial practices, and implement a purchasing card system
- Provide training to Acquisition and Subcontracts personnel in areas such as property management and FARs
- Establish policies and procedures to award and administer purchases, services, and equipment and maintaining a DCMA approved purchasing system
- Promote and maintain a SB program that meets the goals as defined by the Government.
- Use best value commercial practices to promote efficiency and effectiveness
- Implement an effective bid, evaluation and award process that meets approved policies, procedures, and requirements

3.17.1. The Contractor shall maintain a Government-approved purchasing system IAW the terms and conditions of the contract.

The Contractor shall:

- Establish policies and procedures, ensuring that appropriate checks and balances are established to foster maximum competition, fair and reasonable pricing, and execute the appropriate commitment approval documents
- Institute policies limiting award approval to the appropriate level of management

3.17.2. The Contractor shall use best value commercial practices.

3.17.3. The Contractor shall meet small business subcontracting plan goals IAW FAR 52.219-9, Small Business Subcontracting Plan.

3.17.4. The Contractor shall coordinate on-site product demonstrations with the Government, AEDC using organizations, and appropriate vendors.

3.17.5. The Contractor shall purchase special approval items as specified in AF or Complex regulations or procedures.

Special approval items include hazardous items, computer items, etc.

3.17.6. The Contractor shall not purchase or contract for research and development services, Military Construction Projects (MILCON), utilities, fuels (including coal, gasoline, fuel oil, kerosene, and diesel), supplies and services to support the AF Commissary, education services for AF personnel, rental, lease, or purchase of automated data processing equipment exceeding $25,000 per purchase, and any group of items for which the estimated value of the single purchase exceeds $25,000, except items for which a stock level is maintained in economic order quantities exceeding $25,000, without approval of the Contracting Officer.

The Contractor shall:

- Implement policy limiting award approvals to the appropriate level of management
- Implement Government approved procedures, including agreed upon thresholds to acquire goods and services without the contracting officer's consent.

3.17.7. The Contractor shall manage Government property IAW the terms and conditions of the contract.

This PWS element focuses on activities relative to Financial Improvement and Audit Remediation (FIAR) activities. Arnold Engineering and Development Complex (AEDC) and its Geographically Separated Units (GSU) at the National Full-Scale Aerodynamics Complex (NFAC) in Moffett Field California and Tunnel 9 in White Oaks, Maryland account for inventory in the Contractor Property Management System in accordance with the Property Management Clause and Government approved property systems of record (APSR) to ensure AEDC meets its auditability responsibilities to the Department of Defense (DoD). AEDC leverages a creative blend of APSR and contractor- managed processes to achieve this objective while sustaining the efficiency of its work processes. APSRs, Federal Acquisition Regulation (FAR) policy, and strategic sourcing tools will be used to maximize asset availability while minimizing reporting requirements associated with Government inventory. This hybrid of inventory management processes requires attention to detail at strategic points within the acquisition lifecycle to strike the appropriate balance between test mission readiness and asset auditability.

3.17.7.1. The Contractor shall review work areas within the scope of the contract to identify excess assets and assets that require induction into the Government Approved Property Systems of Record (APSR) or addition to the Government Furnished Property (GFP) Listing. Underutilized, impaired, or obsolete property will be dispositioned.

3.17.7.1.1. The Contactor shall notify the Government Property Administrator (GPA) when assets are found meeting the following criteria:

- Government property not managed under the Property Management Clause having a unit acquisition cost of $5,000 or more
- Assets of any value with controlled item indicator codes identifying them as controlled, classified, or sensitive

3.17.7.1.2. The Contractor shall furnish the manufacturer, manufacturer's part and model number, nomenclature and supporting documentation to the cataloging activity to assist in the APSR induction process.

3.17.7.1.3. The Contractor shall coordinate with Facility Support Services (FSS) contractor to establish warehouse space for Government Furnished Material (GFM), Contractor Acquired Property (CAP), and plant clearance exhibits.

3.17.7.1.4. The Contractor shall participate in semiannual inventory review committees to assist in addressing asset maintenance, excess, loans, donations, management processes, and other Government Furnished Property and APSR related management topics.

3.17.7.1.5. The Contractor shall coordinate with AEDC/TSD-LG to request storage on Supply Points or Special Purpose Recoverables Authorized Maintenance (SPRAM) details.

3.17.7.1.6. The Contractor shall appoint an asset sponsor for assets requested to be stored in Government inventory.

The asset sponsors will serve as the point of contact for validations, identify and conduct routine/preventative maintenance, and to act as the subject matter expert for warehoused assets under their sponsorship.

Deliverable:

OT-2017-30028 Government Contractor Acquired Property List

3.17.7.1.7. The Contractor shall appoint Primary and Alternate AFEMS Equipment Custodians IAW AFMAN 17-1203.

3.17.7.1.8. The Contractor shall make every effort to minimize the inventory investment by leveraging strategic sourcing tools and Contractor Acquired Property procedures. Asset sponsors will be assigned for all assets retained on Supply Points to serve as points of contact for serviceability determination, retention justifications, and other matters regarding stockage retention.

3.17.7.1.9. The Contractor shall establish and maintain an Organizational Cost Center Record (OCCR) to order GFM from the Supply Point and wholesale sources.

3.17.7.2. Procedures

3.17.7.2.1. The Contractor shall develop procedures that incorporate FIAR compliant steps for management of material and equipment.

3.17.7.3. Supply Point

3.17.7.3.1. The Contractor shall maintain an OCCR through 96 LRS/LGRMC to request and return supply point assets.

3.17.7.3.2. The Contractor shall review management products and listings associated with assigned OCCR.

3.17.7.3.3. The Contractor shall coordinate with 96 LRS to resolve all problems and non- compliant conditions associated with assigned OCCR.

3.17.7.3.4. The Contractor shall assign points of contact as required by 96 LRS to comply with mandatory APSR requirements.

3.17.7.3.5. The Contractor shall coordinate with AEDC/FM to load funds to the Project Funds Management Record (PFMR) when ordering Government Furnished Materiel (GFM) through retail and wholesale sources of supply.

3.17.7.4. Facility Reconfiguration Items (FRI)

AEDC Special Purpose Recoverable Authorized Maintenance (SPRAM) details have been established to facilitate FRI reporting through the Government Approved Property Systems of Record (APSR) in order to comply with Financial Improvement and Audit Readiness (FIAR) requirements. The management philosophy for these assets is to load assets to SPRAM details for reporting while managing the movement and flow of assets in the Work Asset Management (WAM) system. Assets maintained on AEDC SPRAM details have been purchased and/or fabricated locally. Transactions for these items will be processed to avoid impact to the Air Force Stock Fund.

3.17.7.4.1. The Contractor shall coordinate with the Government Asset Manager to create a SPRAM detail for prospective additions to the FRI inventory. This includes items removed from the infrastructure for induction to the FRI inventory.

3.17.7.4.2. The Contractor shall coordinate with the Government SPRAM Custodian for the movement of FRI.

3.17.7.4.3. The Contractor shall ensure FRI location changes are updated in WAM within eight hours of location change.

3.17.7.4.4. The Contractor shall immediately report missing FRI and warehouse refusals to the Government SPRAM custodian.

3.17.7.4.5. The Contractor shall assist the Government SPRAM custodian in locating the FRI during the SPRAM inventories and reconciliations.

3.17.7.4.6. The Contractor shall ensure FRI custodian recorded in WAM remains current.

3.17.7.4.7. The Contractor shall ensure FRI records in WAM contain the SPRAM detail number and Government SPRAM custodian's name.

3.17.7.4.8. FRI Issue and Disposal.

3.17.7.4.8.1. The Contractor shall process issue requests for FRI assets utilizing WAM work request.

3.17.7.4.8.2. The Contractor shall process FRI disposal in WAM upon receipt of DD Form 1348-1A from the Government SPRAM custodian.

3.17.7.4.8.3. The Contractor shall affix DD Form 1348-1A to the FRI identified for disposal and process WAM pick-up request to move excess and condemned FRI to the DCP.

3.17.7.4.8.4. The Contractor shall process pick-up WAM work requests to return FRI assets to storage location.

3.17.7.4.8.5. **The Contractor shall affix DD Form 1574 to FRI returns to stock. The tag shall contain as a minimum, National Stock Number, nomenclature, quantity, unit of issue condition code "A", and the FRI custodian's legible signature in the block labeled INSPECTOR NAME OR STAMP AND DATE". The REMARKS field shall contain the SPRAM detail number, Government SPRAM custodian name and phone number.**

3.17.7.4.8.6. The Contractor shall recommend the turn-in of inactive or obsolete FRI to the Government SPRAM custodian.

3.17.7.5. Loans

3.17.7.5.1. The Contractor shall coordinate loans through the Government Loan Control Representative for assets managed in the APSR or the Government Property Administrator for GFP.

3.17.7.5.2. The Contractor shall coordinate with the Program Manager (PM) to ensure the appropriate contracting mechanism, Educational Partnership Agreement (EPA) or Cooperative Research and Development Agreement (CRADA) is in place prior to processing loan.

3.17.7.5.3. The Contractor shall coordinate with the FSS contractor to complete required paperwork with shipping instructions.

3.17.7.5.4. The Contractor shall update WAM record to reflect current location and anticipated return date for approved FRI loans.

3.17.7.5.5. The Contractor shall coordinate loan returns with the FSS contractor, Government SPRAM Custodian and Loan Control Representative.

3.17.7.6. Cyclic Warehouse Surveillance Support

3.17.7.6.1. The Contractor shall take corrective action on sponsored items (supply point, FRI, and courtesy storage) in the warehouse demonstrating signs of corrosion, leaking, and deterioration to include crates and containers.

3.17.7.6.2. The Contractor shall complete a DD Form 1574 containing as a minimum, National Stock Number, nomenclature, quantity, unit of issue, condition code "A", and the asset sponsor's legible signature in the block labeled "INSPECTOR NAME OR STAMP AND DATE".

3.17.7.7. Disposal

3.17.7.7.1. The Contractor shall dispose of assets excess to contract requirements through the Defense Logistics Agency Disposition Services (DLADS), via FSS, unless otherwise directed by the AEDC Plant Clearance Officer.

3.17.7.7.2. The Contractor shall notify the FSS contractor by pickup WAM work request and complete the appropriate forms to turn in excess and condemned assets.

3.17.7.7.3. The Contractor shall coordinate with the FSS contractor to complete the DLA- DS Vehicle/Rolling Stock Turn-in Checklist.

3.17.7.7.4. The Contractor shall perform the following actions prior to turning in vehicles:

- Remove and dispose of all waste/debris
- Remove and turn in fire extinguishers and all fire suppression devices
- Remove and turn in any extra or unnecessary parts that did not originally belong on the vehicle
- Remove and turn in Communications Security (COMSEC) items/radios/antennas

3.17.7.7.5. The Contractor shall ensure the following for vehicles with possible reuse/sales value:

- Batteries remain installed
- Quarter tank of fuel or less
- Include a list and value of any major, missing (or reclaimed) components (i.e., engine, transmission, differential, wheels, axles, doors), which would impair the use of the vehicles in Federal Supply Groups (FSG) 23, 24, 38, and 39 with commercial application (Demilitarization code A or Q6)

3.17.7.7.6. The Contractor shall complete all DLA-DS checklists and forms prior to requesting movement to the DCP.

3.17.7.7.7. The Contractor shall provide the following information to the FSS contractor when processing WAM turn-in/work order:

- Manufacturer's name, part number, model number, and nomenclature when available
- Item description
- Point of contact information

3.17.7.7.8. The Contractor shall receive, inspect, and process serviceable materials and supplies IAW the terms and conditions of the contract.

3.17.7.7.9. The Contractor shall utilize a portion of the warehouse to unload and receive Contractor Acquired Property (CAP) l purchased under the TOS contract.

3.17.7.7.10. The Contractor shall maintain receiving and shipping documentation and provide a point of contact for inquiries on receipt status for AF procurements.

3.17.7.7.11. The Contractor shall resolve shipping discrepancies, research and resolve problems associated with nonconforming materiel, and submit nonconforming material and technical receiving inspection report summaries to the Government.

3.17.7.7.12. The Contractor shall identify discrepancies during receipt and inspection, produce and maintain Unsatisfactory, Overage, Satisfactory, Damaged (UOS&D) material and technical receipt inspection report summaries and make them available to the Government Property Administrator upon request.

3.17.7.7.13. The Contractor shall receive assets in Government Oracle Work and Asset Management (OWAM).

3.17.7.7.14. The Contractor shall prepare receiving report in Invoice, Receipt, Acceptance, and Property Transfer (iRAPT) if Contractor purchased asset on behalf ofGovernment.

3.17.7.7.15. The Contractor shall prepare purchase order from OWAM requisition of all purchases.

3.17.7.7.16. The Contractor shall resolve shipping discrepancies, research and resolve problems associated with nonconforming materiel, and submit nonconforming material and technical receiving inspection report summaries to the Government Property Administrator.

3.17.7.7.17. Applicable Documents (Mandatory)

AFMAN 17-1203	Information Technology (IT) Asset Management (ITAM)

3.18. INTERFACE MANAGEMENT

This section covers specific interface requirements between the TOS Contractor and other AEDC Contractors and the Government. Effective teamwork with other contractors supporting the overall mission and base support operations will be essential to helping achieve AEDC Strategic Goals.

3.18.1. The Contractor shall communicate and coordinate resource and support requirements with other AEDC Contractors and the Government.

3.18.2. The Contractor shall provide requirements, specifications, and other required information for materiel procurements and contracted services. Requirements and specifications are needed in order for purchasing to acquire the correct materiel and services in support of operations and sustainment activities.

3.18.3. The Contractor shall establish and communicate to the FSS Contractor spare part and materiel stock level requirements.

This requirement only applies to items under FSS Contractor inventory responsibility. Potential

sources for spare part identification are FMEAs, maintenance strategies, preventive maintenance work instructions, or other spare part identification documents.

Requirement 3.18.3 does not apply to AEDC Moffett Field or AEDC White Oak.

The Contractor shall:

- Input their requirements into the AEDC supply system for the FSS to maintain the requested stock levels

3.18.4. The Contractor shall communicate operational status, incidents, and other required information to the Operations Center for required activities.

Information may include but is not limited to Foreign Object Damage (FOD) events, accidents, mishaps, security incidents, test activities / results, test schedule coordination / modifications / cancelations / additions, utility curtailments / warnings, and etc. Information may be used to provide support for all scheduled / unscheduled tests, checkouts, maintenance actions for testing, and all after action reporting to on / off base agencies.

3.18.5. The Contractor shall support and participate in the AEDC Exercise Program IAW AFI 90-201 the Air Force Inspection System, Air Force Material Command (AFMC) Supplement 90-201, and local requirements.

3.18.6. The Contractor shall manage their Fire Protection and Prevention program IAW AFMAN 91-203 Air Force Consolidated Occupational Safety Instruction, Chapter 6 Fire Protection and Prevention.

At AEDC Moffett Field, the Contractor shall also follow the NASA ARC Fire Marshall requirements.

3.18.7. The Contractor shall manage the TOS Unit Emergency Management (EM) Program IAW AFI 10-2501, Air Force EM Program Planning and Operations, to include Unit EM Representatives, Emergency Operations Center (EOC) Representatives, Crisis Action Team (CAT) Members, Disaster Response Force (DRF) Members, and other specialized teams as required.

3.18.8. The Contractor shall assist the Government and the FSS Contractor with implementing specific test security requirements as identified in the test security or program protection plan(s). At White Oak and Moffett Field the Contractor shall establish, or where applicable follow government established, local Emergency Management Programs and ensure personnel are trained on the Plan's requirements.

3.18.9. The Contractor shall coordinate access to TOS managed areas for other Contractors providing work and services to AEDC.

3.18.9.1. The Contractor shall provide a space utilization program to identify and coordinate space requirements. Requirements shall be coordinated with the Air Force and other contractors as required.

3.18.10. Industrial Security and Information Protection:

This section defines requirements for managing, administering, and sustaining an effective Information Protection and Industrial Security Program to prevent the compromise, loss, unauthorized access / disclosure, destruction, distortion or non-accessibility of information, regardless of physical form or characteristic, over the life cycle of the information, including actions to regulate access to sensitive information, controlled unclassified information and classified information produced by, entrusted to or under the control of the United States Government. Proper implementation will protect sensitive data from compromise, which if experienced would be a major factor in not moving AEDC forward.

The Contractor shall:

- Work closely with all AEDC functions, to include the Information Protection Office, FSS Contractor and the Government Program Manager, to ensure control of classified, competition sensitive, and proprietary operations, as required by AEDC Installation Security directives

3.18.10.1. The Contractor shall implement an effective Information Protection and Industrial Security Program IAW DoDM 5220.22-M, , requirements of the solicitation as noted on the DD Form 254, DoD Contract Security Classification Specification and respective Contractor Visitor Group Security Agreements (VGSA).

Performance Standards:

a) STD: No loss of classified and no security violations that result in a compromise.

b) STD: Achieve no less than a Satisfactory rating on all security reviews, inspections, audits, and vulnerability assessments.

3.18.10.2. The Contractor shall ensure all subcontractors enter into a separate VGSA with the AEDC Commander, as determined by the Servicing Security Activity IAW DoD 5220.22- M DoDM 5220.22V2_and AFMAN 16-1406V2, and supplements.

3.18.10.3. The Contractor shall designate a Facility Security Officer (FSO), cleared commensurate with and concurrent with the issuance of the FCL. Ensure the FSO authority to manage and enforce all Industrial Security programs for the company; if the FSO is not located on site, the Contractor shall provide qualified personnel to serve as the security representative to monitor and facilitate all security requirements at AEDC.

The FSO serves as a security POC. The FSO is responsible for administering the requirements of the Industrial Security Program within his or her facility, i.e., ensuring that proper levels of protection are provided to prevent unacceptable, adverse impact on national security or on the health and safety of DoD and contractor employees, the public, or the environment. In serving as the site's POC, the FSO directs the implementation of security measures and is responsible for coordinating implementation of a security program with the Contractor or DoD. The FSO is instrumental in making sure that personnel are aware of good security procedures and practice them, regardless of whether they have access to classified information or other DoD/AF security interests. FSOs see that the organization's employees know their responsibilities regarding security procedures of the Government or Contractor. Additional security requirements are identified on the approved Contract Security Classification Specification (DD FM 254) form and communicated to the FSO under separate cover. FSO or alternate shall be available to meet day to day with the

Government on all security issues upon request; but no later than the next duty day.

3.18.10.3.1. **The Contractor shall ensure all events that have an impact on the status of the FCL, that impact the status of an employee's PCL, that affect proper safeguarding of classified information, or that indicate classified information has been lost or compromised are promptly reported.**

Internal procedures established as necessary to ensure that cleared employees are aware of their responsibilities for reporting pertinent information to the FSO, the Federal Bureau of Investigation (FBI), the Servicing Security Activity (SSA), or other Federal authorities as required by the terms of a classified contract, and U.S. law. Adverse information or other NISP reporting obligations reports submitted in a timely manner and recorded, if appropriate, as an incident report in the Defense Information Security system (DISS) and maintain a disciplinary action database regarding adverse information reporting.

3.18.10.3.2. The Contractor shall process required documentation through the Defense Counterintelligence and Security Agency (DCSA) and the Office of Personnel Management to obtain security clearances and credentials for Contractor personnel. Maintain records of clearancedata, as required.

3.18.10.3.3. The Contractor shall process required documentation through the AEDC Information Protection Office for background checks and interim approval for access to unclassified U.S. Government computers. This documentation is required for all new AEDC contractor personnel who do not have a U.S. security clearance or other required background investigation, and is required to support test customers who work for uncleared companies.

3.18.10.3.4. The Contractor shall ensure all employees, including those outside the United States, are briefed on their individual responsibility for safeguarding classified information.

Initial briefings, refresher briefings, and debriefings provided as required, commensurate with their involvement with classified information.

3.18.10.4. The Contractor shall assist the Government and work with the FSS Contractor to provide security control of classified, competition sensitive, proprietary operations, and other controlled unclassified information (CUI) as required by the installation Security (INFOSEC) program.

3.18.10.4.1. The Contractor shall assist the Government and work with the FSS Contractor to implement specific Test Security and / or Program Protection requirements as identified in the Test Security or Program Protection Plans.

3.18.10.4.2. The Contractor shall assign personnel and operate "Secure" areas IAW with guidance provided by the FSS Contractor FSO.

Procedures must be followed to ensure the structural integrity of secured areas above false ceilings and below raised floors. All work orders involving secured areas must be approved by the FSS FSOs. Coordinate with the FSS FSO the purchase, installation, and repair of physical barriers used for security purposes (doors, fences, gates, alarms, automated access control systems, etc.), stand-alone security systems (cameras, Automated Entry Control Systems, and

Balanced Magnetic Switches), security signs / notices and security-lock hardware / keys. Secured areas shall be constructed and access controlled to preclude unauthorized access.

3.18.10.4.3. The Contractor shall accomplish administrative tasks and coordinate a daily schedule of activities and general correspondence required to support the FSS security program requirements, and in the administration of day-to-day security requirements.

3.18.10.5. The Contractor shall use specific Program Security Classification Guides (SCG) for all classification management decisions.

3.18.10.6. The Contractor shall nominate an appropriate number of qualified personnel, as defined by applicable DoD / AF requirements, to serve as Derivative Classifiers / Declassifiers and Unclassified Controlled Nuclear Information Reviewing Officials IAW the applicable DoD / AF requirements.

3.18.10.7. The Contractor shall conduct, participate, or support security investigations, preliminary inquiries, and other actions required for resolution of security incidents IAW DoD 5220.22-M, DoDM 5205.07 Volumes 1-4, DoDM 5220.22V2_AFMAN 16-1406V2, and supplements.

3.18.10.7.1. The Contractor shall provide a copy of all adverse information reports submitted to DCSA to the installation Commander via the SSA. Incident reports shall also be entered in the DISS. Reports required to be submitted to the FBI shall also be reported to the local detachment of the AF Office of Special Investigations (OSI). The Contractor shall report all adverse information concerning Special Access Program briefed personnel to the Program Security Officer IAW JAFAN6/0. Report all adverse information concerning SCI indoctrinated personnel to the AEDC Special Security Officer.

3.18.10.8. The Contractor shall attend security and other program meetings, integrated product team (IPT) meetings, test concept meetings, working group meetings, counter- intelligence support meetings, and participate in the development of solutions to items of concern or action items related to test.

3.18.10.9. The Contractor shall provide a qualified person as a POC with overall OPSEC responsibilities and maintain awareness of foreign intelligence collection capabilities, limitations, methods, and practices.

The Contractor shall:

- Familiarize all new employees and conduct refresher sessions as needed in the areas of Counterintelligence (DoDI 5240.6, Counterintelligence (CI) Awareness and Briefing Program, paragraph 6.2, Awareness and Briefing Requirements), Operations Security (DLAI 5200.13, DLA Operations Security (OPSEC) Program, Enclosure 3, OPSEC Planning Guidance), and Classified Material / Clearance (DLAI 5200.12, Information Security Program, Chapter 11, Standards for Storage and Handling Classified Material)

3.18.10.10. The Contractor shall ensure appropriate personnel receive OPSEC training; conduct and document OPSEC self-assessments; and identify new, or changes in, projects, activities, or facilities that will require an OPSEC assessment and communicate that to the FSS Contractor.

3.18.10.11. The Contractor shall integrate OPSEC into all organization planning and operational processes. Integrate OPSEC into all acquisition programs and contractor support documents.

The Contractor shall:

- Implement OPSEC programs for subcontractors designed to afford at least a minimum level of OPSEC protection and understanding for all subcontracts with increasing levels of OPSEC protection and understanding for more sensitive subcontracts, recognizing that subcontractors vary in size, resources, and length of subcontract

3.18.10.12. The Contractor shall comply with the OPSEC requirements imposed by any program supported.

3.18.11. OPSEC is a structured process that identifies critical information, analyzes friendly actions, integrates threat analysis and risk assessments, then helps personnel apply protective measures to mitigate unacceptable risk. Organizations and personnel supporting customers may have OPSEC requirements associated with their activities and support. Resource Protection: The Contractor shall implement an effective Resource Protection Program in support of Protection Level 4 Resources IAW AFI 31-101.

3.18.12. The Contractor shall determine acceptance inspection requirements for procured items and shall coordinate the requirements with the FSS Contractor and PMEL Contractor. Requirement 3.18.12 does not apply for items procured for and delivered to AEDC White Oak or AEDC Moffett Field.

3.18.13. The Contractor shall submit technical releases to the Government for determination of appropriate distribution statements IAW AEDCOI 99-10 using the workflow manager software system provided by the Information Technology Support Contractor.

This effort includes properly marking all project documentation prior to release.

3.18.14. The Contractor shall provide a building manager program to identify and input maintenance needs, to assist in maintenance of assigned facilities, and execute the Antiterrorism Representative (ATR) program.

3.18.14.1. The Contractor shall:

- Appoint in writing primary and alternate ATRs to meet program requirements for AAFB and NFAC facilities
- Ensure all appointed ATRs complete Level I-AT Awareness, Antiterrorism Officer (ATO) Level II, and locally provided AT training
- Create, revise and maintain required documentation for identified facilities, to include work instructions and checklists. A list of all identified facilities will be provided by the Government.
- Manage the Random Antiterrorism Measure (RAM) program for all Arnold AFB, Tunnel 9, and NFAC facilities
- Ensure RAMs are completed and reported as required

- Oversee FPCON changes for identified facilities and report attainment to Antiterrorism Program Manger
- Ensure building residents are trained on appropriate actions for RAMs and FPCONs

Deliverables:
OT-2017-30033 AT Level I and Level II Training Certificates
OT-2017-30034 Antiterrorism Representative Appointment Letters
OT-2017-30035 Facility AT Plans
OT-2020-30001 Monthly RAM Reports

3.18.15. The Contractor shall communicate and coordinate all base communications and base Information Technology resource, infrastructure and support requirements with AEDC/TSDI.

3.18.16. The Contractor shall coordinate with the AEDC Geo-Integration Office (GIO) whenever mapping, surveying, or cartography activities are anticipated and provide geo- spatial products as required. Contractor produced geo-spatial services and products shall comply with the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) data model. All Contractor-created geo-spatial products shall be provided in digital form to the AEDC-GIO for storage and ad hoc access.

The Government serves as the primary POC for base-level geo-spatial activities through the AEDC-GIO. The AEDC-GIO maintains, manages, exposes, and protects the Arnold AFB Common Installation Picture (CIP) and Mission Data Sets (MDS) integrated through the GeoBase Program and ensures compliance with the GeoBase Enterprise Architecture. The AEDC-GIO provides data standards and projection parameters to support interoperability of Contractor services to the Arnold AFB Geographic Information System (GIS).

Requirement 3.18.16 does not apply to AEDC Moffett Field or AEDC White Oak.

3.18.17. Applicable Documents (Mandatory)

E.O. 12829	National Industrial Security Program
E.O. 13526	Classified National Security Information
E.O. 13556	Controlled Unclassified Information
E.O. 13467	Reforming Process relating to Suitability for Government Employment, Fitness for Contractor Employees, and Eligibility for Access to Classified National security Information
E.O. 13587	Structural Reforms To Improve the Security of Classified Networks and the Responsible Sharing and Safeguarding of Classified Information
T.O. 00-20F-2	Inspection and Preventative Maintenance Procedures for Classified Security Containers
USSAN 1-69	United States Implementation of NATO Security Procedures
DoDD 5100.55	United States Security Authority for North Atlantic Treaty Organization Affairs

DoDD 5200.02	DoD Personnel Security Program
DoDD 5230.11	Disclosure of Classified Military Information to Foreign Governments and International Organizations
DoDD 5230.25	Withholding of Unclassified Technical Data from Public Disclosure
DoDI 2040.02	International Transfers of Technology, Articles, and Services
DoDI 3020.46	The Military Critical Technologies List (MCTL)
DoDI 5205.13	Defense Industrial Base (DIB) Cyber Security/Information Assurance (CS/IA) Activities
DoDI 5210.01	Access to and Dissemination of Restricted Data and Formerly Restricted Data
DoDI 5210.83	DoD Unclassified Controlled Nuclear Information (UCNI)
DoDI 5220.22	National Industrial Security Program (NISP)
DoD 5230.24	Distribution Statements on Technical Documents
DoDI 5230.29	Security and Policy Review of DoD Information for Public Release
DoDI 5240.6	Counterintelligence (CI) Awareness and Briefing Program
DoDI 8500.01	Cybersecurity
DoDM 5200.01, Vol 1	DoD Information Security Program: Overview, Classification, and Declassification
DoDM 5200.01, Vol 2	DoD Information Security Program: Marking of Classified Information
DoDM 5200.01, Vol 3	DoD Information Security Program: Protection of Classified Information
DoDM 5200.01, Vol 4	DoD Information Security Program: Controlled Unclassified Information (CUI)
DoDM 5200.1	Acquisition Systems Protection Program
DoDM 5205.02	DoD Operations Security (OPSEC) Program Manual
DoDM 5200.45	Instructions for Developing Security Classification Guides
DoDM 5220.22	National Industrial Security Program (NISP) Operating Manual
DoDM 5220.22V2_AFMAN 16-1406V2	Industrial Security Program Management (and supplements)
DoDR 5200.1	Information Security Program
DoDR 5200.08	Physical Security Program (Sections that apply to the protection of classified material)
DoDR 5220.22	Industrial Security Regulation
DoDM 5230.30	DoD Mandatory Declassification Review (MDR) Program
DoDR 5400.7	DoD Freedom of Information Act Program

DoDM 5205.07 Volumes 1-4	Special Access Program Security Manual
Joint Pub 3-54	Joint Doctrine for Operations Security
AFI 10-701	Operations Security (OPSEC) (and supplements)
AFI 10-2501	Air Force Emergency Management Planning and Operations
AFI 31-101	Integrated Defense (FOUO)
AFI 31-406	Applying North Atlantic Treaty Organization (NATO) Protection Standards
AFI 61-204	Disseminating Scientific and Technical Information
AFI 61-205	Sponsoring or Co-Sponsoring, Conducting, and Presenting DoD-Related Scientific Papers at Unclassified and Classified Conferences, Symposia, and Other Similar Meetings
AFI 90-201	The Air Force Inspection System
AFMAN 91-203	Air Force Consolidated Occupational Safety Instruction, Chapter 6
AFMC SUP 90-201	The Air Force Inspection System
AEDCOI 99-10	Technical Reporting
AEDCOI 32-1033	Space Utilization and Move Request
AF 847	Recommendation for Change of Publication
DoDD 3000.09	Autonomy in Weapon Systems
DoDD 5000.01	The Defense Acquisition System
DoDI 5000.02 (Interim)	Operation of the Defense Acquisition System
DoDD 5230.09	Clearance of DoD Information for Public Release
DoDD 5240.06	Counterintelligence Awareness and Reporting (CIAR)
DoDD O-5240.02	Counterintelligence
DoDI 3200.20	Scientific and Engineering Integrity
DoDI 4140.01	DoD Supply Chain Materiel Management Policy
DoDI 5030.55	DoD Procedures for Joint DoD-DOE Nuclear Weapons Life- Cycle Activities
DoDI 5200.33	Defense Courier Operation
DoDI 5200.39	Critical Program Information (CPI) Protection Within the Department of Defense
DoDI 5200.44	Protection of Mission Critical Functions to Achieve Trusted Systems and Networks (TSN)
DoDI O-5240.24	Counterintelligence (CI) Activities Supporting Research, Development, and Acquisition (RDA)
DTM 09-019	Policy Guidance for Foreign Ownership, Control, or Influence (FOCI)
DoDM 5010.12	Procedures for the Acquisition and Management of Technical Data
SAE Aerospace Standard (AS) 5553	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

SAE Aerospace Standard (AS) 5553A	Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

3.19. GENERAL MANAGEMENT

This section highlights requirements that apply across multiple sections of the PWS. It includes but is not limited to activities, such as housekeeping, tool control, welding, pressure vessels and systems work, Engineering, spill control, Environmental requirements, software purchases, records management, deviations, ITAR, and LCM that are essential to helping achieve all AEDC Strategic Goals.

3.19.1. The Contractor shall provide a clean and orderly environment for workers.

Work areas shall be maintained in a neat, clean, and orderly manner. Workers shall clean up their workspace upon completion or suspension of a job.

3.19.2. The Contractor shall plan, execute, track, and report resources and work activities for projects.

3.19.3. The contractor shall document cost, schedule (milestones), performance objectives, deliverables, resource requirements, verification and validation plans and risk analysis data as directed by the Government for selected maintenance efforts.

3.19.4. The Contractor shall develop, document, and implement critical skills training, qualification, and certification for designated operators and maintainers.

All positions designated will be recommended by the Contractor and approved by the Government. Designated operators shall be those craft and / or engineering positions that are critical to hands-on operations of test unit, plants, and utility systems. Selection factors for designation include: level of control of the test process and / or test article during live operations, level of responsibility, amount of systems knowledge required, and position responsibility during emergency situations. Operator qualification will consist of formal documented training requirements, a Qualification Exam and a Performance Evaluation.

Designated maintainer positions shall be those positions that warrant documentation of qualification / certification. Examples include, as a minimum, but may not be limited to welding, TMDE User-calibration, NDE, and engine borescope.

No designated position duties performed without documented qualification/certification.

Deliverables:

OT-2014-30016 Qualification / Certification report

3.19.5. The Contractor shall implement and manage a tool control program for designated areas IAW AEDCI 21-113 Tool Control.

Performance Standards:

a) STD: 100% pass rate on tool stewardship audits performed by the Government.

No more than one major discrepancy allowed and no more than two minor discrepancies per 50 tools allowed for a pass on a tool stewardship audit as documented on AEDC Form 822.

b) STD: No unauthorized tools found.

3.19.6. The Contractor shall execute and manage a FOD Prevention Program IAW AEDCI 21-111, Foreign Object Damage Prevention Program.

3.19.6.1. The Contractor shall comply with all requirements in AEDCI 21-111, Paragraph 2.8.

Performance Standards:

STD: FOD Prevention Program Score > 90

Deliverables:

OT-2017-30030 FOD-DOD Final Event Report
OT-2017-30031 FOD-DOD Event Data
OT-2017-30032 FOD-DOD Initial Event Report

3.19.7. The Contractor shall execute impoundment actions for AEDC assets and test articles IAW AEDCI 21-112, Impoundment.

3.19.8. The Contractor shall perform welding IAW AEDC-ENGR-STD-T-5, AEDC Standard Welding Practices.

3.19.9. The Contractor shall design, fabricate, assemble, erect, and inspect all new pressure vessels and evaluate, repair, alter, define limits for safe operation, and certify used pressure vessels for operation at AEDC in compliance with AEDC-ENGR-STD-T-1, AEDC Standard Pressure Vessels.

3.19.10. The Contractor shall design, fabricate, assemble, erect, and inspect all new pressure piping and evaluate, repair, alter, define limits for safe operation, and certify used pressure piping for operation at AEDC in compliance with AEDC-ENGR-STD-T-2, AEDC Standard Pressure Piping.

3.19.11. The Contractor shall perform engineering design and drafting IAW AEDC- ENGR- STD-T-3, AEDC Standard Engineering Drawing and Drafting Practices.

3.19.12. The Contractor shall prepare procurement documentation IAW AEDC-ENGR- STD-T-4, AEDC Standard for Procurement Documentation.

3.19.13. The Contractor shall include at a minimum, a spill control plan for each hazardous material or system they intend to use that has the potential, if a spill or release of the hazardous material should occur, to cause an adverse effect on human health or the environment, or is otherwise required by law, regulation or AFI.

This plan shall comply with the AEDC spill response plan IAW the AEDC Spill Prevention Control and Countermeasure Plan. Notification to the Ops Center is required for all spills, regardless of quantity. Also, at AEDC Moffett Field, the Contractor shall comply with the NASA ARC spill response requirements.

3.19.14. The Contractor shall comply with AF Environmental Management System (EMS) requirements. This includes providing a designated team member(s) to the EMS Cross Functional Team for review of processes and environmental aspects, and compliance with AFI 32-7001. Provide EMS awareness training to all employees.

The Contractor shall:

- Coordinate environmental activities with the FSS Contractor

3.19.15. The Contractor shall, for activities that generate Hazardous or Regulated wastes, have adequately trained personnel, and maintain compliance with the AEDC Hazardous Waste Permit, AFIs 32-7001/7042, AEDC SHE Standards A6/E6/E14/E16/E18, as well as the AEDC Hazardous Waste Compliance, Management, and Reduction Plans.

3.19.16. The Contractor shall use standard AF system EESOH-MIS to track acquisition, approval, use, and disposal of all hazardous materials. Any use or storage of hazardous materials must be approved per AFI 32-7086, AEDC Hazardous Materials Management Plan, and managed in order to minimize the potential for release, spill, or discharge to the environment and threat to human health.

3.19.17. The Contractor shall ensure that air emission sources for all TOS-operated processes, equipment, or facilities are operated in compliance with the conditions listed on the AEDC Title V Air Operating Permit.

The Contractor shall designate a source monitor and source support person for each TOS operated source listed in the Title V Air Operating Permit and perform recordkeeping requirements, conduct permit-required sampling, and notify the Source Manager and the Installation Management Section (AEDC/TSDCI) of design or operating changes for new or existing sources.

3.19.17.1. The Contractor shall ensure Government vehicle operators are familiar with vehicle idling restrictions and how Government vehicles are operated IAW AFI 24-302, para 10.4.14 and 11.9.2.

3.19.18. The Contractor shall comply with the AEDC Wastewater Compliance Plan and AEDC National Pollution Discharge Elimination System permit conditions for all Contractor-owned or operated processes or facilities that discharge water, wastewater, or any other substance to the AEDC industrial water system (or to any environment within AEDC that may impact the IWS).

If a new or changed non-temporary discharge is required, a permit modification may be required. Owners of permitted discharges are required to test and submit test results to the FSS Contractor according to permit requirements.

Requirement 3.19.17 does not apply to AEDC Moffett Field or AEDC White Oak.

3.19.19. The Contractor shall coordinate all software license purchases and renewals with the Government Configuration Management / Software License management office IAW AFMAN 17-1203 Information Technology (IT) Asset Management (ITAM).

Software inventories are considered a 100%, exhaustive, inventory of all software held or residing all hardware.

Deliverables:

OT-2017-30010 Software License Management Quarterly Report
OT-2017-30011 Software License Management Annual Inventory

Performance Standards:

a) No unauthorized software or unlicensed software shall be allowed on systems under this contract.

b) Discrepancies shall be resolved within 6 months.

3.19.20. The Contractor shall implement AF IA requirements as identified in: AFPD 33-2, Information Assurance Program, AFI 17-130 Information Assurance Management, and AFI 17-101, Risk Management framework (RMF) For Air Force Information Technology (IT) including all tasks and directives identified therein including, but not limited to; AFSSI 300 Series – COMSEC Equipment, AFSSI 400 Series – COMSEC Operation, AFSSI 700 Series EMSEC/TEMPEST, and 8500 Series – IA Implementation or their replacements on all test systems and networks. This includes all applicable TOs. National and DoD level documents shall be used as mandatory directives in lieu of, or in addition to AF directives, as appropriate. This includes:

- Coordinate with FSS Contractor on COMSEC/EMSEC/TEMPEST/IA issues and implement IA controls as required
- Participate in base level COMSEC/EMSEC/TEMPEST/IA level programs
- Appoint IA Managers as appropriate
- Design and implement secure IA architecture on test systems and networks. Ensure IA architect holds IA Workforce Systems Architect and Engineer (IASAE) certification
- Ensure all personnel performing IA functions meet the requirements identified in DoD 8570. The contractors must comply with DFARS 252.239.7001
- Track and maintain all FISMA reporting requirements for the Contract, and provide status to the AF
- Be responsible for vulnerability scanning and correcting vulnerabilities on test systems
- Provide IA artifacts to the Information Technology Support Contractor sufficient to ensure appropriate level of approval to operate (Certification & Accreditation)
- Implement IA controls on all test IT systems, networks and applications
- Operate and maintain test systems and applications IAW D0D/AF IA principles
- Ensure all users of IT systems and services comply with IA directives
- Accomplish TCNO and IAVA implementation, tracking and reporting
- Accomplish and report software asset inventories as specified in AFMAN 17-1203 quarterly, certifying annually
- Purchase software assets as specified in AFMAN 17-1203, FAR and DFAR
- Accredit DT&E system in accordance with guidance set forth by the DT&E Authorizing official

Performance Standards:

a) STD: Zero compromises.

b) STD: 90% of systems in use must have an approved Authority to Operate (ATO).

Deliverables:

OT-2017-30017 EMSEC Documentation and Report

OT-2017-30013 Protected Distribution System Documentation

3.19.21. In coordination with the base records management office, the Contractor shall store, retrieve, collect, archive, protect, and maintain a records management program, IAW disposition instructions (AFI 33-360, AFI 33-322, AFMAN 33-363, and AFI 33-364).

3.19.22. If deviation from any mandatory technical or process requirement of this contract is deemed by the Contractor to be advantageous to the Government, the Contractor shall request the deviation from the cognizant Government POC and receive approval in writing.

3.19.23. The Contractor shall comply with all United States laws and regulations including the International Traffic in Arms Regulation (ITAR) and for export of defense articles, defense services, and technical data.

3.19.23.1. The Contractor shall notify the Contracting Officer prior to engaging in direct discussions with foreign nationals or engaging in other actions which would constitute an export as described in the ITAR.

3.19.24. The Contractor shall route all Scientific and Technical Information (STINFO) through the STINFO office.

3.19.25. The Contractor shall provide technical assistance to the Government in the evaluation of proposals as required.

3.19.26. The Contractor shall comply with the AF / NASA ARC lease agreement at AEDC Moffett Field and the AF / GSA lease agreement at AEDC White Oak.

3.19.27. The Contractor shall provide janitorial services and refuse collection at AEDC Moffett Field.

3.19.28. The Contractor shall use varied documents in the performance of work.

3.19.28.1. The Contractor shall develop, document, maintain and follow directional documents to prevent injury to personnel, damage to equipment, harm to the environment, and data compromise.

Applies to all directional documents including Work Instructions, Checklists, Master Work Permits, Work Order Tasks, Job Safety Analyses, Base Civil Engineering Work Clearance Requests, and other documents that if not followed correctly could result in personnel injury, equipment damage, environmental harm, or data compromise.

3.19.28.1.1. The Contractor shall retain completed (worker accomplished) work instructions for 90 days or until after next execution of the work instruction, whichever comes later.

3.19.28.1.2. The Contractor shall ensure directional documents correctly and safely direct the work to be performed.

3.19.28.1.3. The Contractor shall perform internal audits to ensure compliance with directional documents.

3.19.28.2. The Contractor shall develop, document, maintain and follow guidelines and procedures in the performance of work.

3.19.28.3. The Contractor shall develop, maintain, and use TOS forms as required to accomplish work specified in guidelines, procedures, checklists and operations and maintenance work instructions only if:

- Government forms are not specified for use
- The form is to be used only by TOS personnel (Government or other contractor personnel cannot be required to make data entries or be designated as approval authority on the form)
- The completed form is not a Government-specified record or deliverable

Deliverables:

OT-2014-30018A Operations and Maintenance Work Instructions

OT-2016-30050 Guidelines

OT-2016-30049 Procedures

OT-2017-30024 Checklists

3.19.29. The Contractor shall develop, document, and follow directional documents to prevent injury to personnel, damage to equipment, harm to the environment, and data compromise.

Applies to all directional documents including Master Work Permits, Work Order Tasks, Job Safety Analyses, Base Civil Engineering Work Clearance Requests, etc.

3.19.29.1. The Contractor shall ensure instructions correctly and safely direct the work to be performed.

3.19.29.2. The Contractor shall ensure instructions are strictly followed.

3.19.30. The Contractor shall support engine management for Government-owned engines assigned to SRAN 2804.

3.19.30.1. The Contractor shall document engine operation and maintenance performed (e.g., component change, engine inspections, TCTO actions, time changes, etc.)

Deliverable:

OT-2017-30042 Engine Log

3.19.30.2. The Contractor shall document all engine blade blending repairs.

Deliverable:

OT-2017-30040 Engine Blade Blending Report

3.19.30.3. The Contractor shall provide the Government Engine Manager with a copy of all depot and locally generated DD Form 1574 (yellow serviceable tag) for all newly received serially controlled engine parts. For new parts not having a DD Form 1574, provide manufacture label with part and serial number information.

3.19.30.4. The Contractor shall document all engine borescope inspections performed.

Deliverable:

OT-2017-30041 Engine Borescope Inspection Report

3.19.30.5. The Contractor shall prepare engines for shipment as required.

3.19.30.5.1. The Contractor shall obtain shipping paperwork from the Government Engine Manager prior to engine shipment IAW TO 2J-1-18 CHAPTER 8 PREPARATION AND HANDLING OF GAS TURBINE ENGINES FOR ALL SHIPMENTS and TO 00-85-20 CHAPTER 4 PREPARATION AND INSPECTION & CHAPTER 5 ENGINE AND SHIPPING DEVICE HANDLING.

3.19.30.5.2. The Contractor shall notify the Government Engine Manager within 24 hours of engine shipment.

3.19.30.6. The Contractor shall provide original engine records and shipping documents to the Government Engine Manager upon receipt of an engine within 24 hours of receipt of the engine.

3.19.31. The Contractor shall coordinate all munitions related activities through the Air Force Munitions Accountable Systems Officer (MASO) IAW AFMAN 21-201 Chapter 7 and Attachment 3 and AAFBI 21-201.

3.19.31.1. The Contractor shall provide custody account management support to the Government including the following:

- Complete Custody Account training.
- Ensure compliance with requirements of AF Form 68, Munitions Authorization Record.
- Store, track and protect munitions once issued to the custody account.
- Submit munitions issue request, expenditures and turn-in documentation to the MASO for

processing.

- Maintain packing material to repackage munitions maintained on the custody account.
- Turn-in munitions residue, excess packing material, and containers for munitions assets expended or consumed to the Government for certification or disposition.
- Pick-up and deliver all requested, issued, and turn-in custody munitions to and from the munitions storage area.
- Conduct three quarterly and one annual custody account inventory.

Deliverables:

OT-2019-30004, Munitions Quarterly Inventory

OT-2019-30008, Munitions Operations Expenditures Request

OT-2019-30009, Munitions Issue Request

OT-2019-30010, Munitions Accountability Turn-in Request

OT-2019-30011, Munitions Annual Inventory

OT-2019-30013, Munitions Requirements Forecast

3.19.31.2. The Contractor shall establish written technical data and a Commercial Off-The- Shelf (COTS) munitions purchase request package for each non stock listed munitions asset.

3.19.31.2.1. The Contractor shall perform an annual review and update of the Technical Data Package (TDP) and COTS package to ensure the Interim Hazard Classification (IHC) remains current.

Deliverable:

OT-2019-30012, Munitions Technical Data Package

3.19.31.3. The Contractor shall coordinate all munitions received in support of RDT&E tests customers with the MASO.

3.19.32. Applicable Documents (Mandatory)

DFARS 252.239.7001	Information Assurance Contractor Training and Certification
DoD 4140.25M	DoD Management of Bulk Petroleum Products and Dispensing Systems
DoD 8570	Information Assurance Training, Certification, and Workforce Management
AFI 32-1068	Heating Systems and Unfired Pressure Vessels
AFI 32-7001	Environmental Management
AFI 32-7042	Waste Management
AFI 32-7086	Hazardous Materials Management Plan
AFMAN 33-153	Information Technology (IT) Asset Management (ITAM)

AFI 17-130	Information Assurance Management
AFI 17-101	Air For Certification and Accreditation Program
AFI 21-101 AFMC SUP Addendum A	AIRCRAFT AND EQUIPMENT MAINTENANCE MANAGEMENT
AFI 33-322	Records Management Program
AFI 33-360	Publications and Forms Management
AFMAN 33-363	Management of Records
AFMAN 33-364	Records Disposition Procedures and Responsibilities
AFPD 33-2	Information Assurance Program
AFSSI 300 Series	COMSEC Equipment
AFSSI 400 Series	COMSEC Operation
AFSSI 700 Series	EMSEC/TEMPEST
AFSSI 8500 Series	IA Implementation
AF TO 00-20-14	Air Force Metrology Calibration Program
AF TO 00-25-254-1	COMPREHENSIVE ENGINE MANAGEMENT SYSTEM
AEDC- ENGR-STD-T-1	AEDC Standard Pressure Vessels
AEDC- ENGR-STD- T-2	AEDC Standard Pressure Piping
AEDC- ENGR-STD- T-3	AEDC Standard Engineering Drawing and Drafting Practices
AEDC- ENGR-STD- T-4	AEDC Standard for Procurement Documentation
AEDC- ENGR-STD- T-5	AEDC Standard Welding Practices
AEDC-STD-CM-1	Configuration Management
AEDCI 21-113	Tool Control
AEDCI 21-111	Foreign Object Damage Prevention Program
AEDCI 21-112	Hold and Impoundment
AEDC Supplement to AFTCI 91-202	Test Safety
	AF / NASA ARC Lease Agreement
	AF / GSA Lease Agreement

3.20. STRATEGIC PLANNING

This section defines support to the Government in development of strategic plans.

3.20.1. The Contractor shall support and participate in workshops and meetings for the development of the AEDC Strategic Plan as required/requested.

3.20.2. The Contractor shall provide technical analysis, documentation, and recommend solutions to assist the Government in the development of the RDT&E Facility Investment Plan that covers the period of the FYDP.

The Facility Investment Plan will provide a holistic view of a solution set including the risks and probable impacts to existing AEDC test assets.

Deliverables:

OT-2014-30025 RDTE Facility Investment Plan Data

3.20.2.1. The Contractor shall provide technical analysis, documentation, and recommended solutions to assist the Government in management of the requirements development and validation process.

3.20.2.2. The Contractor shall provide technical analysis to assist the Government in documenting, determining, and validating capability gaps for current and future capabilities.

3.20.2.3. The Contractor shall recommend solutions for meeting future AEDC infrastructure needs.

Proposed solutions should include conducting comparative studies of existing AEDC facilities and capabilities with those of other providers, identifying all Government actions required to enable the proposed solution, performing an economic analysis of identified solutions, developing programming justification and supporting technical documentation, and determining the operational characteristics and acceptance requirements for integrating the solution into AEDC infrastructure.

3.20.3. The Contractor shall assist the Government in future year (FYDP) planning IAW AEDCI 90-700 for the requirements for which they are responsible.

Specific activities in AEDCI 90-700 which the Contractor will assist in / perform include but are not limited to:

- Recommending projects and activities to meet future requirements
- Development of resource requirements for said projects
- Assessing the overall executability of the entire program

3.20.4. Applicable Documents (Mandatory)

AEDCI 90-700	Capabilities Based Planning

3.21. FOREIGN TECHNOLOGY

The research, evaluation, and analysis of developing and in-place technologies in foreign countries is a key aspect in maintaining aerospace technology superiority in test concepts and

facilities while reducing threats to our military and civilian infrastructures. The application of Foreign Technology is in direct alignment to meeting AEDC Strategic Goals.

The requirements defined in Section 3.21 and subparagraphs do not apply to AEDC White Oak or AEDC Moffett Field.

3.21.1. The Contractor shall analyze and compare foreign scientific and technical capabilities using all-source (Top Secret / Sensitive Compartmentalized Information (TS/SCI)) data IAW customer or AEDC Statement of Work.

Performance Standards:

STD: The Technical Report shall meet security marking standards, receive an average of 4.5 on AEDC/XP2 product compliance reports, and be delivered by the due date defined by AEDC/XP2.

Deliverables:

DI-MISC-80711A Scientific and Technical Report

3.21.1.1. The Contractor shall evaluate available information to determine function, design, and performance characteristics for foreign environmental test facilities, other military, and terrorist related infrastructure IAW customer or AEDC Statements of Work.

3.21.1.2. The Contractor shall research foreign weapon development throughout the lifecycle IAW customer or AEDC Statements of Work.

3.21.1.3. The Contractor shall determine the role and forecast trends of environmental facilities for foreign system development and acquisition cycle IAW customer or AEDC Statements of Work.

3.21.1.4. The Contractor shall provide analysis, evaluation, and reporting for foreign chemical weapon capabilities IAW customer or AEDC Statement of Work.

3.21.1.5. The Contractor shall evaluate possible AEDC use of foreign facility test techniques and concepts IAW customer or AEDC Statement of Work.

3.21.1.6. The Contractor shall identify TOS Personnel to be mentored in the Foreign Technology analysis, evaluation, and reporting process.

3.21.1.7. The Contractor shall provide reach back or TOS personnel resources as required for short term, short suspense requirements

3.21.2. The Contractor shall maintain knowledge and update AEDC/XP2 databases of foreign RDT&E capabilities using all-source TS/SCI data.

Deliverables:

OT-2014-30029 Foreign Technology Test Facility Database

3.21.3. The Contractor shall maintain knowledge of Intelligence, Surveillance, and

Reconnaissance (ISR) threats to AEDC operations using all-source data up to the TS/SCI level.

Deliverables:

DI-MISC-80711A Scientific and Technical Report

OT-2014-30029 Foreign Technology Test Facility Database

3.21.4. The Contractor shall provide day-to-day administrative support to the Foreign Technology program and its TS/SCI security requirements, including, but not limited to, security reviews, document reviews, research support, clearance requirements, transmittal of classified information to include use of Defense Courier Service, and document destruction.

3.22. PUBLIC AFFAIRS

Public Affairs (PA) communicates timely, accurate, and useful information about AF activities to DoD, AF, and domestic audiences; builds, maintains and strengthens Airman (military / civilian / contractor) morale and readiness; enhances public trust and support; informs decision makers and communicates requirements, capabilities, actions, and achievements; analyzes effectiveness of communication efforts and adjusts as necessary. Additionally, PA manages the Visual Information functions which provide visual products (photos, videos, and graphics) to support AF communication objectives and historical documentation by producing high-quality products. PA is the steward of the AF's visual history. Efforts at AEDC are conducted in consultation with the AF Chief of PA; however, at AEDC White Oak and AEDC Moffett Field these tasks will be accomplished through coordination with each location's staff.

3.22.1. The Contractor shall acquire, edit, produce, and distribute photos, videos, graphics, and news articles to communicate the activities, capabilities, mission, and accomplishments of AEDC to various audiences.

All tests and significant events at AEDC are typically visually documented for historic and/or investigative purposes and to achieve AF communication objectives. PA products cleared for public release will be distributed in a timely manner to maintain newsworthiness.

3.22.2. The Contractor shall seek public release clearance for AEDC-specific information prior to distribution and archival.

AEDC-specific information bound for public release must be reviewed by AF PA. Release of information products not cleared for public release may result in an information security incident. Contractor's process must be auditable and comply with AFI 35-102, para 5.2.

3.22.3. The Contractor shall ensure the High Mach (base newspaper) is published twice each month and is widely available to AEDC employees and stakeholders at no cost to the Government (civilian enterprise), and arnold.af.mil website content is kept current.

3.22.4. The Contractor shall maintain searchable archive for news clips and all cleared photos, videos, graphics, and information releases created by AEDC employees.

The archive includes all cleared imagery, videos, graphics, news releases and a secure archive of non-cleared products for which clearance was sought. Update databases as material is approved or disapproved for public release.

3.22.5. The Contractor shall provide support to AEDC/PA staff during major events and emergency situations facilitating effective communication with the workforce and general public.

Major events include but are not limited to banquets, open houses, air shows, Science, Technology, Engineering, and Mathematics (STEM) and other Commander initiatives. Activities include, but are not limited to manning EOCs; on- scene escorting of media personnel; alert photo and video documentation; establishing and staffing media operations centers.

3.22.6. The Contractor shall coordinate, organize, and conduct an Arnold AFB tour program consistent with the Commander's community relations program.

Increase public awareness and understanding; support AF & STEM recruiting by inspiring youth; maintain a reputation as a good neighbor. Tour content should be appropriate to the audience, comprehensive and accurate.

3.22.7. The Contractor shall provide professional visual information products and services, including photography, video, graphics, and other products for documenting all test programs, supporting public affairs requirements, supporting historical interests, and facilitating monthly submissions to the AF Media Center.

PA manages the Visual Information functions which provide visual products (photos, videos & graphics) to support AF communication objectives and historical documentation by producing high-quality products. Alert photo & video services supporting security forces, AF OSI, civil engineering, safety office, and other emergency response agencies in addition to day to day support of the Arnold AFB command section, PA office, and history office. PA is the steward of the AF's visual history. These tasks will be accomplished at AEDC White Oak and AEDC Moffett Field through coordination with each location's staff.

3.22.8. The Contractor shall administer the AF Civil Engineering Center (AFCEC) developed environmental community relations plan for Arnold AFB to inform and involve the general public in environmental, occupational health programs, and safety.

3.22.9. Applicable Documents (Mandatory)

AFI 35-102	Security and Policy Review Process, para 5.2

3.23. REAL PROPERTY MANAGEMENT AND ACCOUNTABILITY SERVICES

The Contractor shall plan and execute a Real Property Management program for AEDC Arnold AFB, using the Accountable Property System of Record that maintains compliance with federal, DoD, and AF directives. The Real Property Management program is integral in helping AEDC achieve Strategic Goals.

The Real Property Management program shall comply with AFI 32-9001 - Acquisition of Real Property, AFI 32-9002 - Use of Real Property Facilities, AFI 32-9003 - Granting Temporary Use of Air Force Real Property, AFI 32- 9004 - Disposal of Real Property, AFI 32-9005 - Real Property Accountability and Reporting.

The requirements defined in Section 3.23 and subparagraphs do not apply to AEDC White Oak or AEDC Moffett Field.

3.23.1. The Contractor shall capitalize all construction, or improvements affecting real property accomplished through a capital improvement project or in-house work order above the capitalization threshold (currently $250,000) in the APSR.

Deliverables:

OT-2014-30007 Transfer and Acceptance of Military Real Property

3.23.2. The Contractor shall develop and document a real property inventory plan.

The plan shall ensure that for the life of the contract, 20% of all assets identified in the APSR are inventoried annually and that 33% of all cultural / historical assets identified in APSR are physically inventoried annually.

The real property inventory plan shall also ensure that all real property (land, facility, and RPIE) assets are inventoried within five years and all cultural / historical assets are inventoried within three years.

Deliverables:

OT-2014-30052 Real Property Inventory

3.23.3. The Contractor shall execute the inventory plan including both real property and cultural/historical assets.

Deliverables:

OT-2014-30052 Real Property Inventory

3.23.4. The Contractor shall conduct annual installation boundary inspections.

The Contractor shall:

- Conduct inspections annually of the external boundaries of the AEDC reservation to prevent unauthorized use of federal property:
- Identify all encroachments
- Inspect all markers and signage where permanent markers (survey monuments, pins, etc.) are not in place
- Document the location and extent of encroachment violations
- Record and maintain current geographic information to provide computer-aided mapping of the full external boundary

3.23.5. The Contractor shall perform a compliance inspection for all outgranted real property annually.

The Contractor shall:

- Conduct inspections annually to ensure grantees comply with outgrant terms and conditions and document the results of these inspections in the APSR and in the Real Estate Records

3.23.6. Applicable Documents (Mandatory)

AFI 32-9001	Acquisition of Real Property
AFI 32-9002	Use of Real Property Facilities
AFI 32-9003	Granting Temporary Use of Air Force Real Property
AFI 32-9004	Disposal of Real Property
AFI 32-9005	Real Property Accountability and Reporting

3.24. CONTINUOUS IMPROVEMENT PROGRAM

3.24.1. The Contractor shall administer, deliver, and utilize documented, disciplined, mature, and continuously improving processes for key AEDC functions.

3.24.2. The Contractor shall use a documented, disciplined, and mature life cycle management process for appropriate base-wide activities.

3.24.3. The Contractor shall make recommendations to the Government for tailoring, implementation, and improvement of Systems Engineering for the technical management of AEDC assets in all PWS elements.

3.24.4. The Contractor shall instill a culture of continuous process improvement for the AEDC workforce.

Goals are a culture to reduce costs, improve quality, and reduce cycle time.

3.25. INTEGRATED PERFORMANCE MANAGEMENT PROGRAM

The Contractor shall utilize an integrated performance management program for all PWS elements. This program is to verify and measure performance in order to ensure delivery of proposed results, support management and decision making, facilitate communications, and motivate high performance through use of key performance measures.

3.25.1. The Contractor shall measure and validate results and account for fluctuating workloads.

The Contractor shall:

- Utilize the RLIS to develop short term and long term forecasts as well as track actuals

against those to support performance measurement of resources.

3.25.2. The Contractor shall measure effectiveness of response actions to validate performance improvement.

The Contractor shall:

- Perform graphical and/or statistical analysis to validate performance improvement

3.25.3. The Contractor shall provide an earned value management system.

The Contractor shall provide Earned Value Management Data. While the requirement to perform EVM on the entire contract has been deviated, the Government still requires EVM on selected projects. The EVM data shall be provided for both multiple year and fiscal year tracking and include data for trend analysis.

Deliverables:

DI-MGMT-81861 IPMR

3.25.4. The Contractor shall provide access to their performance management system to the Government, to include real-time access to their performance measures.

The Contractor shall:

- Establish a real-time electronic Dashboard of agreed-to metrics such as cost, schedule, quality, safety, risk, and test operations data and information, that is available to the Government

3.25.5. The Contractor shall maintain a Quality Control Program to ensure services are performed IAW this PWS.

The Contractor shall develop and implement processes and procedures to prevent delivery of defective services. In addition, the Contractor shall develop a methodology to measure performance of the Contractor's tasks, processes, and output as well as drive and measure continuous improvement.

The Contractor shall:

- Implement an ISO-9001 certified quality management system (QMS)
- Establish a People Based Quality (PBQ) employee-based team
- Develop and communicate Quality Absolutes to the entire project via multiple forms of media

Deliverables:

OT-2014-30107 Quality Program Plan

3.26. INNOVATIONS AND EFFICIENCIES

3.26.1. The Contractor shall implement Innovations and Efficiencies as described in section 4.0 of their proposal.

Performance Standards: Relative to the Government's FY 2016 Baseline:

STD: The Contractor shall realize proposed Level Of Effort (LOE) reductions relative to the workload on an annual basis as defined in the proposal. The Contractor shall coordinate and obtain Government approval prior to implementing changes in staffing levels on an annual basis.

Deliverables:

OT-2016-30045 Progress Report Toward Initiative Goals

4.0 SPECIAL REQUIREMENTS

This section describes the special requirements for this effort. The following subparagraphs provide details of various considerations on this effort.

4.1. GOVERNMENT FURNISHED MATERIALS

Covered in Clause H111

4.2. APPLICABLE DIRECTIVES

Covered in Clause H100

5.0 ACRONYMS

ACA	Associate Contractor Agreement
ACAS	Assured Compliance Assessment Solution
ACB	Associate Contractor Board
ACES-PM	Automated Civil Engineer System-Project Management
ACES-RP	Automated Civil Engineer System-Real Property
AEDC	Arnold Engineering Development Complex
AEDCI	AEDC Instruction
AEDCOI	AEDC Operating Instruction
AEDC SE	AEDC Systems Engineering
AF	Air Force
AFCAP	Air Force Certification and Accreditation Program
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFMETCAL	Air Force Metrology and Calibration

AF-NNSA	Air Force-National Nuclear Security Administration
AF-PM	Air Force Project Manager
AFTC	Air Force Test Center
AIHA	American Industrial Hygiene Association
AMS	Aerospace Material Specifications
ANSI	American National Standards Institute
AQL	Acceptable Quality Level
ARC	Ames Research Center
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASR	Alternative System Review
ASTM	American Society for Testing and Materials
ATMSS	AEDC Test Mission Support System
ATO	Authority to Operate
AWS	American Welding Society
AWWA	American Water Works Association
BIS	Business Information System
BLCC	Building Life Cycle Cost
BMAR	Base Support Asset Backlog Maintenance and Repair
C&A	Certification and Accreditation
CAD	Computer Aided Design
CARA	Capability Analysis and Risk Assessment
CAS	Contractor Assurance System
CAT	Crisis Action Team
CBA	Collective Bargaining Agreement
CBM	Condition Based Maintenance
CDRL	Contract Data Requirements List
CI	Counterintelligence
CIAR	Counterintelligence Awareness and Reporting
CIP	Common Installation Picture
CIVR	Configuration Item Verification Review
CM	Configuration Management
CMMS	Computerized Maintenance Management System
CMS	Calibration and Measurement Summary
COMSEC	Communications Security

COTS	Commercial-off-the-Shelf
CPAF	Cost Plus Award Fee
CPI	Critical Program Information
CPMP	Comprehensive Program Management Plan
CS	Control Schedule
CS/IA	Cyber Security / Information Assurance
CSSP	Cyber Security Service Provider
CTEIP	Centralized Test and Evaluation Improvement Program
CTF	Combined Test Force
CTS	Consolidated Test System
CUI	Controlled Unclassified Information
DART	Days Away Restricted or Transferred
DaVE	Developing and Versioning Environment
DCMA	Defense Contract Management Agency
DGM	Deputy General Manager
DIA	Defense Intelligence Agency
DIACAP	Department of Defense Information Assurance Certification and Accreditation Process
DIB	Defense Industrial Base
DID	Data Item Description
DJSIG	Joint Security Implementation Guide
DLA	Defense Logistics Agency
DLA-E	Defense Logistics Agency – Energy
DNI	Director of National Intelligence
DoD	Department of Defense
DoDIIS	DoD Intelligence Information System
DREN	Defense Research and Engineering Network
DRF	Disaster Response Force
DCSA	Defense Counterintelligence and Security Agency
DISS	Defense Information Security system
EEIC	Element of Expense Identification Code
EISA	Energy Independence and Security Act
EM	Emergency Management
EMP	Equipment Maintenance Plans
EMS	Environmental Management System
EMSEC	Emissions Security

EOC	Emergency Operations Center
E-OMS	Eglin AFB, Operations and Maintenance Services
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
ERDC-CERL	US Army Corps of Engineers: Engineer Research and Development Center – Construction Engineering Research Laboratory
ERPUD	Elk River Public Utility District
ESOHC	Environmental, Safety, and Occupational Health Council
ETL	Engineering Technical Letter
EVM	Earned Value Management
EVMS	Earned Value Management System
FBI	Federal Bureau of Investigation
FCL	Facility Clearance
FMEA	Failure Modes and Effects Analysis
FMECA	Failure, Modes, Effects and Criticality Analyses
FMFIA	Federal Managers' Financial Integrity Act
FOCI	Foreign Ownership, Control, or Influence
FOD	Foreign Object Damage
FOUO	For Official Use Only
FPA	Fuels Property Administrator
FSC	Fuels Service Center
FSO	Facility Security Officer
FSS	Facility Support Services
FTE	Full-Time Equivalent
FYDP	Future Years Defense Program
GFE GIO	Government Furnished Equipment Geo-Integration Office
GIS	Geographic Information System
GOTS	Government-Off-The Shelf
GPCP	Government Property Control Plan
GSA	General Services Administration
GSU	Geographically Separated Unit
HBSS	Host Based Security System
HMI	Human Machine Interface
HPC	High Performance Computing
HVAC	Heating, Ventilation, and Air Conditioning
I&M	Improvement and Modernization
IA	Information Assurance
IAW	In Accordance With

ID&C	Instrumentation, Data, and Controls
IH	Industrial Health
IMS	Integrated Master Schedule
IPMR	Integrated Program Management Report
IPT	Integrated Product Team
ISI	In-Service Inspections
ISR	Intelligence, Surveillance and Reconnaissance
ITAR	International Traffic in Arms Regulations
ITIL	Information Technology Infrastructure Library
ITIP	Integrated Technology Investment Plan
IUID	Item Unique Identification
IWT	Integrated Work Plan
JAFAN	Joint Air Force – Army – Navy
JCIDS	Joint Capabilities Integration and Development System
JCS REPOL	Joint Chiefs of Staff Petroleum Damage Deficiency Report
JOAP	Joint Oil Analysis Program
JSIG	Joint Security Implementation Guide
JWICS	Joint Worldwide Intelligence Communications System
KPI	Key Performance Indicators
LCM	Life Cycle Management
LDDT	Lost, Damaged, Destroyed, Theft
LIN	Liquid Nitrogen
LOE	Level of Effort
LOX	Liquid Oxygen
LOTO	Lock Out / Tag Out
LSS	Lean Six Sigma
LTT	Lost Test Time
MAJCOM	Major Command
MCTL	Military Critical Technologies List
MDR	Mandatory Declassification Review
MDS	Mission Data Sets
MICT	Management Internal Control Toolkit
MILCON	Military Construction Projects
MIS	Management Information System
MRTFB	Major Range and Test Facility Base
NAICS	North American Industry Classification System
NAS	National Aerospace Solutions, LLC

NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NDE	Nondestructive Examination
NFAC	National Full Scale Aerodynamics Complex
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NISP	National Industrial Security Program
NIST	National Institute of Standards and Technology
NLT	Not Later Than
NSMS OEM	Non-contact Stress Measurement System Original Equipment
ODCs	Other Direct Costs
OEM	Original Equipment Manufacturer
OH	Occupational Health
OMAG	Operations Management Advisory Group
OMB	Office of Management and Budget
OMIMS	Operations, Maintenance, Information Management, and Support
OPSEC	Operations Security
OSH	Operational Shift Hours
OSHA	Occupational Safety and Health Administration
OSI	Office of Special Investigations
OWAM	Oracle Work and Asset Management
PA	Public Affairs
P&ID	Piping and Instrumentation Diagram
PBQ	People Based Quality
PCL	Personal Clearance
PCS	Property Control System
PdM	Predictive Maintenance
PHMS	Pressure and Hazardous Material System
PLC	Programmable Logic Controller
PM	Proactive Maintenance
PMEL	Precision Measurement Equipment Laboratory
POC	Point of Contact
PPE	Personal Protective Equipment
PQR	Procedure Qualification Record
PRF	Propulsion Research Facility
PRS	Performance Requirements Summary

PSF	PeopleSoft Financials
PTC	Pressure Technology Code
PTT	Productive Test Time
PWS	Performance Work Statement
QMS	Quality Management System
RAMP	Requirements and Analysis Management Plan
R&R	Replacement And Renewal
RCM	Reliability Centered Maintenance
RDA	Research, Development, and Acquisition
RDT&E	Research, Development, Test, and Evaluation
RLIS	Resource Loaded Integrated Schedule
RMF	Risk Management Framework
ROM	Rough Order of Magnitude
RPIE	Real Property Installed Equipment
RTM	Requirements Traceability Matrix
RWP	Recurring Work Program
SAP	Special Access Program
SBIR	Small Business Innovative Research
SCG	Security Classification Guide
SCI	Sensitive Compartmented Information
SCI SDSFIE	Sensitive Compartmented Information Spatial Data Standards for Facilities, Infrastructure, and Environment
SCM	Security Classification Manual
SDREN	Secret Defense Research and Engineering Network
SE	Systems Engineering
SEI	Special Experience Identifier
SHE	Safety, Health, and Environmental
SIPRNet	Secret Internet Protocol Router Network
S&M	Space & Missiles
SME	Subject Matter Expert
SMS	Sustainment Management System
SOC	Statement of Capability
SOO	Statement of Objectives
SRB	Safety Review Board
SRM	Sustainment, Restoration, and Modernization
SSA	Servicing Security Activity

STEM	Scientific, Technical, Engineering, and Mathematics
STIG	Security Technical Implementation Guide
STINFO	Scientific and Technical Information
STIP	Scientific and Technical Information Program
STR	Subcontractor Technical Representative
S/W	Software
T&E	Test and Evaluation
TCNO	Time Compliance Network Order
TDEC	Tennessee Department of Environment and Conservation
TM	Terminal Manager
TMDE	Test, Measurement, and Diagnostic Equipment
TO	Technical Order
TOS	Test Operations and Sustainment
TRIR	Technical Receiving Inspection Report
TRR	Test Readiness Review
TSN	Trusted Systems and Networks
TS/SCI	Top Secret / Sensitive Compartmented Information
TSS	Test Systems Sustainment
TVIC	Tennessee Valley Industrial Committee
UCNI	Unclassified Controlled Nuclear Information
UMCS	Utility Monitoring & Control Systems
UOS&D	Unsatisfactory, Overage, Satisfactory, Damaged
USAF	United States Air Force
UTSI	University of Tennessee Space Institute
VCOE	Virtual Center of Excellence
VGSA	Visitor Group Security Agreements
WAM	Oracle Work Asset Management
WBS	Work Breakdown Structure
WCO	Wing Cybersecurity Office
WPQ	Welder Performance Qualification

6.0 DELIVERABLES

The contractor shall provide the following deliverables as described in the format and delivery schedule for deliverables are outlined in CDRLs.

Identifier	Name	Description
DI-MISC-80228	Pest Control Summary Report	Report consists of information on the Pest Management Program and pesticide use
DI-MISC-80711A	Scientific and Technical Report	Report comparing foreign systems based on all-source classified data
DI-MGMT-81861	Integrated Program Management Report	Monthly, Hours and Dollars, Selected Individual Projects at Government Direction. Both multi-year and fiscal year reports / analysis required for selected projects.
DI-NDTI-80566A	Test Plan	Outlines the plans and performance objectives at every level of testing on systems or equipment
DI-QCIC- 80278B	Calibration Measurement Summary	Identifies and validates the adequacy of TMDE and the need for calibration standards and equipment
OT-2014-30000	Personnel Strength Report	This report will be used by the Government to track hiring and termination trends, personnel employed by pay category and organization, and payroll additions/deletions
OT-2014-30001	Wage and Salary Management Plan	This report will be used by the Government to ensure the Contractor maintains a qualified work force able to perform the broad spectrum of functions necessary to operate, support, maintain, and improve AEDC
OT-2014-30002	As-built Documentation	This document is used to establish the as-built configuration of AEDC assets installed or modified as identified by the project plan
OT-2014-30003	Construction Inspection Record	This record documents the results of construction project inspections performed on site during the project's execution phase
OT-2014-30004	Project Change Agreement	This document submits proposed changes in scope for a project prior to execution of the new or revised scope
OT-2014-30005	Project Review Comments	Obtains information for review, evaluation, and management of individual projects and programs
OT-2014-30006	Technical Data Package	Defines a complete plan of work to be accomplished in performance of an authorized project or program
OT-2014-30007	Transfer and Acceptance of Military Real Property	Notifies the Government that a specific project is complete and that Military Real Property is ready for transfer to Government records
OT-2014-30011	Technical Manuals	Consists of the information created or obtained during a capital improvement or maintenance project that is required for maintenance, repair, operation or use of the facility or equipment
OT-2014-30012	RDT&E Program and Project Management Plan Data	Describes the cost, schedule and technical performance requirements for successful project completion
OT-2014-30013	Schedule deviation report	Electronic report listing all deviations between the approved 2-week integrated schedule and actual test operations for the same week

OT-2014-30015	90-day Outage Report	Report forecasting all scheduled / approved outages for a rolling 90-day period
OT-2014-30016	Qualification / Certification report	Electronic Operator / maintainer qualification report
OT-2014-30018A	Operations and Maintenance Work Instructions	Documents the procedures the Contractor uses to operate and maintain AEDC assets
OT-2014-30019	SBIR topic candidate list	Identifies SBIR topic candidates
OT-2014-30020	Integrated Schedule	This schedule incorporates a daily, 2-week, 90-day, annual and strategic (5-7 year) outlook. It includes all work activities: test, maintenance, capital improvements, and other support activities such as Base Civil engineering.
OT-2014-30021	Daily Operating Time Log	Documents the activities that occurred in a scheduled test unit
OT-2014-30022	PHMS Deficiencies Correction Report	Documents TOS Contractor response to deficiencies noted in PHMS Evaluation report
OT-2014-30023	ITIP Candidate Topic List	Provides a long-term plan for technology investment topics
OT-2014-30024	Annual Statement of Assurance	Annual Statement of Assurance of the adequacy of internal controls
OT-2014-30025	RDTE Facility Investment Plan Data	Used to develop a six-year projection of work requirements so that appropriate planning and programming can be performed to quantify future funding and manpower requirements for RDT&E assets
OT-2014-30026	Technology Progress Report	Used to inform AEDC management of the technology developments and accomplishments from the previous period
OT-2014-30027	Rough Order of Magnitude Estimate	Provides the assumptions, estimated project duration or start and end dates, cost by category (e.g. labor, utilities, materials, etc.)
OT-2014-30028	Asset Condition Assessment	Provides data regarding the health of RDT&E assets to assist in the identification of sustainment needs
OT-2014-30029	Foreign Technology Test Facility Database	Contains the characteristics and capabilities of worldwide test facilities and is maintained at the Top Secret/SCI level
OT-2014-30031	Monthly Chemistry Laboratory Report	Provides data on the performance and progress of the work performed in the Chemistry Laboratory
OT-2014-30032	Monthly Machine and Fabrication Report	Provides data on the performance and progress of the work performed in the machine and fabrication areas
OT-2014-30033	Monthly Material Testing and Welding Report	Provides data on analyses performed
OT-2014-30034	SCI Accredited Area Standard Operating Procedure	SCI/SAP Security Standard Operating Procedures for each SCI accredited area
OT-2014-30035	SCI Certification and Accreditation Package	Certification and Accreditation package for each SCI system
OT-2014-30036	SCI Accreditation package	Accreditation package for each SCI accredited area, including TEMPEST
OT-2014-30037	SCI Test Security Plan	SCI Test Security Plan for each SCI/SAP test

OT-2014-30038	Shop and Laboratory Management Plan	Provides the information necessary to plan and execute machine/fabrication, and laboratory lifecycle sustainment
OT-2014-30039	Test Unit Status Log	Provides a real-time status of work activities that affect the operational capability and readiness of the test unit
OT-2014-30040	Monthly Test Measurement and Diagnostic (TMDE)	Provides data on the performance and progress of the work performed in the management of TMDE
OT-2014-30041	Injury Mishap Report	Injury / Property Damage Summary
OT-2014-30043	Financial Management Reports	Provides the ability to manage contract cost. Production of these reports relies on the Contractor's ability to populate data on the Government- Provided Management Information System.
OT-2014-30044	Technical Reports	AEDC technical reports for the following types: Quick Look Report, Letter Report and Technical Report IAW AEDCOI 90-10
OT-2014-30045	Test Period Run Plan	Outlines the required facility simulation requirement, test article configuration and setting, data acquisition systems requirements, and estimates for consumables required to conduct a test period
OT-2014-30046	Maintenance Management Information	Provides information to facilitate maintenance management including: work management, asset management, inventory management, configuration management, purchasing, and financial accounting
OT-2014-30047	Title V Major Source Operations Log	Used to maintain current AEDC Air Program data in the APIMS
OT-2014-30048	SOC Report	Describes the report format for cost, schedule, and technical performance requirements necessary to complete a test project at the project phase level
OT-2014-30049	Test and Analysis Project Plan	Provides detailed information on all the resource requirements necessary to accomplish a test project
OT-2014-30050	RDT&E Asset Sustainment Program Analysis Report	Provides the Government with data analysis on the performance and progress of the Sustainment program
OT-2014-30052	Real Property Inventory	Used to establish a record and validate the use of all Real Property and RPIE
OT-2014-30053	Test Article Activity Log	Provides a real-time status and history of work activities that affect the readiness of test articles and test article support system interfaces
OT-2014-30054	Utility Forecast	Used to notify local companies of the utility requirements needed to support Test and Base operations

OT-2014-30055	Integrated Pest Management Plan	Provides a five-year integrated pest management plan for AEDC facilities
OT-2014-30056	Base Support Asset Sustainment Program Plan	Used to establish a seven- year projection of work requirements (FYDP+2)
OT-2014-30057	Military Construction Project Data	Used to plan and execute MILCON and Test Facility Acquisition Programs
OT-2014-30058	Requirements and Analysis Management Plan (RAMP)	Provides the project construction plan for Construction projects Military
OT-2014-30059	Requirements Document	Provides technical, management, schedule, and cost data for the construction requirements for Military Construction projects
OT-2014-30060	Integrated RDT&E Asset Management Plan	Provides the information necessary to plan and execute the lifecycle operation and sustainment of AEDC's RDT&E assets
OT-2014-30107	Quality Program Plan	This plan is used to provide a methodology prevent delivery of defective services and to measure performance of the Contractor's tasks, processes, and output
OT-2014-30109	Pre-Task Checklist	Documents the Weapons Safety Program and provides the minimum requirements to establish and maintain a limited Weapons Safety Program
OT-2014-30111	Safety Program Management Plan	This plan is used to establish a baseline of expectations for work and Contractor performance for the reporting period
OT-2016-30045	Progress Report Toward Initiate Goals	Used to capture results of an agreed upon implementation plan of NAS innovations and efficiencies
OT-2016-30046	Acquisition Self-Assessment Report	Provides data regarding the self-assessment program that assesses the quality or character of acquisition files as well as ensuring compliance to established procedures
OT-2016-30047	Sustainment Status Transition Plan	Used to garner Government approval for all continuous improvements being considered for a change in Sustainment Status.
OT-2016-30048	PM Waiver – Deferral Request	Required to be submitted to the Government to obtain a waiver for all deferred maintenance (preventative and predictive)
OT-2016-30049	Procedures	Used to document procedures the contractor uses to perform work at AEDC
OT-2016-30050	Guidelines	Used to document guidance information that may assist in accomplishing work at AEDC
OT-2016-30052	PHMS Project Plan	Provides information necessary to support project certification review and approval
OT-2016-30053	PHMS Evaluation Report	Documents the results of the contractor's inspections and analysis of the system being certified.
OT-2016-30055	PHMS In-Service Inspection Plan	Documents the contractor's recommended NDE inspections and intervals which are required to maintain system certification

OT-2017-30008	ID&C Monthly PMR Charts	To provide a consolidate project management view of the overall health of TSDI directed projects
OT-2017-30009	ID&C Monthly CSSR Report	To provide high level program management level cost, schedule, and status reporting to the TSDI Air Force PM
OT-2017-30010	Software License Management Quarterly Report	To document, maintain and manage software license usage across AEDC
OT-2017-30011	Software License Management Annual Inventory	To document, maintain and manage software license usage across AEDC
OT-2017-30012	ID&C Progress Report	To provide weekly insight into the execution of projects directed by the TSDI Air Force Project Managers
OT-2017-30013	Protected Distribution System Documentation	To ensure compliance with the Air Force Protected Distribution System program
OT-2017-30014	Monthly Critical Spare Parts List	To manage the availability of ID&C components for mechanical and operational assets
OT-2017-30015	ID&C Monthly Unfunded Requirements Report	To assist in determining capability gaps for current and future mission requirements within the ID&C
OT-2017-30016	ID&C Morning Report	To provide a daily status of ID&C assets and mechanical assets
OT-2017-30017	EMSEC Documentation and Report	To ensure compliance with Air Force Emission Communications Security program
OT-2017-30018	NIST Traceable Certificates	Manage the National Institute of Standards and Technology (NIST)'s Traceable Certificates
OT-2017-30019	ID&C Enterprise Integrated Resource Schedule	To provide the ID&C Air Force Project Managers necessary insight into program level coordination
OT-2017-30020	ID&C Project Schedule	Provides detailed, resource loaded, project schedules for ID&C Enterprise and other required projects
OT-2017-30024	Checklists	Used where it is impractical for the work performer to sign off each action as it is performed such as when a series of actions must be performed in a short period of time or when a series of actions is repeated multiple times in a test period.
OT-2017-30028	Government Contractor Acquired Property List	Provides the Air Force with a list of all equipment/property purchased by the contractor
OT-2017-30029	Calibration Instructions	Used to document calibration methodology for classes of test, measurement, and diagnostic equipment (TMDE) based on measurement function
OT-2017-30030	FOD-DOD Final Report	Used to document final investigations of Foreign Object Damage (FOD) and Domestic Object Damage (DOD) events

OT-2017-30031	FOD-DOD Event Data	Used to document Foreign Object (FO), Foreign Object Damage (FOD), Domestic Object (DO), and Domestic Object Damage (DoD) events
OT-2017-30032	FOD-DOD Initial Report	Used to provide initial reporting of Foreign Object Damage (FOD) and Domestic Object Damage (DOD) events
OT-2017-30033	Antiterrorism Training Certificates	Used to validate completion of required training for all appointed Antiterrorism Representatives
OT-2017-30034	Antiterrorism Representative Appointment Letters	Used to ensure compliance with Antiterrorism (AT) Program requirements and identify facility points of contacts to occupants and the Installation Antiterrorism Officer
OT-2017-30035	Facility Antiterrorism Plans	Used to ensure compliance with Antiterrorism Representative Program requirements and to define facility-specific work instructions for Antiterrorism Program implementation
OT-2017-30040	Engine Blade Blend Report	Used to document blade repairs made on turbine engines.
OT-2017-30041	Engine Borescope Inspection Report	Used to document borescope inspections of turbine engines. This data is required to be maintained as permanent engine records
OT-2017-30042	Engine Log	Used to document turbine engine operation and maintenance data that are used as input to the Air Force Comprehensive Engine Management System
OT-2017-30043	Equipment Maintenance Plan	Used to document the maintenance strategy for the system
OT-2017-30045	PM Program Change Request	Used to document recommended changes to the proactive maintenance program and will obtain Government approval
OT-2018-30120	Workload Revision Files	Used to validate, coordinate, and receive approval for workload revisions.
OT-2019-30004	Munitions Quarterly Inventory	Used to document the quarterly munitions inventory
OT-2019-30008	Munitions Operations Expenditures Request	Used to document munitions operations expenditures
OT-2019-30009	Munitions Issue Request	Used to document munitions asset issue requests
OT-2019-30010	Munitions Accountability Turn-in Request	Used to document the return of all excess, restricted, or suspended munitions assets to the Department of Defense Activity Address Code (DoDAAC) stock record account
OT-2019-30011	Munitions Annual Inventory	Used to document the annual munitions inventory the contractor performs on the munitions custody account

OT-2019-30012	Munitions Technical Data Package	Used to document the technical data for munitions assets
OT-2019-30013	Munitions Requirements Forecast	Used to document munitions requirements forecasts for all munitions assets on the custody account that is established to receive, manage, and expend munitions
OT-2020-30001	Monthly RAM Reports	Used to validate completion of required facility checks

7.0 PERFORMANCE REQUIREMENTS SUMMARY (PRS)

Statements		Standards/AQLs	Method of Performance Assessment
3.4.1	The Contractor shall manage the integrated scheduling process for test, maintenance, and all support activities	a) STD: 90% or greater test scheduling effectiveness b) STD: 90% or greater outage scheduling effectiveness	Review Schedule Deviation Report and approved schedule
3.5.1.9.1	The Contractor shall enter data in the CMMS including findings and specific work performed/not performed	a) STD: PM Schedule Compliance > 90% b) STD: PM Schedule Compliance > 95% (Test Utilities) c) STD: PdM Schedule Compliance > 90% d) STD: Proactive Maintenance Ratio > 80%	Review and validate PM Schedule Compliance, PdM Schedule Compliance, and Proactive Maintenance Ratio data documented monthly in quarterly in CDRL OT-2014-30050
3.6.2	The Contractor shall document, manage, and maintain ALL existing, newly developed, and revised / re-engineered AEDC software using the Government provided version control system, Developing and Versioning Environment (DaVE)	STD: 100% of software used in production systems is under configuration control in DaVE, or has a documented and Government-approved waiver	Random audit of software repository

3.6.9	The contractor shall plan and track program / project cost, schedule, technical performance, and approved project changes during execution	STD: Complete the project scope within +/-10%, excluding contingency, for cost and schedule. This performance standard, as defined, applies to project estimates provided to the Government.	Periodic Project and Financial Status Reviews
3.6.11	The Contractor shall develop and maintain the unclassified AEDC Defense Research and Engineering Network (DREN), Public Affairs networks, and the classified Secret Defense Research and Engineering Network (SDREN) and JWICS networks to include all local infrastructure and systems which use these	a) STD: Remain compliant with HPC Cyber Security Support Provider (CSSP) requirements. Report status of compliance to WCO Weekly b) STD: Network availability maintained at 99.6% or higher.	a) Weekly compliance report b) Monthly review of network availability.
	networks. The support shall include system administration, vulnerability and patch management**,** STIG compliance and all activities required in accordance with DoDI 8510.01, Risk Management Framework; DoDI 8500.01,*Cyber Security*, AFPD 17-1, *Information Dominance*		
3.6.13.7	The contactor shall identify and evaluate options to automate business system processes to allow for automated data entry to improve overall efficiencies of operations.	STD: All business systems shall be maintained to be no more than two versions behind the most current released software version	Review of software version every three months

3.6.15	The Contractor shall ensure Cybersecurity requirements are consistently evaluated and met for IT systems and IT Networks	a) STD: Obtain and maintain a minimum vulnerability index score of <= 1.5 vulnerabilities per host (minimal or no concern) with a minimum of 95% credentialed scan results monthly on IT systems and IT Networks full ACAS credentialed scans. Report Weekly ACAS and HBSS status to AEDC WCO.	a) Weekly Full ACAS System Scans
		b) STD: Substantiate a 90% STIG compliance rate of minimal or no concern within each asset category (e.g., Server, Workstation Switch, Router, Printer, Application, etc.) for each three month period, or within one month after a STIG change is promulgated. Report Status Quarterly to WCO.	b) Review of STIG compliance on a three month cycle
		c) STD: Obtain and maintain a minimum score of "Excellent" (80% or higher) on any CSSP Inspection, or other cybersecurity-focused inspection, evaluation, or assessment (announced or unannounced, e.g. MICT) IT systems and IT Networks.	c) Review at each Inspection
		d) STD: Maintain Approval to Operate on Public Affairs on all IT systems and IT Networks from respective Authorizing Official (e.g. AFMC, SAP, DIA, PA) 100% of the time.	d) Routine review of systems at assigned due date
		e) STD: All IT systems and IT Networks A&A packages submitted to the WCO 150 calendar days prior to expiration for coordination/quality review, and submitted to the Authorizing Officer (AO) for approval 120 calendar days prior to expiration date.	e) Routine review of systems at assigned due date

		f) STD: A&A package submissions will adhere to respective AO guidance for processing and timeline.	f) Routine review of systems at assigned due date
3.6.16	The Contractor shall resolve customer service tickets in accordance with priorities and response times as defined in Appendix E. For Tickets which require modification of Business System applications or other IT/ID&C assets must be documented as a Change Request in accordance with AEDC-STD-CM-1.	a) STD: At least 85% of all trouble tickets opened prior to or within the month are initiated and resolved within business hour timeframes defined in Appendix E. b) STD: The remaining 15% of trouble tickets are completed no later than the next lower priority unless otherwise authorized and documented before the timeline is exceeded. c) STD: Priority #4 tickets shall not exceed 15 business days.	a) Monthly Comparison of Time of Request and Time Ticket created in remedy b) Monthly Evaluation of Remedy Tickets c) Monthly Evaluation of Remedy Tickets
3.8.1.3	The Contractor shall execute or support execution of capital improvement programs or projects, from need development through project completion, as indicated in the project plan	a) STD: Meet all negotiated milestone and delivery dates for Test Mission Support (ID&C) Projects b) STD: Meet all negotiated milestone and delivery dates for General Support Projects c) STD: Meet all negotiated milestone and delivery dates for Base Support Projects	Random inspections
3.11.3.1	The Contractor shall execute and track preventive and emergency corrective maintenance and all other scheduled sustainment work for AEDC base support assets IAW the work prioritization system provided in AFI 32-1001	a) STD: 95% of preventive maintenance completed by required completion date b) STD: 100% of Emergency Work Requests responded to and closed out within 24 hours	Periodic review of Maintenance Management Information

3.14.1	The Contractor shall implement the AEDC Contractor mishap prevention program	a) STD: Zero Class A or B injury or chargeable property mishaps. b) STD: Zero chargeable Class C property damage mishaps. c) STD: Develop a Corrective Action Plan for any Class D/E property damage mishap within 30 calendar days of the incident. d) STD: Injury rates at or below TRIR and DART per NAICS code assigned.	Review Injury Mishap Report
3.15.1	The Contractor shall provide SCI Security support to the Government Special Security Office in managing, administering, and sustaining all aspects of an SCI security program compliant with all applicable DoD, AF, and Director of National Intelligence (DNI) directives	STD: Receive an average rating of 4.5 on the AEDC Government SCI Security Office evaluation criteria with no single rating less than 3.0	Review Government SCI Security Office evaluations
3.15.2	The Contractor shall provide IA support, technical support, and system administration support to the Government SCI IA Office in managing, administering, and sustaining an SCI IA Program compliant with all applicable DoD, AF, and DNI requirements	STD: Receive an average rating of 4.5 on the AEDC Government SCI IA Office evaluation criteria with no single rating less than 3.0	Review Government SCI Security Office evaluations

3.18.10.1	The Contractor shall implement an effective Information Protection and Industrial Security Program IAW DoDM 5220.22-M, requirements of the solicitation as noted on the DD Form 254, DoD Contract Security Classification Specification and respective Contractor Visitor Group Security Agreements (VGSA).	a) STD: No loss of classified and no security violations that result in a compromise b) STD: Achieve no less than a Satisfactory rating on all security reviews, inspections, audits, and vulnerability assessments.	a) Review of security inquiry and/or investigative reports b) Annual Inspections
3.19.4	The Contractor shall implement and manage a tool control program for designated areas IAW AEDCI 21-113 Tool Control	a) STD: 100% pass rate on tool stewardship audits performed by the Government - No more than one major discrepancy allowed and no more than two minor discrepancies per 50 tools allowed for a pass on a tool stewardship audit as documented on AEDC Form 822 b) STD: No unauthorized tools found	Random tool audits
3.19.5.1	The Contractor shall comply with all requirements in AEDCI 21-111, Paragraph 2.8.Damage Prevention Program	STD: FOD Prevention Program Score > 90	Review CDRLs OT-2017-30030 Final FOD Event Report and OT-2017-30031 FOD Historical Database. Perform independent Government analysis and assessment of event and evaluate events against established scoring criteria

3.19.18.	The Contractor shall coordinate all software license purchases and renewals with the Government Configuration Management / Software License management office IAW AFMAN 17-1203-153 Information Technology (IT) Asset Management (ITAM). Software inventories are considered a 100%, exhaustive, inventory of all software held or residing all hardware.	a) No unauthorized software or unlicensed software shall be allowed on systems under this contract. b) Discrepancies shall be resolved within 6 months.	Periodic audits of licenses installed

3.19.19	The Contractor shall implement AF IA requirements as identified in: AFPD 33-2, Information Assurance Program, AFI 17-130, Information Assurance Management including all tasks and directives identified therein including, but not limited to; AFSSI 3000 Series – COMSEC Equipment, AFSSI 400 Series – COMSEC Operation, AFSSI 700 Series EMSEC/TEMPEST, and 8500 Series – IA Implementation or their replacements on all test systems and networks. This includes all applicable TOs. National and DoD level documents shall be used as mandatory directives in lieu of, or in addition to AF directives, as appropriate	a) STD: Zero compromises b) STD: 90% of systems in use must have an approved Authority to Operate (ATO)	Periodic review of the database(s)
3.21.1	The Contractor shall analyze and compare foreign scientific and technical capabilities using all-source (Top Secret / Sensitive Compartmentalized Information (TS/SCI)) data IAW customer or AEDC Statement of Work	STD: The Technical Report shall meet security marking standards, receive an average of 4.5 on AEDC/XP2 product compliance reports, and be delivered by the due date defined by AEDC/XP2	Review technical and compliance reports

3.26.1	The Contractor shall implement Innovations and Efficiencies as described in Section 4.0 of their proposal	Relative to the Government's FY 2016 Baseline: STD: The Contractor shall realize proposed Level Of Effort (LOE) reductions relative to the workload on an annual basis as defined in the proposal. The Contractor shall coordinate and obtain Government approval prior to implementing changes in staffing levels on an annual basis.	Periodic review of Contractor provided results

8.0. APPLICABLE DOCUMENTS MANDATORY

APPLICABLE DOCUMENTS MANDATORY	
IDENTIFIER	**TITLE**
	AEDC System Engineering Handbook
	AF/GSA Lease Agreement
	AF/NASA ARC Lease Agreement
EPAct 2005	Energy Policy Act of 2005
	Security Classification Guides as required for AEDC mission requirements
	Sensitive Compartmented Information Facility Accreditation Documentation Security Classification Guide
	Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities, Version 1.2
AAFB IDP 31-101	Arnold AFB Integrated Defense Plan 31-101
AEDC- ENGR-STD- T-2	AEDC Standard Pressure Piping
AEDC- ENGR-STD- T-3	AEDC Standard Engineering Drawing and Drafting Practices
AEDC- ENGR-STD- T-4	AEDC Standard for Procurement Documentation
AEDC- ENGR-STD- T-5	AEDC Standard Welding Practices
AEDC- ENGR-STD-T-1	AEDC Standard Pressure Vessels
AEDC- ENGR-STD-T-3	AEDC Standard Engineering Drawing and Drafting Practices

AEDC SHE STDs	AEDC Safety, Health, and Environmental Standards
AEDCI 21-113	Tool Control
AEDCI 63-3733	Organizational Engineering
AEDCI 90-700	Capabilities Based Planning
AFTCI 91-202, AEDC Supp	AFTC Test Safety Review Policy, AEDC Supp
AEDCI 99-100	Test and Evaluation Project Management
AEDCOI 21-113	Foreign Object Damage Prevention Program
AEDCOI 21-112	Hold and Impoundment
AEDCOI 21-205	Tactical Integration Group
AEDCOI 32-1033	Space Utilization and Move Request
AEDCOI 99-1	Lost Test Time
AEDCOI 99-10	Technical Reporting
AEDC-STD- CM-1	Configuration Management
AF 847	Recommendation for Change of Publication
AFI 10-2501	Air Force Emergency Management Planning and Operations
AFI 10-701	Operations Security (OPSEC) (and supplements)
AFI 17-101	Risk Management Framework (RMF) for Air Force Information Technology
AFI 17-110	Air Force Information Technology Portfolio Management and Capital Planning Investment Control
AFI 17-130	Information Assurance (IA) Management
AFI 17-140	Architecting
AFI 17-203	Cyber Incident Handling
AFI 21-101 AFMC SUP Addendum A	AIRCRAFT AND EQUIPMENT MAINTENANCE MANAGEMENT
AFI 21-113	Air Force Metrology and Calibration Program
AFI 23-201, para 5.10.2.3, 5.12.2, 5.19, 5.20.3, and 6.2	Fuels Management
AFI 31-101	Integrated Defense (FOUO)
AFI 31-406	Applying North Atlantic Treaty Organization (NATO) Protection Standards

AFI 32-1001	Operations Management
AFI 32-1002	Snow and Ice Control
AFI 32-1020	Planning and Programming Built Infrastructure Projects
AFI 32-1023	Designing and Constructing Military Construction Projects
AFI 32-1052	Facilities Asbestos Management
AFI 32-1041	Pavement Evaluation Program
AFI 32-1054	Corrosion Control
AFI 32-1062	Electrical Systems, Power Plants and Generators
AFI 32-1067	Water and Fuel Systems
AFI 32-1051	Roof Systems Management
AFI 32-1064	Electrical Safety Practices
AFI 32-1065	Grounding Systems
AFI 32-1068	Heating Systems and Unfired Pressure Vessels
AFI 32-7042	Waste Management
AFI 32-7062	Comprehensive Planning
AFI 32-7086	Hazardous Materials Management Plan
AFI 32-9001	Acquisition of Real Property
AFI 32-9002	Use of Real Property Facilities
AFI 32-9003	Granting Temporary Use of Air Force Real Property
AFI 32-9004	Disposal of Real Property
AFI 32-9005	Real Property Accountability and Reporting
AFI 33-360	Publications and Forms Management
AFI 33-210	Air Force Certification and Accreditation (C&A) Program (AFCAP)
AFI 33-322	Records Management Program
AFI 48-144	Drinking Water Surveillance Program

AFI 61-204	Disseminating Scientific and Technical Information
AFI 61-205	Sponsoring or Co-Sponsoring, Conducting, and Presenting DoD-Related Scientific Papers at Unclassified and Classified Conferences, Symposia, and Other Similar Meetings
AFI 65-601v12	Budget Guidance and Procedures, Chapter 7
AFI 90-201	The Air Force Inspection System
AFI 90-801	Environment, Safety, and Occupational Health Councils
AFI 99-103	Capabilities-Based Test and Evaluation
AFMAN 10-246	Food and Water Protection Program
AFMAN 14-304	The Security, Use, and Dissemination of Sensitive Compartmented Information
AFMAN 17-1203	Information Technology Asset Management
AFMAN 17-1302	Communications Security (COMSEC) Operations
AFMAN 17-1303	Cybersecurity Workforce Improvement Program
AFMAN 32-1040	Civil Engineer Airfield Infrastructure Systems
AFMAN 32-1053	Integrated Pest Management Program
AFMAN 32-1061	Providing Utilities to U.S. Air Force Installations
AFMAN 32-1084	Standard Facility Requirements
AFMAN 33-364	Records Disposition Procedures and Responsibilities
AFMAN 91-201	Explosives Safety Standards
AFMAN 91-203	Air Force Consolidated Occupational Safety Instruction, Chapters 6, 21, 23, and para 14.4
AFMC SUP 90-201	The Air Force Inspection System
AFMCI SUP 99-103	Capabilities Based Test and Evaluation
AFPD 33-2	Information Assurance Program
AFSSI 3000 Series	COMSEC Equipment
AFSSI 4000 Series	COMSEC Operation

AFSSI 7000 Series	EMSEC/TEMPEST
AFSSI 8500 Series	IA Implementation
CNSSAM TEMPEST/1-13	Red/black Installation Guidance Safety, Health, and Environmental Standards
DFARS 252.239.7001	Information Assurance Contractor Training and Certification
DLA-Energy Interim Policies and Procedures	
DoD 4140.25M	DoD Management of Bulk Petroleum Products and Dispensing Systems
DoD 5105.21, Volume 1	Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Information and Information Systems Security
DoD 5105.21, Volume 2	Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Physical Security, Visitor Control, and Technical Security
DoD 5105.21, Volume 3	Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Personnel Security, Industrial Security, and Special Activities
DoD 5230.24	Distribution Statements on Technical Documents
DoD 8570	Information Assurance Training, Certification, and Workforce Management
DoDD O-5240.02	Counterintelligence
DoDD 3000.09	Autonomy in Weapon Systems
DoDD 5100.55 DoD Intelligence Information System (DoDIIS)	United States Security Authority for North Atlantic Treaty Organization Affairs Joint Security Implementation Guide (DJSIG)
DOD FMR v11a	Reimbursable Operations Policy Chapter 12
DoDI 2040.02	International Transfers of Technology, Articles, and Services
DoDI 3020.46	The Military Critical Technologies List (MCTL)
DoDI 3020.46	The Military Critical Technologies List (MCTL)
DoDI 3200.12	DoD Scientific and Technical Information Program (STIP)

DoDI 3200.20	Scientific and Engineering Integrity
DoDI 4140.01	DoD Supply Chain Materiel Management Policy
DoDI 5030.55	DoD Procedures for Joint DoD-DOE Nuclear Weapons Life-Cycle Activities
DoDI 5205.13	Defense Industrial Base (DIB) Cyber Security/Information Assurance (CS/IA) Activities
DoDD 5200.02	DoD Personnel Security Program
DoDD 5230.09	Clearance of DoD Information for Public Release
DoDD 5230.11	Disclosure of Classified Military Information to Foreign Governments and International Organizations
DoDD 5240.06	Counterintelligence Awareness and Reporting (CIAR)
DoDD 8500.01E	Information Assurance (IA)
DoDI 5000.02 (Interim)	Operation of the Defense Acquisition System
DoDI 5030.55	DoD Procedures for Joint DoD-DOE Nuclear Weapons Life-Cycle Activities
DoDI 5200.33	Defense Courier Operation
DoDI 5200.39	Critical Program Information (CPI) Protection Within the Department of Defense
DoDI 5200.44	Protection of Mission Critical Functions to Achieve Trusted Systems and Networks (TSN)
DoDI 5210.01	Access to and Dissemination of Restricted Data and Formerly Restricted Data
DoDI 5210.83	DoD Unclassified Controlled Nuclear Information (UCNI)
DoDI 5220.22	National Industrial Security Program (NISP)
DoDI 5230.29	Security and Policy Review of DoD Information for Public Release
DoDI 5240.6	Counterintelligence (CI) Awareness and Briefing Program
DoDI 8500.01	Cybersecurity

DoDM 5200.01, Vol 1	DoD Information Security Program: Overview, Classification, and Declassification
DoDM 5200.01, Vol 2	DoD Information Security Program: Marking of Classified Information
DoDM 5200.01, Vol 3	DoD Information Security Program: Protection of Classified Information
DoDM 5200.01, Vol 4	DoD Information Security Program: Controlled Unclassified Information (CUI)
DoDM 5200.1	Acquisition Systems Protection Program
DoDM 5205.02	DoD Operations Security (OPSEC) Program Manual
DoDM 5205.07 Volumes 1	Special Access Program Security Manual
DoDM 5200.45	Instructions for Developing Security Classification Guides
DoDM 5220.22	National Industrial Security Program (NISP) Operating Manual
DoDM 5230.30	DoD Mandatory Declassification Review (MDR) Program
DoDR 5200.08	Physical Security Program (Sections that apply to the protection of classified material)
DoDR 5200.1	Information Security Program
DoDR 5220.22	Industrial Security Regulation
DoDR 5400.7	DoD Freedom of Information Act Program
DoDM 5010.12	Procedures for the Acquisition and Management of Technical Data
DTM 09-019	Policy Guidance for Foreign Ownership, Control, or Influence (FOCI)
E.O. 12829	National Industrial Security Program
E.O. 13467	Reforming Process relating to Suitability for Government Employment, Fitness for Contractor Employees, and Eligibility for Access to Classified National security Information
E.O. 13526	Classified National Security Information
E.O. 13556	Controlled Unclassified Information
E.O. 13587	Structural Reforms To Improve the Security of Classified Networks and the Responsible Sharing and Safeguarding of Classified Information
EISA 2007	Energy Independence and Security Act of 2007
FAR 44.3	Subcontracting Policies and Procedures

FAR 45	Government Property
FAR 52.219-9	Small Business Subcontracting Plan
ICD 503	Intelligence Community Information Technology Systems Security Risk Management, Certification, and Accreditation
Intelligence Community Directive Number 503	Intelligence Community Information Systems Security Risk Management, Certification, and Accreditation
Intelligence Community Directive Number 700	Protection of National Intelligence
Intelligence Community Directive Number 701	Security Policy Directive for Unauthorized Disclosures of Classified Information
Intelligence Community Directive Number 702	Technical Surveillance Countermeasures
Intelligence Community Directive Number 704	Personnel Security Standards and Procedures Governing Eligibility for Access to Sensitive Compartmented Information and Other Controlled Access Program Information
Intelligence Community Policy Guidance Number 704.1	Personnel Security Investigation Standards and Procedures Governing Eligibility for Access to Sensitive Compartmented Information and Other Controlled Assess Program Information
Intelligence Community Policy Guidance Number 704.2	Personnel Security Adjudicative Guidelines for Determining Eligibility for Access to Sensitive Compartmented Information and Other Controlled Access Program Information
Intelligence Community Policy Guidance Number 704.3	Denial and Revocation of Access to Sensitive Compartmented Information, Other Controlled Access Program Information, and Appeals Processes
Intelligence Community Policy Guidance Number 704.4	Reciprocity of Personnel Security Clearance and Access Determinations
Intelligence Community Directive Number 705	Sensitive Compartmented Information Facilities
Intelligence Community Standard Number 705-1	Physical and Technical Security Standards for Sensitive Compartmented Information Facilities
Intelligence Community Standard Number 705-2	Standards for the Accreditation and Reciprocal Use of Sensitive Compartmented Information Joint Security Implementation Guide (JSIG)
Intelligence Community Directive Number 710	Classification and Control Marking System

Joint Pub 3-54	Joint Doctrine for Operations Security
MIL-STD-161H	Identification Methods for Bulk Petroleum Product Systems
MIL-STD-882E (Sections 3 & 4 only)	System Safety
National Institute of Standards of Technology Special Publication 800-37	Guide for Applying the Risk Management Framework to Federal Information Systems
NIST Fee Schedule 2017	NIST Calibration Program Calibration Services User Guide SP 250 Appendix
NFPA 70	National Electrical Code
OMB Cir A-123	Management's Responsibility for Internal Control
SAE Aerospace Standard (AS) 5553	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
SAE Aerospace Standard (AS) 5553A	Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
T.C.A. 68-23-101	Rules of Department of Environment and Conservation, Division of Radiological Health, Chapter 1200-2-9
TN-1297	Guidelines for Evaluating and Expressing the Uncertainty of the NIST Measurement Results
TO 00-20F-2	Inspection and Preventative Maintenance Procedures for Classified Security Containers
TO 00-33A-1001	General Cyberspace Support Activities Management Procedures and Practice Requirement
TO 00-20-14	Air Force Metrology Calibration Program
TO 1T-38A-2-6	Org. Maint., T-38A Aircraft Powerplant
TO 1T-38A-6WC-4	T-38 Power Pack Installation and Inspection
TO 2J-J85-102	Corrosion Control/Cleaning Manual
TO 2J-J85-111 (1-2)	Test, Troubleshooting, and Handling Maintenance Manual
TO 2J-J85-113-(1-10)	Depot Maintenance Manual
TO 2J-J85-113-CD-1	Turbojet Engine J85 Technical Manual Set
TO 2J-J85-116-(1-11)	Interim Maintenance Manual
TO 2J-J85-154	Support Equipment for J85 IPB
TO 2J-J85-54	J-85 Turbojet Engine IPB

TO 2J-J85-9	Nondestructive Inspection Procedures
TO 33D4-6-264-1	Engine Control Kit Ops and Service Manual
TO 33D4-6-264-4	Engine Control Kit IPB
TO 33K-1-100-2	Calibration Procedure for Maintenance Data Collection Codes and Calibration Measurement Summaries
TO 35C2-3-372-11	Operations, Maintenance and Overhaul Instruction W/IP
TO 36-1-91	Technical and Managerial Reference for Motor Vehicle Maintenance
TO 36A12-13-2CL-1 Chapter 1	Air Force Refueling Vehicle Checkpoint Checklist
TO 36A12-13-17-81	Illustrated Parts Breakdown
TO 36A12-13-17-84	Operation and Operator Maintenance
TO 37A1-101, para 4.1.12	USAF Fuel, Water, and Lubricant Dispensing System
T.O. 37-1-1, Chapter 3	General Operation and Inspection of Installed Fuel Storage and Dispensing System
TO 42B-1-1	Quality Control of Fuels and Lubricants
T.O. 42B-1-23	Management of Recoverable and Waste Liquid Petroleum Products
TO 6J3-2-16-13	Afterburner Control Overhaul Manual
TO 6J3-2-16-14	Afterburner Control IPB
TO 6J3-4-73-3	Main Fuel Control Overhaul Manual
TO 6J3-4-73-4	Main Fuel Control IPB
UFC 3-401-01	Mechanical Engineering
UFC 3-430-02	Central Heating Boiler Plants
UFC 3-430-07	O&M: Inspection & Certification of Boilers & Unified Pressure Vessels
UFC 3-460-03F	Maintenance of Petroleum Systems
UFC 3-470-01	Lonworks Utility Monitoring & Control
UFC 3-501-01	Electrical Engineering
UFC 3-540-01	O&M: Generators
UFC 3-550-01	Exterior Electrical Power Distribution

UFC 3-560-01	O&M: Electrical Safety
UFC 3-570-06	Cathodic Protection
UFC 3-575-01	Lightning & Static Electricity Protection Systems
UFC 3-601-02	Operation and Maintenance: Inspection, Testing and Maintenance of Fire Protection Systems
USSAN 1-69	United States Implementation of NATO Security Procedures

APPENDIX A

TEST AND TEST SUPPORT ASSETS

The AEDC test and test support assets are described below. They include the test cell systems and their associated support systems, process air plants, and test utilities. The descriptions below include identification of the associated Processes that form the AEDC asset hierarchy. Each of these Processes consists of lower level assets (systems, sub-systems, etc.) that constitute the Process.
Specific details on Test Instrumentation, Data Acquisition, and Control (ID&C) assets are located at the end of this appendix.

Propulsion Wind Tunnels (PWT):

- **16T:** The 16 ft. transonic tunnel is a continuous-flow, closed-circuit tunnel that can be operated at Mach (M) numbers from 0.06 to 1.60. The entire test section and supporting structure is constructed as a separate unit called the test cart, and is removable from the tunnel circuit. In some cases, test unit preparation, restoration, and cart installation may be done in one cart while testing in the tunnel is conducted on another cart. Model preparation, assembly, and installation are conducted on the test carts in the Model Installation Building. Tunnels 16T and 16S share the PWT main compressor drive system for primary airflow, and the two tunnels cannot be operated simultaneously. The Plenum Evacuation System (PES) removes part of the tunnel main airflow through the test cart perforated walls to alleviate wall interference effects. The PES also provides tunnel pressure level control. The scavenging of combustion products for engine tests is provided by the ETF B Exhaust Plant.

- **16S**: (Process: 16S): The 16S is a 16 ft., supersonic, continuous-flow, closed-circuit tunnel that can be operated at M 1.50 to 4.50.

- **4T**: 4T is a four-foot continuous-flow, closed-circuit wind tunnel that can be operated from M 0.1 to
- **2.5**. Approximately 80 percent of the 4T work can be done independently of 16T and 16S through the use of the Independent Drive System (IDS) which provides a Mach range from 0.2 to 1.3. For M
- >**1.3**, airflow is provided by the PES compressors. Plenum evacuation is normally provided by F-unit, a second increment compressor. Both increments are required to support operations above M = 1.3.

- **1T**: 1T is a transonic wind tunnel with a 1 ft. test section.

PWT Plant: The PWT main drive compressor drive system consists of four synchronous motors. Disconnect couplings permit the four motors to be operated with either the Tunnel 16T compressor or Tunnel 16S compressor. The Tunnel 16T compressor is a three-stage, axial-flow machine having a 30 ft. tip diameter and a hub-to-tip ratio of 0.6. The inlet guide vanes and the three interstage stator rows of the compressor are remotely controllable through an angle range that satisfies the range of volume flow requirements.

- **PES:** The PES is composed of two identical groupings or increments of compressors,

drive equipment, and associated ducts and valves. Each increment has five Allis-Chalmers VA-1409 compressors, which are nine-stage axial-flow machines, and one Allis-Chalmers VA-1107, which is a seven-stage axial-flow machine. The arrangement of the ducts and valves of each increment permits the compressors to be operated in one-, two-, or three-stage compressor configurations.

- **IDS:** The Independent Drive System (IDS) supports low-speed 4T operations, and consists of a three- stage, axial flow machine and a 20,000 hp synchronous compressor drive motor with variable speed control.

Von Kármán Facility (VKF) Wind Tunnels:

- **Tunnel A: T**unnel A is a 40- by 40-in., continuous flow, closed-circuit, variable-density, supersonic wind tunnel with a Mach range of 1.5 to 5.5. Continuous-curvature nozzle contours are obtained by flexible top and bottom walls mounted on electrically driven screw jacks. The side walls of the nozzle are plane and parallel. The tunnel is served by a main compressor system that provides a wide range of mass flows and stagnation pressures up to a maximum of 200 psia.

- **Tunnels B/C:** The 50-in. hypersonic tunnels are Tunnel B for Mach 6 and 8 and Tunnel C for Mach 4, 8, and 10. Both tunnels are closed circuit with axisymmetric contoured nozzles, and may be operated continuously over a range of pressure levels with air supplied by the main compressor system. Tunnels A/B/C are not operated simultaneously. Test unit preparation, restoration, and test article installation may be done in one tunnel while testing is conducted in one of the other tunnels.

- **ACL:** The Airflow Calibration Laboratory (ACL) is a continuous supersonic / hypersonic tunnel used for small model testing and test probe calibrations. The ACL can be run simultaneously with tunnels A or B provided the secondary mass flow system is not being utilized by those facilities. The ACL cannot be run simultaneously with Tunnel C.

VKF Plant: The main compressor system for continuous operation is comprised of six axial and seven centrifugal compressors arranged in nine stages. The compressors are interconnected by a duct and piping system which includes intercoolers and valves whereby one to five stages are used to deliver air to Tunnel A for operation between Mach 1.5 and 5.5. Five stages are used to deliver air to Tunnel B for operation at Mach 6, seven stages for Tunnel B Mach 8 operation, and 7 or 8 stages are used to deliver air to Tunnel C for operation at Mach 8 or 10. Either seven or nine stages are used for Aerothermal Tunnel C at Mach 4, depending on the required temperature and pressure.

The VKF Plant also constitutes the main high-pressure air (HPA) supply and storage system for the Complex. Air is stored in a 22,200 ft.3 storage system. A dedicated HPA compressor system consisting of two JM3 machines is capable of charging the storage system at the rate of 6.0 lbm/sec. In addition to this system, a two-compressor system comprising the tenth and eleventh stages of the main plant can be used in conjunction with main plant compressors to charge the storage reservoirs at the rate of 84 lbm/sec.

High-Enthalpy Ablation Test Cells: The arc heater test units are high-pressure facilities providing high- enthalpy test conditions simulating aeroheating environments consistent with reentry / endoatmospheric flight at velocities from 5,000 ft/sec up to and exceeding 20,000 ft/sec. The test units share utilities, including a power supply, raw water systems, a demineralized water system, and an air supply provided by the VKF HPA storage and supply network.

- **H1**: The H1 test unit is a segmented arc heater that provides high-pressure, high-enthalpy test conditions for qualification of thermal protection materials, nose tips, and / or electromagnetic apertures and structures for hypersonic missiles, space access systems, and entry / reentry vehicles.
- **H2:** The H2 is a Huels-type arc heater that provides conditions suitable for aerothermal simulations of hypersonic flight. Unlike H1 and H3 that exhaust to atmosphere, the H2 is exhausted to either the PES or B-Exhaust Plant to provide altitude simulation.

- **H3**: H3 is a larger, 3-inch bore segmented arc heater with operational performance up to 150 atmospheres and is designed to provide proportionately larger high-enthalpy flows for testing of materials, aerothermal structures, and hypersonic propulsion components.

- **Arcs Support**: This Process consists of a 4000 psig high pressure air system, 1500 psig demineralized water system, 2500 psig raw water system, 70MW DC power supply system, data acquisition system and other minor shared support systems that are common to all the HTL arc facilities

Ballistic Range Test Cells:

- **Range G:** Range G consists of a two-stage light-gas gun, a 305-m long test chamber with projectile guidance capability (track), and a projectile recovery system. Three gun configurations are available for use (84-mm, 102-mm, or 203-mm) and the 64-mm Range I can be installed as well. Range G can be converted from the free-flight, impact configuration to the track configuration by swinging the track assembly into place. Range G shares the same building and some systems with Range I, and these test units are not operated simultaneously.

- **Range I**: Range I consists of a 64-mm two-stage light-gas gun and a 10-m long target tank, and is primarily used to perform impact and lethality tests. Range I can also be converted to a Free Piston Shock Tunnel (FPST) to perform real-gas testing for CFD code validation. The launch tube of the 64- mm two-stage light-gas gun is replaced with a shock tube, nozzle, and test section. Range I shares the same building and some systems with Range G, and these test units are not operated simultaneously.

- **Range S1**: The S1 is primarily used for conducting research and is equipped with a two-stage, 0.75-in diam., light-gas launcher, which accelerates the projectile to the desired test velocity. The range has a blast chamber into which muzzle gases expand and in which the projectile is separated from the sabot which adapts it to the bore of the launch tube; a connecting tube, along which instrumentation can be located; and the three target

chambers, where impact occurs. Range S1 and Range S3 are located in the same building and are not operated simultaneously.

- **Range S3**: The S3 is a test unit used primarily for testing aircraft components to determine their reaction to bird impacts. It consists of a gas launcher that accelerates the projectile to the desired launch velocity and a covered concrete test pad where the target and its associated instrumentation are housed. Range S1 and Range S3 are located in the same building and are not operated simultaneously.

Space Environmental Test Cells:

The space environmental simulation chambers and supporting infrastructure are housed within three adjacent buildings, Building 1077, Building 1075, and Building 1088.

- **7V Test Unit:** The 7V thermal vacuum chamber provides a test capability for calibration and performance characterization of infrared surveillance sensors and interceptor seeker sensors against space backgrounds. The chamber systems include the vacuum chamber, sensor antechamber, the vibration isolation system, the optical bench, and the cryogenic liner. The vacuum chamber is a horizontal stainless-steel, cylindrical shell 7 ft. in diameter by 23 ft. long with a 7 ft. diameter by 7 ft. long antechamber on one end, and is contained within a cleanroom. 7V shares many systems with 10V and they are not operated simultaneously.

- **10V Test Unit**: The Aerospace Chamber 10V provides complete ground test support to the sensor community for large aperture surveillance sensors and kinetic kill interceptors. The 10V Chamber is a horizontal cylinder, 10 ft. in diameter and 24 ft. long and is contained within a cleanroom. 10V shares many systems with 7V and they are not operated simultaneously.

- **12V Test Unit**: The Aerospace Chamber 12V is 12 ft. in diameter and 35 ft. high thermal vacuum test unit, and provides a space environmental test capability for electric propulsion systems. It has also been used as a vacuum vessel to support testing in the 7V Chamber.

- **Space Threat Assessment Testbed (STAT):** The STAT is a thermal vacuum chamber used to test satellite subsystems and microsatellite systems in real time in a realistic operational space environment. The chamber has ten source simulators which emulate conditions that exist at various orbits, and operates independently from the other space chambers.

- **Mark 1: (Process: MARK 1):** The Mark 1 Space Environmental Chamber consists of a large cylindrical vacuum tank 42 ft. diam. By 82 ft. high, pumping systems, thermal environment systems, vehicle support and attitude control equipment, controls, and instrumentation suitable for conducting tests on large space vehicles and a variety of space subsystems.

- **Research Chambers**: The Research Chambers consist of several different small thermal vacuum chambers for conducting research or component tests. The 4V chamber

(a.k.a. Characterization of Combined Orbital Surface Effect (CCOSE)) is a 4 ft. by 10 ft. research chamber designed to simulate a combination of environmental effects that occur in space.

- **Chambers Plant**: The Space Environmental Test Cells are supported by an infrastructure that includes liquid nitrogen and gaseous / liquid helium supply systems, and vacuum systems. The helium refrigeration system is made up of a 3-kw refrigerator, a 1-kw refrigerator / liquefier, and a 0.5- kw helium liquefier. The refrigerators and liquefaction systems are integrated to provide operating flexibility. Test chambers and helium refrigerators are connected to the closed-loop, high- pressure helium distribution system. The 3-kw refrigerator supplies the chambers with gaseous helium. The 0.5-kw gaseous helium refrigerator primarily provides liquid helium and supports the Research Chambers. The 1-kw refrigerator is used to supplement the 3-kw refrigerator.

- **MBS**: The Modular Bremsstrahlung Source (MBS) is a small X-ray simulator that provides nuclear effects testing on cables and small satellite components.

Rocket Test Cell:

- **J2A**: Rocket development test cell J2A is an 18 ft. diameter by 32 ft. long cryogenically cooled liner inside of a 20 ft. diameter duct.

- **J3**: Test cell J3 is a vertical rocket motor test cell consisting of two test capsules.

- **J4**: J4 is a vertically oriented test complex designed for the static testing of large liquid- and solid- propellant rocket engines and entire propulsion systems at simulated altitudes. J4 is connected to the ETF A/B Exhaust Plant and is supported with high pressure steam by Steam Plant B.

- **J5**: J5 is a horizontally arranged test cell designed primarily for static testing of large solid-propellant rockets.

- **J6**: J6 is a horizontally arranged test cell designed for static testing of large solid-propellant rocket motors with up to 500,000-lbf thrust at simulated pressure altitudes of 100,000 ft. via pumping from the ETF A/B Exhaust Plants and a steam ejector connected to a high-pressure steam plant. The Steam Plant C consists of one boiler producing 740 PSI Steam (37,500 lbm/hr) and six 376,000 lbm (H2O) capacity accumulators and is provided basic steam from the main steam plant.

Advanced Missile Signature Center (AMSC): The Advanced Missile Signature Center (AMSC) supports the Missile Defense Agency (MDA), Defense Intelligence Agencies (DIA) and other DoD programs with signature measurements, analysis, modeling, archiving and distribution. State-of-the- art instrumentation and infrastructure are used to collect temporal, spectral and spatial signatures during static, launch, sled and free flight tests on test ranges in and outside the USA. Archives include target, threat and battlespace environment signatures for missiles and other vehicles.

Aerodynamic and Propulsion Test Unit (APTU): APTU is a blow-down test facility for testing air- breathing propulsion systems, aerodynamic systems, and materials while simulating flight conditions at supersonic and hypersonic velocities. Air for the high-pressure air storage system in APTU is provided by the VKF plant and operation of APTU is directly related to the availability of the VKF plant for support.

Turbine Engine Test Cells:

- **C1**: Test Cell C1 is designed for performance and operability testing of large augmented turbofan engines, although free-jet testing can be accommodated. The cell is 28 ft. in diameter and 50 ft. long. The engine inlet air can be conditioned from -100° to 650°F. True simulated flight conditions can be provided over the entire flight envelope of most turbine-type engines up to M 2.1 and 60,000 ft. altitude. Ejector-diffusers can be used to simulate higher altitudes in the test cell.

- **C2**: Test Cell C2 is designed for performance testing of large high bypass turbofan engines. The cell is 28 ft. in diameter and 50 ft. long. The engine inlet air can be conditioned from -100° to 650°F. C2 can be configured to run large augmented turbofan engines with capability similar to C1.

- **J1**: Test Cell J1 is 16 ft. in diameter and 65 ft. long. This test cell is used primarily for direct-connect performance and stability testing of large air-breathing propulsion systems. This engine inlet air can be conditioned from -65° to 750°F. Simulated pressure altitudes up to 80,000 ft. can be provided in the test cell by the facility exhaust compressors. Ejector-diffusers can be used to simulate higher altitudes in the test cell. Using the heated air inlet source, true simulated flight conditions can be provided over the entire flight envelope of most turbojet engines up to M 3.2 and 80,000 ft.

- **J2**: Test Cell J2 is 20 ft. in diameter and 67.3 ft. long. This test cell is used primarily for direct- connect performance and stability testing of large air-breathing-type propulsion systems. The engine inlet air can be conditioned from -65° to 650°F. Simulated pressure altitudes up to 80,000 ft. can be provided in the test cell by the facility exhaust compressors. Higher simulated altitudes may be attained in the test cell by the use of ejector-diffusers. True simulated flight conditions can be provided over the entire flight envelope of most turbine-type engines up to M 3.0 and 80,000 ft. altitude.

- **J2A**: (Process J2A): Rocket development test cell J2A is an 18 ft. diameter by 32 ft. long cryogenically cooled liner inside of a 20 ft. diameter duct.

- **J3**: (Process: J3 TEST CELL): Test cell J3 is a vertical rocket motor test cell consisting of two test capsules.

- **SL1**: SL1 is a standard USAF T-9 (Large Turbofan Engine Noise Suppression System) sea level turbine engine test unit hush house configuration with a modified fuel supply capacity. This test unit provides a means of testing turbojet, turbofan, turboshaft, and turboprop engines under sea level (local altitude) ambient conditions.

- **SL2 & SL3**: Test Cells SL2 & SL3 are sea level turbine test units capable of operating

at either sea level ambient conditions, variable-temperature, ram inlet conditions, or heated inlet sea level conditions without ram and to rapidly transition between these test configurations. Additionally, the test units can accomplish corrosion tests simulating operation in a sea-based marine environment. The SL2 / SL3 test cells are capable of testing up to 50,000 lbf thrust engines at ram conditions of up to M1.25 and temperatures ranging from minus 65° F to 350° F.

- **T1**: Airbreathing propulsion test cell T1 is 12.3 ft. in diameter with length variable to approximately 57 ft.

- **T2**: Airbreathing propulsion test cell T2 is 12.3 ft. in diameter with length variable to approximately 50.5 ft.

- **T3**: Test Cell T3 is 12 ft. in diameter and 15 ft. in length. The cell is a high-temperature, high- pressure, small air-breathing propulsion test cell. T-3 is designed for the direct-connect testing of small air-breathing engines over a Mach range from 0 to 4.0.

- **T-4**: Airbreathing propulsion test cell T-4 is 12.3 ft. in diameter with a length variable to approximately 47.8 ft.

- **T5**: Airbreathing propulsion test cell T5 is 7 ft. in diameter by 17 ft. long.

- **T7**: Airbreathing propulsion test cell T7 is 7 ft. in diameter and 9 ft. in length.

- **T11**: Airbreathing propulsion test cell T11 is 10 ft. by 10 ft. by 17 ft. long.

- **T12:** Airbreathing propulsion test cell T12 is 10 ft. in diameter with a length of 20 ft. This test unit is designed for the testing of air-breathing turbo-prop and turboshaft engines.

ETF Research Cells: These research facilities have typically been used to support development efforts in propulsion, aerodynamics, and space simulation requirements for a variety of environmental conditions and system operational modes.

Engine Test Facility (ETF) Plant: The ETF consists of three plants identified as B (Basic) Plant, A (Addition) Plant, and C (Aeropropulsion Systems Test Facility (ASTF)) Plant.

- **The ETF C Plant** air supply provides conditioned air to the Aeropropulsion T-Cells, J1, J2, C1, and C2 and to SL2 and SL3 when running RAM conditions. The ETF C plant air supply system is comprised of six axial-flow air supply compressors – four first stage and two second stage compressors.

- Exhaust capacity for J1, J2 and T-cells are provided by the ETF-A and ETF-A and ETF-B exhaust systems Special interconnecting ducting to the Propulsion Wind Tunnel exhaust compressors permits exhaust capability augmentation for ETF-A and ETF-B test cells. The ducting and valve arrangement in the exhaust systems provides many different compressor configurations necessary to establish the required test cell conditions.

- **The ETF-C** exhaust system is comprised of 12 identical axial-flow exhaust compressors. The exhaust compressors are arranged in stages such that there are eight first stage axial flow compressors, three second stage axial flow compressors, and one third stage axial flow compressor. Refrigeration is used to condition the process air supply.

Hypervelocity Wind Tunnel 9: Tunnel 9 is located at AEDC White Oak near Silver Spring, Maryland. It is the primary high Mach number and high Reynolds number wind tunnel for hypersonic ground testing and the validation of computational simulations for the USAF and DoD. The facility is capable of simulating speeds of Mach 8, 10, and 14 and Reynolds numbers of 0.05-48 million/ft.

The National Full-Scale Aerodynamics Complex (NFAC): AEDC Moffett Field contains the NFAC and is located at NASA's Ames Research Center at Mountain View, California. This facility is composed of two large test sections and a common, six-fan drive system. The 40 by 80 ft. wind tunnel circuit is capable of providing test velocities up to 300 knots and Reynolds numbers up to 3 million/ft. The 80 by 120 ft. test section is capable of testing a full-size aircraft at velocities up to 100 knots at nominal unit Reynolds numbers of 1.1 million/ft. A system of moveable vanes can be positioned so that air is either drawn through the 80- by 120 ft. test section and exhausted into the atmosphere, or driven around the closed circuit through the 40- by 80 ft. test section.

Technology Labs: The following labs are used for development purposes and risk reduction demonstrations:

- **Heat Flux Gage Development and Fabrication:** Inventing and developing heat flux gages for use in the aerodynamic wind-tunnel models in tunnels 4T, A, B and Tunnel 9.
- **Lab 934**: Laser Lab, Shock Tube, and small wind tunnel used for development of flow-field diagnostics, such as shock wave visualization.
- **Lab 936**: Signatures lab in support of signature customers, Non-contact Stress Measurement (NSMS) lab and electronics buildup.
- **Lab 938**: Optics and Camera electronics, combustion laser diagnostics, and advanced imaging techniques.
- **RPA4 (Rocket Prep Area 4)**: High-speed fan facility used for development of exhaust plume simulations and testing plume detection products.

Propulsion Research Facility (PRF / UTSI J85): Collaborative effort with University of Tennessee Space Institute to demonstrate technology developments using a J85 engine as heat and flow source. Provides for risk reduction testing on SBIR products, combustion probes, and provides test environment for customer tests.

Steam System: Steam Plant A and the steam distribution system provides building heat, freeze protection, and low pressure steam for test operations. The system consists of:

- Four Boilers producing 200 pounds per square inch (PSI) Steam

- One 35,000 lbm/hr
- Three 60,000 lbm/hr
- Four 273,000 lbm (H2O) capacity accumulators
- Three 376,000 lbm (H2O) capacity accumulators
- Approximately 175,000 feet of steam distribution lines ranging in size from ½ to 14 inches

The primary function of the high-pressure steam system (greater than 200 PSI) is to provide steam for the J4 and J6 test cell ejectors. The HP steam system can also provide steam to the J1 and T3 test cells as well as the base 200 psi steam system. The HP steam system consist of steam plants B and C, the J4 high and low pressure accumulators, the J6 accumulators, the 750 PSI steam and feed water piping including the three inch 750 PSI line to T3 and J1 test cells.

Raw / Cooling Water: The Raw / Cooling Water Supply and distribution system provides cooling water to support testing and consists of the following:

- Primary Pumping Station
- Six 25,000 GPM Pumps; six 2,000 HP, 4.16 KV motors
- Valves and Electrical Equipment
- Secondary Pumping Station
- Eight 25,000 GPM Pumps; eight 1,750 HP, 4.16 KV motors
- One 10,000 GPM Pump, one 900 HP, 4.16 KV motor
- Three 3,300 GPM Pumps; three 250 HP, 480 V motors
- Valves and Electrical Equipment
- 57 Million Gallon Secondary Reservoir
- ASTF Cooling Water System
- Million Gallon Reservoir
- Twelve Cooling Towers
- 983,000-Gallon Storage
- One 5,000 gallons per minute (GPM) Pump; one 400 HP, 2.4 KV motor
- One 10,000 GPM Pump; one 800 HP, 6.9 KV motor
- One 15,000 GPM Pump; one 1,250 HP, 6.9 KV motor
- One 25,000 GPM Pump; one 2,000 HP, 6.9 KV motor
- Three 50,000 GPM Pumps; three 4,000 HP, 6.9 KV motors
- Twelve Cooling Fans; eight 150 HP, 2.4 KV motors
- Return Basin
- 1,300,000-Gallon Storage
- One 5,000 GPM Pump; one 200 HP, 480 V motor
- One 10,000 GPM Pump; one 450 HP, 480 V motor
- One 15,000 GPM Pump; one 700 HP, 6.9 KV motor
- One 25,000 GPM Pump; one 1,000 HP, 6.9 KV motor
- Three 50,000 GPM Pumps; three 2,250 HP, 6.9 KV motors
- Rowland Creek Pump Station
- Four 25,000 GPM Pumps; four 2,000 HP, 4 KV motors
- Two 12,500 GPM Pumps; two 1,000 HP, 4 KV motors
- 3,500 LF of 72-inch Steel Water Piping
- Bradley Creek Pump Station – Three 1,000 GPM Pumps
- Brumalow Creek Pump Station – Two 1,000 GPM Pumps
- Meters and water measuring equipment

Machine & Fabrication Shop:

- The Machine & Fabrication Shop, commonly referred to as the Model Shop, has the capability to provide machining, hardware / electrical fabrication, installation, and maintenance services.

Chemical Laboratory:

- The Chemical Laboratory has the capability to provide a full-range of chemical analysis and measurements.

Metallurgical and Non-Destructive Examination (Met / NDE) Laboratory:

- The Met / NDE laboratory has the capability to provide comprehensive support in the areas of mechanical testing, failure analysis, scanning electron microscopy, metallography, and materials selection and processing.

Instrumentation, Data Systems, and Controls (ID&C)

Overview: Approximately 52,000 devices are used to acquire test data, control facility and test article systems, and provide monitoring to operations personnel. These instruments are contained in the test and plant assets listed within this appendix. The devices in the test and plant assets have been categorized as instrumentation, information systems, data acquisition and processing, and controls and are defined below:

- Instrumentation: equipment used to measure, transmit, and / or display physical phenomena such as pressure, force, temperature, vibration, position, etc. Examples include measurement sensors such as accelerometers, transducers, thermocouples, load cells, flow meters, gages, meters, signal conditioners, filters, analog-to-digital converters, voltage scanners, pressure scanners, temperature scanners, etc.;

- Information Systems: Equipment and software (GFE and COTS) used in the storage, manipulation, management, movement, control, display, transmission, switching, or reception of data or information. Examples include servers, computers, switches, routers, intercoms, building page systems, monitors, video distribution systems, and storage systems;

- Data Acquisition and Processing: Equipment and software (GFE and COTS) used in the setup, configuration, acquisition, recording, playback, processing, transmission, and display of data. These are heavily customized systems that integrate multiple instrumentation data sources to form a general- purpose data system that is able to be scaled and configured as needed to meet test requirements. Examples include EDAPS (Engine Data Acquisition and Processing System), PDPAS (Propulsion Data Processing and Analysis System), TestVIEW, Test SLATE®, PyDataMine, CADDMAS (Computer Aided Dynamic Data Measurement and Analysis System), ARLIS (Arnold Remote Link Information System), Argus, and the subsystems contained within these and others;

- Controls: Equipment and software (GFE and COTS) used to control and monitor (1) test article and test cell operation and (2) plant operations and equipment. Examples of test cell control systems include TACS (Test Area Control System), TAPS (Test Article Positioning System), Throttle, and TCS (Test Control Sequencer). Examples of plant control systems include MCM (Machine Condition Monitoring), ECS (Engine Test Facility Control System), PES (Plenum Evacuation System), fuel control systems, and process controls.

AEDC Business Systems include but are not limited to:

- Oracle Work Asset Management (OWAM)
- Dassault ENOVIA
- Oracle Business Intelligence
- Oracle PeopleSoft
- Laboratory Information Management System
- Synergis ADEPT/Autodesk/Solidworks
- MATLAB
- Oracle Recovery Manager
- Air Force GeoBase
- Air Force Geographic Information System
- Barcode System
- Electronic Data Interchange
- Microfocus Internation Net Express
- RealIDWG
- Serena Dimensions
- TOAD
- Workforce Qualifications
- Device Log
- PMEL Miscellaneous
- Integrated Management Scheduling System
- ARGUS
- BCIS Extension
- CachePulse MACH5
- Condition Based Maintenance Application
- DaVE/Subversion
- Red Hat Virtualization
- SNORT
- Del EMC AVAMAR
- Solarwinds

Table A-1 provides an approximation of the number of the devices assigned to each of the ID&C categories listed above. While actual numbers vary depending on test work load and system configuration changes, the purpose of this list is to give a representative order of magnitude for the scope of ID&C.

Table A-1

PROCESS	Instrumentation	Information Systems	Data Acquisition and Processing	Controls	Grand Total
AMSC	25	460	2		487
APTU	220	57	612	72	961
Chamber 10V	44	23	19	18	104
Chamber 12V	11	1	4	5	21
Chamber 7V	87	60	42	55	244
Chambers Research	128	107	124	52	411
Chambers Support	459		101	158	718
DECADE	238	153	157	5	553
ETF Test Support	2870	337	1432	1417	6056
GN2 NETWORK	4			6	10
HPA NETWORK	4			14	18
HTL	700	72	1220	87	2079
INSTR AND DIAG	1222		297	48	1567
Instrument Crib	486	66	90	43	685
JP FUEL NETWORK	56		4	69	129
MARK 1	35	160	2	4	201
MET LAB	132			35	167
MODEL SHOP	277	184	1	136	598
PC LAN	73	2367			2440
Plant A/B	495	15		1838	2348
Plant C	352	2	2	2186	2542
Plant P	31	5		414	450
Plant V	36			887	923
PWT Support	681	452	40	854	2027
R Cells	116	16	425	144	701
Range G	579	185	247	30	1041
Range S1	24		15		39
Rocket Cell J3	36	2	528	85	651
Rocket Cell J4	186	21	851	299	1357
Rocket Cell J5	55	25	348	106	534
Rocket Cell J6	1085	35	1179	453	2752
Technology	42	523	1	8	574
Tunnel 16S	356	135	162	138	791
Tunnel 16T	658	60	414	229	1361
Tunnel 1T	41	14	43	6	104
Tunnel 4T	115	90	220	114	539
Tunnel 9	77	373	9	1	460
Tunnels A/B/C	619	539	497	244	1899
Turbine Cell C1	494	403	1068	343	2308
Turbine Cell C2	123	70	834	119	1146
Turbine Cell J1	155	21	1684	135	1995
Turbine Cell J2	168	14	1052	107	1341
Turbine Cell SL2	182	93	333	56	664
Turbine Cell SL3	76	89	188	12	365
Turbine Cell T1	103	31	563	69	766
Turbine Cell T11	163	53	140	46	402
Turbine Cell T12	49	33	83	29	194
Turbine Cell T2	69	21	295	50	435
Turbine Cell T3	196	32	555	72	855
Turbine Cell T4	241	101	1320	136	1798
Turbine Cell T5	25	14	230	36	305
Turbine Cell T7	30	25	370	29	454
VKF SUPPORT	340		37	112	489
Grand Total	**15069**	**7539**	**17840**	**11611**	**52059**

APPENDIX B

COMMON ASSETS

Propane Storage and Distribution System:

- Various sites at AEDC

Natural Gas System:

- Piping and components downstream of the Points of Demarcation of the Privatized Natural Gas System

Fire Suppression System:

- Six pressure vessels and associated piping and devices supplying carbon dioxide for Test Cell fire suppression

Electrical Supply and Distribution:

- The Electrical Supply and Distribution system provides electrical power to base and test assets. Electrical power is received from the Tennessee Valley Authority (TVA) and is distributed through the following systems:
- Nine 161KV Switchyards
- Twenty-nine 161KV Transformers
- Twenty 161KV Circuit Breakers
- Approximately 13,000 LF of 161KV cables and protective piping systems
- Approximately 375,000 LF of overhead and underground 13.8 and 6.9KV lines
- 61 Unit Substations
- Cathodic Protection System
- Meters and power measuring equipment

Fuel System:

- Test and Bulk Fuel Farms and Distribution Systems
- 12 Tanks with total capacity of 312,600 gallons in the test fuel farm
- Tanks with total capacity of 1,682,000 gallons in the bulk fuel farm
- 1 Tank with total capacity of 200,000 gallons at Steam Plant A
- Pumps, Meters, Valves, Gauges, Strainers, Filter Separators, Static
- Grounds, And Fill Stands
- Meters and fuel measuring equipment

APPENDIX C
BASE SUPPORT UTILITY ASSETS

Electrical Supply:

- The Electrical Supply and Distribution system provides electrical power to base and test assets. Electrical power is received from the Tennessee Valley Authority (TVA) and is distributed through the following base support systems:
- 45 medium voltage transformers
- 110 medium voltage switchgear lineups
- 393 medium voltage circuit breakers
- Twenty-seven miles of underground 161, 13.8 and 6.9 kV cables
- Twenty-nine miles of overhead lines
- Meters and power measuring equipment

Raw Water:

- The Raw / Cooling Water Supply and distribution system provides raw water to base support assets and consists of the following:
- Rowland Creek Pump Station
- Four 25,000 GPM Pumps; four 2,000 HP, 4 KV motors
- Two 12,500 GPM Pumps; two 1,000 HP, 4 KV motors
- 3,500 LF of 72-inch Steel Water Piping
- Elk River Dam
- Three tainter gates
- Two sluice gates
- One leaf gate
- FAMCAMP
- One well and pump rated at 30 GPM
- 450 Ft of distribution lines
- AEDC Golf Course (One well and pump rated at 14 GPM)
- Meters and water measuring equipment

Potable Water System:

- One 2,250,000 GPD Treatment Plant
- Two 1,000 GPM pumps
- One 500 GPM pump
- One 2,000 GPM Emergency Pump
- Two 250,000 Gal Clear Wells (for storage)
- One 250,000 Gal Elevated Tank
- 148,400 Ft of Distribution Lines
- Estill Springs Water Distribution System (Services Wingo Inn, Lakeside Club, Military Family Housing, Gossick Leadership Center, AEDC Recreation Area, FAMCAMP,
- Approximately 12,500 Ft of Distribution Lines

- One Well and Pump Rated at 60 GPM
- AEDC Airfield (One well and pump rated at 10 GPM)
- AEDC Golf Course (One well and pump rated at 14 GPM)
- Backflow preventers, valves, gauges and associated equipment
- Meters and water measuring equipment

Waste Water System:

- One Retention Reservoir
- Two Oil Skimming Ponds
- Two Oil Skimmers
- Discharge Control Gates and Diversion Canals
- Sanitary Sewer System
- One digester (5,900 cubic feet)
- Three sludge drying beds (1,728 square feet)
- Trickling filter (5,500 square feet)
- Primary settling tank (19,750 gal)
- Secondary settling tank (17,962 gal)
- Collection system (Six miles with fifteen lift stations)
- One equalization basin (100,000 gallons)
- Off-site wastewater facilities to include:
- UNIT LOCATION CAPACITY
- Septic Tank (ST) Primary Pumping Station 750 gallons per day (GPD)
- Lift Station & ST Gossick Leadership Center 750 GPD
- Lift Station & ST Arnold Lakeside Club 16,000 GPD
- Lift Station Arnold Lakeside Club Beach 1,500 GPD
- ST Golf Course 500 GPD
- Two STs Main Recreation Area 2,700 GPD
- Package-type Waste Plant Family Housing and VOQ 30,000 GPD
- ST FAMCAMP 1,200 GPD
- ST Hobby Shop 500 GPD
- Wastewater Lines Golf Course 252 linear feet (LF)
- Wastewater Lines Family Housing 3,018 LF
- Septic tanks at other various locations
- 30 tanks
- privies

Storm Sewer System:

- 8.6 miles of various size mains and open ditches
- 96 manholes
- 472 drop inlets
- Separators and Traps
- 27 oil-water separators
- 8 grease traps
- 7 oil traps / siphon dams
- Meters and wastewater measuring equipment

APPENDIX D

BASE SUPPORT

ASSETS

Structures and Facilities:

- 290 facilities with approximately 2.8 million square feet
- Test facility and support buildings, administrative office space, warehouses, repair shops, machine shop, laboratories

Refrigeration, Cooling, Heating, and Ventilation Systems:

- Approximately 450 AC units ranging in size from ¼ to 400 tons
- 172 window units
- Several hundred small appliances, refrigerators, and water coolers

Electrical Support System:

- 38 electric generators ranging from 2 – 1000KW
- Grounding and lightning protection systems
- 32,500 feet of streetlights on three circuits
- Electric machines and appliances
- Control circuits to operate and monitor electrical systems and equipment
- Fire and intrusion detection systems

Cranes:

- 81 overhead Cranes
- 60 overhead cranes with capacities ≥ 10 tons
- 21 overhead cranes with capacities < 10 tons
- 8 Mobile Cranes capacities ranging from 8.5 ton to 140 ton
- 324 hoists
- hatch hoists with capacities ≥ 20 tons
- valve hoists with capacities of 30 tons each
- 316 misc. hoists with capacities ≤ 20 tons

Energy Management and Control Systems (EMCS):

- 60 building monitoring systems
- Over 2,100 monitoring points
- One central EMCS computer in Building 1525
- Four EMCS color terminals in Buildings 1507, 1525, 1478, and 1099
- Three black and white terminals in Buildings 350 and 1525
- Data transmission cables, field devices, sensors, controls, cards, computers, and terminals
- Pavements and Appurtenances
- 52,667 SY Primary Road Concrete

- 493,028 SY Primary Road Asphalt
- 13,059 SY Secondary Road Concrete
- 70,637 SY Secondary Road Asphalt
- 69,903 SY Tertiary Road Concrete
- 186,004 SY Tertiary Road Asphalt
- 287,031 SY Tertiary Road Crushed Rock
- 115 Miles Total Road Pavement Length
- 17,784 SY Parking Area Concrete
- 213,677 SY Parking Area Asphalt
- 47,390 SY Parking Area Crushed Rock
- 122,925 LF of Curbs and Gutters
- Guard rails, road bed slopes and ditches, back-slopes, culverts, trestles, grade crossings, signals and markings

Appendix E. Configuration Change Actions

The examples in the table below are provided to aid in defining initial priorities but are not all-inclusive.

Priority	Description	Change Action Initiated/Resolved
Priority 1 (Critical)	Critical priority fixes or changes include but are not limited to preventing personnel injury and damage to equipment or property, resolving security vulnerabilities that require immediate action, changes that are critical to restore, achieve or maintain mission critical system or services, and those that support basewide services and VIP operational support. Implementation needs to begin immediately. Examples of Critical Priority Items: VIP level requests; issues involving CAT I (Root Access), CAT II (User Access), CAT IV (Denial of Service), or CAT VII (Malware Attack Events); or pertain to an actual or potential security breach, network outage impacting a group of users, production server outage impacting a group of users, network/system/service that has adverse impact on the base populace.	20 minutes/4 hours
Priority 2 (High)	High priority fixes or changes include but are not limited to those that restore, achieve, or maintain operational efficiency, operational posture, and/or protect the safety or success of mission accomplishment. High priority actions include those that impact services to a large portion of the end user population or create other critical work stoppages. Examples of High Priority Items: Requests to terminate user access initiated by a supervisor or Information Assurance Officer; issues or requests which impact test operations schedule in the next 48 hours, building level network/system/service that has adverse impact to multiple users to accomplish their work.	Four hours/one day
Priority 3 (Medium)	Medium priority fixes or changes include those that involve fixes and operational modifications that affect multiple users or individual work stoppages. Examples of Medium Priority Items: Individual work stoppages; requests for new user access requirements; issues involving CAT VIII (Unconfirmed) events, CAT VII (Minor/Contained Virus), CAT VI (Scan/Probe), and CAT III (Attempted Access) events, uninterruptible power supply equipment,	One day/three days

	multiplexers, etc.	
Priority 4	Low priority fixes or changes include normal, routine, and minor issues and application installs and changes which can be implemented after higher priority items (as resources permit but within the defined timelines). Examples of Low Priority Items: Changes to existing user access requirements; general network infrastructure changes, general computer	Two days/four days

Priority 1 and 2 tickets shall be performed both during and outside normal business hours 24 hours per day and 7 days per week. An additional hour shall be added to the time limit for the initiation of corrective action for Priority 1 and 2 tickets received outside normal business hours. Priority 3 and 4 tickets may be worked during normal business hours.