

PART I – THE SCHEDULE

SECTION C

DESCRIPTION / SPECIFICATION / WORK STATEMENT

DESCRIPTION OF WORK AND SERVICES

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Statement of Work

C1. GENERAL INFORMATION

1.0 Introduction

This requirement is for the management and operation of the Office of Civilian Radioactive Waste Management Program. A management and operating contract is defined at FAR 17.6 and DEAR 917.6.

2.0 Background

The U.S. Department of Energy (DOE) is responsible for the development of the nation's high-level nuclear waste disposal system. The Nuclear Waste Policy Act of 1982, as amended, (NWPA) established the Office of Civilian Radioactive Waste Management (OCRWM) within the DOE and assigned it the responsibility to design, construct, and operate a system for spent nuclear fuel and high-level radioactive waste disposal, including a permanent geologic repository, and transportation.

OCRWM is headquartered in Washington, D.C. Its Director reports to the Secretary of Energy. OCRWM carries out its mission through two project-level business centers: the Yucca Mountain Site Characterization Office (YMSCO) Project in Las Vegas, Nevada, and the Waste Acceptance, Storage, and Transportation (WAST) Project in Washington, D.C. In addition, the program management and integration functions are in Washington, D.C. Certain functions are unique to one or the other of the two project level business centers. However, the recipient of this contract is to plan, manage and integrate all activities supporting both unique and non-unique functions of the business centers in the most cost effective manner possible.

The following describes the scope of work which shall be performed under this contract for the period from the effective date of award through March 31, 2011, which includes the option periods. The transition term is from the effective date of award through February 11, 2001. The Statement of Work identifies only the major deliverables / milestones and Program functions. More detailed information is available in material referenced in the Statement of Work.

3.0 OCRWM Program Mission

The Program's mission, as set out in the NWPA, is to implement the Federal policy for permanent disposal of spent nuclear fuel and high-level radioactive waste, in order to protect the public health and the environment. The Program provides leadership in developing and implementing strategies to accomplish this mission that assure public and worker health and safety, protect the environment, merit public confidence, and are economically viable.

4.0 Site and Regional Information

The Yucca Mountain Site occupies 195 square miles in a remote area about 100 miles northwest of Las Vegas, Nevada, on the edge of the nation's Nevada Test Site. It includes a facility to store drilling samples in a controlled environment; laboratory facilities for testing samples; buildings used to administer field operations; 20 miles of paved roads and 28 miles of unpaved roads; utilities; communication systems; and approximately 800 test areas, including 451 boreholes, 276 pits and trenches, environmental plots, and geologic exposures. The underground facilities include the main loop of the Exploratory Studies Facility, which is 7.9 kilometers (5 miles) long and 7.6 meters (25 feet) in diameter, and the cross-drift (East-West drift), an excavation 2.8-kilometers (1.7-miles) long and 5 meters (16 feet) in diameter that crosses the potential repository block from east to west. The alcoves and niches constructed within the Exploratory Studies Facility, the cross drift and Busted Butte Facility contain scientific equipment used for testing and monitoring.

The preponderance of the current employees work in leased office space on Town Center Drive in the Summerlin subdivision of Las Vegas, Nevada. The Program has approximately 211,000 square feet of office space available in Las Vegas, Nevada; and 114,000 square feet of building space available on the Nevada Test Site.

Support of functions in Washington, D.C. (rapid response, technical and regulatory analyses, waste acceptance/standard contract activities, etc.) requires the Contractor to plan for limited office space in the Washington, D.C. metropolitan area. The Contractor should be cognizant of the need to minimize the space required for the Washington, D.C. area, since the functions supported are expected to remain a small fraction of the overall contract effort.

5.0 Scope of Work Summary

The YMSCO Project has been studying the Yucca Mountain, Nevada, site to determine whether it is a suitable location to build a geologic repository for the nation's spent nuclear fuel and high-level radioactive waste. The WAST Project has been addressing issues related to acceptance, storage, and transportation of spent nuclear fuel and high-level radioactive waste for eventual emplacement in a repository.

Commercial spent nuclear fuel, DOE spent nuclear fuel, Naval spent nuclear fuel, excess plutonium and high-level radioactive waste generated primarily by defense activities will be disposed of at Yucca Mountain if the site is determined to be suitable, recommended, licensed, constructed and operated as a repository.

C2. WORK REQUIREMENTS

1.0 General Management Guidelines

DOE is responsible for all programmatic, policy and funding decisions; the establishment of goals and objectives; monitoring and measuring the performance of the Contractor; and performance of all inherently governmental functions (see FAR 7.5). DOE will be the licensee and is responsible for all programmatic interactions and interfaces with the Nuclear Regulatory Commission (NRC). Specific fiscal-year direction to the Contractor shall be provided by DOE in the annual planning guidance and the Program baseline, as referenced in the OCRWM Strategic System Management Policies 1998, and shall be incorporated into this contract on a fiscal year-by-fiscal year basis. The annual planning guidance will identify all work to be accomplished, including that to be performed by other organizations and prime contractors. DOE will conduct audits and surveillance of all aspects of the work performed under the terms of this Statement of Work to ensure compliance. DOE reserves the right to intervene, as necessary and appropriate, to redirect Program activities for the purposes of assuring DOE retains its ownership, accountability, fiduciary and licensing responsibilities.

The Program is executing the work steps identified in the Program Plan and the Viability Assessment. Specific work activities and schedules may be impacted by Congressional funding and/or legislation. The Contractor is fully accountable for the entire scope of work as described in this Statement of Work, with special emphasis on accomplishing the following Program Milestones:

- DOE issues Site Recommendation to the President July 2001
- DOE Submits License Application to NRC..... March 2002
- License Application Passes NRC Acceptance Review June 2002
- Receive NRC Construction Authorization..... March 2005
- Update License Application to NRC April 2008
- Acquire License to Receive and Possess Waste March 2010

The Contractor shall provide the technical products and support necessary for successful milestone completion. The Contractor shall be responsible for performing the work identified by OCRWM using integrated technical plans, schedules and cost control

systems, to ensure that the statement of work is accomplished. The Contractor is to determine which organizations are to perform the work. The Program issues annual guidance to the Contractor, which provides detailed information on the deliverables and finalizes the work scope for each year. It should be noted that the milestone schedule dates in the planning guidance may differ from the Project Summary Schedule dates due to planning assumptions. The Project Summary Schedule dates represent the official Program milestone dates. The content of DOE deliverables is defined in the Program guidance or for key deliverables in Program documentation, e.g., License Application Technical Guidance Document. As defined by DOE, the Contractor shall provide technical direction and ensure proper coordination of the work of the other organizations and prime contractors supporting the OCRWM Program in the accomplishment of Program milestones.

The Quality Assurance program requirements for the OCRWM Program are described in the OCRWM Quality Assurance Requirements and Description (QARD) document. The QARD contains regulatory requirements and Program commitments necessary for the development and implementation of an effective Quality Assurance program. All organizations performing work to be accepted by OCRWM, shall comply with QARD.

2.0 General Contractor Guidelines

The Contractor will be responsible for assuring that all work is done safely and in compliance with applicable requirements. The Contractor is to assure all Program deliverables comply with acceptance criteria. The Contractor shall ensure that the work as defined in this Statement of Work is executed within available funds.

The Contractor will determine the structure to best manage the requirements of the Statement of Work. The Contractor shall ensure, to the extent beneficial to the government, that subcontracting is accomplished using fixed price or performance based subcontracting, including the use of incentive fee and other cost risk type sharing arrangements. The Contractor shall emphasize objective and measurable performance requirements, safety and quality standards in developing statements of work; selecting subcontractors; determining subcontract type and incentives; determining subcontract costs, profit, fee, and prices; and performing subcontract administration. This subcontracting approach is meant to provide appropriate use of small and small disadvantaged businesses, increase subcontractor accountability and the privatization of work when it is in the government's best interest.

The National Laboratories and the United States Geological Survey (USGS), collectively and individually have provided nearly twenty years of scientific and engineering studies on issues relevant to the natural physical processes of the site and the engineered materials. The type of work performed to date by the National Laboratories and USGS is defined in the statement of work. It is anticipated that the National Laboratories and USGS will continue to support the Program throughout the licensing process. ~~The Contractor is to plan, integrate and manage the work activities of the National Laboratories and USGS.~~ For fiscal year 2001, the work scope of the National Laboratories and USGS will have been defined and approved by DOE when this Contract is executed (Reference Fiscal Year 2001 Planning Guidance, available in April 2000.) The work scope of the National Laboratories and the USGS after Fiscal Year 2001, shall be defined by the Contractor, subject to DOE approval. The identification of work to be accomplished or continued by the National Laboratories and the USGS shall be consistent with Program needs. The Contractor shall ensure that all necessary testing data is appropriately incorporated into project documents for development of the technical bases and the successful completion of scheduled milestones.

The Contractor shall, when directed and authorized by DOE, enter into subcontracts for the performance of any part of the work under this Statement of Work (DEAR 970.5204-37 Statement of Work "M&O Contracts".) Such subcontracts are distinguished from the purchase of supplies/services in support of the prime contractor's performance of the requirements set forth in the statement of work (see Section I, Contract Clause DEAR 970.5204-22, entitled, "Contractor Purchasing System.")

3.0 Interaction with Other Organizations and Prime Contractors

The OCRWM has interaction with and participation by numerous other organizations and prime contractors. The Contractor shall identify and integrate the work of the other organizations and prime contractors supporting the OCRWM Program in the accomplishment of Program milestones. The Contractor shall be required to integrate the Waste Acceptance and National Transportation functions if these functions are provided by other prime contractors.

The Nevada Operations Office, including the Nevada Test Site (NTS), currently provides infrastructure, security and logistical support and is the landlord of the site. The Contractor shall ensure that interfaces with the NTS are maintained, work is coordinated effectively, and appropriate site support services continue. This is especially important to those activities associated with public and worker health and safety and protection of the environment.

In support of site investigation, operations and construction at the Yucca Mountain Site, Nevada Operations Office provides, through its management and operating contractor, NTS common site support such as: logistics, fire protection, emergency medical services, roads/grounds maintenance, environmental operations, vehicle/construction equipment maintenance, facility maintenance, worker transportation, janitorial and refuse services, and power (see Section C2.20.0 Support Functions). Nevada Operations Office provides Nevada Test Site security through its security protective force contract. All of the Nevada Operations Office services may be contracted for separately based upon make or buy analysis, the best overall interest of the government, and DOE approval.

The current work scope summaries of other Program participants and interaction with the Program follows. These summaries indicate Program functional category support, i.e., site investigation, design, engineering, operations and construction, and program management. In addition, any Process Model Report support is noted. The National Laboratories and the United States Geological Survey, identified in the following paragraphs, have supported the development of the scientific basis for repository performance assessment.

Program Participants:

Argonne National Laboratory

In support of design, engineering and the Waste Form Process Model Report, Argonne National Laboratory conducts unsaturated waste form testing. The laboratory is also the custodian for new spent fuel and approved test material.

Lawrence Berkeley National Laboratory

In support of site investigations, the Unsaturated Zone, and Near-Field Environment Process Model Reports, Lawrence Berkeley National Laboratory conducts unsaturated flow and transport modeling, thermal hydrologic modeling activities, geophysics testing, and supports the drift-scale heater test. The laboratory performs in situ hydrological testing and monitoring in the Exploratory Studies Facility and in the East-West Drift.

Lawrence Livermore National Laboratory

In support of site investigation, design, engineering, the Engineered Barrier Systems, Waste Form, Waste Package, and Near Field Environment Process Model Reports, Lawrence Livermore National Laboratory conducts experiments and modeling activities

used to predict responses of the engineered and natural barrier systems to the heat generated by radioactive waste and conducts experiments and modeling of the waste package environment, waste package materials and waste forms.

Los Alamos National Laboratory

In support of site investigation, the Unsaturated Zone, Saturated Zone and Tectonics Process Model Reports, Los Alamos National Laboratory conducts geochemistry, mineralogy, volcanism, and colloid transport studies; laboratory and field-scale transport tests, including the Busted Butte Transport Test; and develops radionuclide transport models for the unsaturated and saturated zone groundwater at the site. Los Alamos National Laboratory collaborates with USGS on isotopic and groundwater chemistry.

Oak Ridge National Laboratory

In support of design, engineering and the Waste Form Process Model Report, the Oak Ridge National Laboratory provides analysis of commercial reactor criticality data, radiochemical assays and un-canistered fuel design. The laboratory also provides technical support for the disposal criticality topical report, thermal/neutronics model and criticality analysis process report.

Pacific Northwest National Laboratory

In support of design, engineering and the Waste Form Process Model Report, the Pacific Northwest National Laboratory provides saturated waste form testing support.

Sandia National Laboratories

In support of site investigation, the Integrated Site Model, the Near-Field Environment, Unsaturated Zone Flow and Transport, Saturated Flow and Transport, Disruptive Events, and Biosphere Process Model reports, Sandia National Laboratories performs modeling activities and also conducts in-situ monitoring in the Exploratory Studies Facility and in the East-West cross drift and also conducts experiments related to coupled processes and to performance confirmation testing. The Laboratories support design and engineering in development of the Waste Form and Engineered Barrier Systems Process Model reports and performs geoengineering and rock mechanics studies and backfill analyses. Sandia National Laboratories supports each Process Model Report in the area of model abstraction for performance assessment and develops and implements Total-System Performance analyses.

United States Geological Survey

In support of site investigation, the Integrated Site Model, Unsaturated Zone, Saturated Zone, and Tectonics Process Model Reports, the USGS conducts studies of stratigraphy, structural geology, earthquake hazards, unsaturated and saturated zone hydrology, surface processes, paleo-climatology, and modeling of unsaturated and saturated zone flow and transport.

Interactions with the Program:

Nye County

Nye County conducts hydrologic testing of the saturated zone, down gradient of the potential repository. Nye County drills, tests, and monitors a series of wells to determine aquifer characteristics, water chemistries, and flow paths. This information supports site investigations.

University and Community College System of Nevada

The University and Community College System of Nevada conducts independent scientific and engineering studies concerning Yucca Mountain as a potential repository. The studies have been far ranging from seismology and geology to data management. These studies are funded by DOE through a cooperative agreement and are only conducted after a merit review and approval by DOE. This information supports site investigation and design and engineering.

4.0 Program Integration Functions

The Contractor shall implement a fully integrated management system in compliance with OCRWM requirements and shall implement quality, timely, and cost-effective programs and operations. The Contractor shall ensure all work under its direction is conducted in a manner that complies with applicable health, safety and environmental regulations; promotes and improves productivity and efficiency; and complies with regulatory requirements, agreements and guidance. The Contractor shall maintain the project decision schedule and budgeting system, including the Integrated Budget Database. The Contractor shall support Program planning activities including assistance with revisions to the Civilian Radioactive Waste Management Program Plan and with Program planning sessions.

The Contractor shall manage work using integrated technical management systems in accordance with the Strategic System Management Policy (SSMP). The SSMP is a policy document, which defines how the CRWM Program is managed. The Contractor's integrated management system is to integrate the technical management (e.g., technical responsibilities and requirements, control and integration of the design process, and physical assets management); planning and control (e.g., establish cost and schedule baselines, identify roles and responsibilities, preparation of accurate cost estimates, establish work authorization process, and provide timely and traceable performance reports); and baseline management (e.g., establish a formal baseline change control process, and establish a formal configuration management system). The baseline shall describe activities over multiple years. The Contractor may propose the performance objectives to DOE on a fiscal-year by fiscal-year basis; subcontractors, as appropriate, to achieve these objectives; and an effective performance measurement system that includes incentives and productivity goals to monitor performance and to ensure that work is properly prioritized and accomplished in a cost effective, safe, secure, and environmentally sound manner. The Contractor shall analyze and report on Program progress against the baseline. The Contractor shall maintain baseline control documents, such as, a work breakdown index, cost and schedule baselines, and monthly management reports on Program status.

The Contractor shall accept the OCRWM baseline documentation and the Configuration Management Information System at the expiration of the incumbent's contract and maintain both in accordance with the formal change control systems. The Contractor's transition plan shall address the review of the baseline documentation for continued implementation and enhancement.

The Contractor shall maintain a post closure safety case sufficient to provide an adequate basis for assessing the safety of the repository system and explaining the performance roles of the natural and engineered systems. The Contractor shall be capable of accommodating new information by periodically performing a Total System Performance Assessment (TSPA) and incorporating the most up to date information each time TSPA is run. The post closure safety case must address the ability of the repository system to protect the health and safety of the public. The Repository Safety Strategy is the plan for completing the work associated with the post closure safety case. This strategy focuses on demonstrating how multiple natural and engineered barriers would work together to enhance post closure performance. As information about the site has increased, design has evolved, and performance assessments have become increasingly more sophisticated and the basis for the post closure safety case has improved. Accordingly, the strategy has

evolved as the understanding of what is important to performance has improved. The Contractor must be capable of accommodating new information and changing Program constraints.

The Contractor shall coordinate and integrate the design functions to ensure compliance with regulatory requirements for protecting the public, workers, and the environment; to demonstrate that designs will operate cost-effectively and efficiently; to ensure that changes to designs and specifications are documented and controlled in accordance with OCRWM quality assurance requirements; and to verify that designs for facilities and equipment meet acceptance criteria and design requirements.

The Contractor shall maintain a Total System Life Cycle Cost estimate to be used in preparing an annual draft Fee Adequacy Report in accordance with the NWPA and use value engineering techniques to maintain lowest life cycle costs consistent with required levels of performance. The Contractor shall process and verify utility fee payment data and develop quarterly revenue projections.

In performing work under this contract, the Contractor shall comply with the applicable Federal, State and local laws and regulations (including DOE regulations), unless relief has been granted in writing from the appropriate regulatory agency. The Contractor shall comply with the requirements of DOE directives, or parts thereof, identified in the List of Applicable Directives (Section J Appendix E), appended to the contract, or a tailored set of requirements developed under a DOE approved process. The Contractor shall continuously evaluate work activities and associated hazards to assure Environmental Safety and Health standards, practices and controls are appropriate. The Contractor is responsible for assuring compliance with the requirements made applicable to the contract regardless of the performer of the work.

The Contractor shall maintain a fully integrated surveillance tracking, trending (excluding Program deficiencies trended by OCRWM, C2.8.0 Quality Assurance Functions) and reporting system to ensure site compliance with applicable health, safety, and environmental regulations; applicable DOE Orders and Standards; and quality assurance requirements. This includes the reporting and documenting of unplanned occurrences such as spills, fires, damage to operating systems, personnel accidents, and exposure to hazardous material; subsequent critiques; disposition of unplanned occurrences; and tracking of corrective actions. The Contractor shall develop and implement a formal lessons learned program.

The Contractor shall ensure that all personnel, facilities, equipment, material, supplies, and services, except as may be expressly set forth in this contract or as furnished by the Government, are available to satisfy the terms of this contract. Further, the Contractor shall take all actions necessary for, or incident to, providing all necessary and related services to manage and subcontract for the programs and operations of the facilities as described in this Statement of Work. All supplies and services are to be procured in accordance with applicable rules, regulations and policies.

The Contractor shall be required to integrate the Waste Acceptance and National Transportation functions described in C2.18.0 and C2.19.0.

The decisions to recommend and approve the Yucca Mountain will entail significant policy decisions based on technical information about not only the site but also other components of a waste management system, including transportation, predisposal storage, finance, and system management. These policy decisions will involve the Secretary and other DOE programs, including Environmental Management, Defense Programs, Environmental Safety and Health, and the Office of Nuclear Nonproliferation; other federal agencies, particularly the Environmental Protection Agency, the Nuclear Regulatory Commission, the President's Council on Environmental Quality, and the Department of Interior; the President and the White House staff, including the Cabinet Council; the Congress; the State of Nevada and other states that may wish to comment; the nuclear utility industry; the nonproliferation and national security communities; the scientific community both within the U.S. and other nations also grappling with the nuclear waste problem; international organizations, such as the Nuclear Energy Agency and the International Atomic Energy Agency; and other stakeholders.

The Contractor will support DOE, both in Washington and Las Vegas, to shepherd the site recommendation through the policy process, including extensive communications with the many participants in the process, the analysis of policy issues, and other support activities. The integration of these support activities with the technical program is vitally important. Similarly, the licensing process, though obviously focused on the Nuclear Regulatory Commission, also will involve many other parties, some supportive and others opposed, and will require significant contractor support that is integrated with the technical program.

5.0 Site Recommendation

The YMSCO has focused its activities on site characterization, principally to develop subsurface testing facilities, and to complete the necessary technical and scientific work at Yucca Mountain. In 2001, site investigations will culminate in a series of statutory

decisions on whether a repository should be developed at Yucca Mountain. If the site is determined to be suitable, in accordance with applicable laws and regulations, and the Secretary of Energy recommends the site for repository development, a Site Recommendation Report will be submitted to the President in 2001. If the President, and then Congress, approve the Site Recommendation, a License Application will be prepared and submitted to the NRC in 2002.

In 2000, OCRWM plans to issue the Site Recommendation Consideration Report to support public hearings. It will present, in summary form, the essential data, analyses, and safety arguments that could support a site recommendation; the general background information and descriptions of the site characterization, repository design, waste form and waste package design; a discussion of the data related to pre-closure and post-closure safety of the site; and an evaluation of whether the repository system complies with DOE's site suitability guidelines.

Supporting documents for the Site Recommendation Consideration Report will include engineering design documents, the Repository Safety Strategy, the Process Model Reports, and the Total System Performance Assessment. The Contractor shall provide the necessary post-release support for the Site Recommendation Consideration Report. This support shall include but not necessarily be limited to support public hearings: disposition of the preliminary comments from the NRC concerning the extent to which the site characterization analysis and the waste form proposal seem sufficient for licensing; review comments from the public, States, Indian Tribes, NWTRB and NRC; prepare a summary of oral and written comments from the hearings, and a draft response to them; prepare a summary of comments from States and a draft response to them; prepare the draft basis for a Site Recommendation Report, which will include the results of the latest iteration of Total System Performance Assessment conducted for the evaluation of the site and the information from the Site Recommendation Consideration Report revised based on comments from the public, States, Indian Tribes, NWTRB and the NRC, as appropriate; and, ensure the report's internal consistency and manage and support the report's review and release.

6.0 License Application

The NWPA requires the Secretary to submit a license application for a high-level nuclear waste repository, in accordance with applicable laws and regulations, within 90 days of the date on which a site designation takes effect. If the site is recommended and approved, the date scheduled for license application submittal is March 2002. It is presumed that the process will encounter delays. To allow adequate time for final review, the draft application must be virtually complete by November 2001. Thus, while work

related to site recommendation will have the greatest visibility in 2001. the scope, complexity and duration of repository licensing will require a significant amount of work related to licensing and interaction with the NRC throughout this same period. As the license applicant, DOE will be responsible for interactions with the NRC with Contractor support. This support will include maintaining an overall repository post-closure and pre-closure safety strategy, maintaining technical sufficiency arguments for the representation of natural and engineered barriers, drafting the necessary submittals for the License Application and amendments, and assisting DOE in the presentation of technical issues leading up to and during the licensing hearing process.

The Contractor shall be responsible for the preparation of the license application in accordance with the License Application Management Plan and Technical Guidance Document. The specific work activities are identified in the annual planning guidance. The Contractor shall support DOE in defining the necessary information for the license amendments.

7.0 Construction / Receive and Possess Authorizations

The pre-emplacment construction will start after NRC issues a construction authorization to DOE for all or part of the repository. The Contractor shall develop the license application amendments to be submitted to the NRC for the construction authorization and receive and possess authorization. This amendment shall address the safety, common defense and security and environmental aspects of Yucca Mountain, as required by the NRC. Current plans indicate that the construction authorization may be granted as early as 2005. The construction activities will include, but not be limited to, site preparation activities, construction of surface facilities, construction of a pre-emplacment lag-storage facility, transition of existing underground drifts to repository facilities, excavation of subsurface facilities, and demonstration of select repository operations. Detailed design and operational information is available in the Subsurface Construction and Development Analysis, Subsurface Development Design, and Surface Nuclear Facility Space Program analysis.

Construction of the underground facilities will continue during the waste handling and emplacement operations phase. It is anticipated that the underground facilities will be completed sufficiently to support waste package emplacement by 2010. The Contractor shall develop the license application amendment to be submitted to the NRC to receive and possess source, special nuclear, or byproduct material at Yucca Mountain. The emplacement rate information is defined in the Acceptance Priority Ranking and Annual Capacity Report (Reference DOE/RW-0457).

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8.0 Quality Assurance Functions

The NWPA mandates that the OCRWM Program complies with NRC regulations. These regulations include quality assurance requirements. Therefore, a comprehensive and effective Quality Assurance program is essential for the performance of work for all phases of the OCRWM Program. The NRC has prescribed quality assurance requirements and guidance for all aspects of the Program. OCRWM responsibilities, as the license applicant and owner, are to ensure that all of the quality assurance controls are in place for verification by NRC and to ensure that the systems, structures, and components under postulated conditions will not adversely affect the waste isolation capabilities of the site and not cause undue risk to the health and safety of the workers and the public.

The Quality Assurance functions to be performed by the Contractor include maintenance of Quality Engineering and Quality Control functions. Quality Engineering includes, but not limited to: review of Contractor quality assurance procedures; review of Contractor procurement documents; in-process review of Contractor technical and design documents; providing advice to Contractor line organizations regarding quality assurance matters, especially in implementing a graded Quality Assurance program to ensure the Contractor's technical products are generated in full compliance with QARD requirements; review and approval of Contractor generated deficiency and nonconformance reports; maintenance of the Contractor Qualified Suppliers List (including quality assurance audits and surveillances of suppliers of items or short term services). Quality Control includes, but is not limited to: independent inspection of in-process and installed facility items, receipt inspection of procured items, and nondestructive examination. The Contractor shall maintain on-site quality assurance representation at various off-site locations to provide Quality Engineering support as appropriate.

OCRWM, Office of Quality Assurance will retain the responsibility for the development and maintenance of the QARD; Quality Assurance Program Management and Policy; QARD interpretation; conduct of all independent Quality Assurance program audits and surveillance at all major participant locations (other than audits of suppliers of items or short-term services); and trending of all quality assurance Program deficiencies (Non-Conformance Reports, Deficiency Reports and Corrective Action Reports).

OCRWM shall have access to Contractor and subcontractor facilities for purposes of quality assurance overview activities, such as audits, surveillance and reviews. Observers from NRC, state and local governments may participate in these oversight activities. The Contractor shall respond to all deficiencies identified.

OCRWM has stop work authority over the Contractor to assure that work does not proceed in areas found to be significantly deficient in implementing quality assurance requirements.

9.0 Operations, Construction and Nevada Transportation Functions

Construction and operations activities include providing, maintaining and managing operating structures, systems and components necessary to support the repository. Construction activities include constructing and modifying underground and surface test areas; changing the configuration of the Exploratory Studies Facility to provide a fully functional underground scientific research facility; providing direct support for test setup and execution; and constructing surface and sub-surface facilities necessary to support the potential repository. Operations activities include maintaining facilities and systems constructed to gather site characterization data; maintaining facilities in the central support area at the site; providing and maintaining site utilities and communications; providing transportation for site workers; and operating all repository facilities.

The Contractor shall be responsible for setting up the program for material control and accomplishing material control and accountability functions when the fuel is received at the repository in Nevada in accordance with applicable security and safeguards requirements including 10 CFR 73 and 10 CFR 75.

While the Regional Service Contractors discussed in C2.19.0, National Transportation Functions will be responsible for delivering spent nuclear fuel and high-level waste to the receiving facility at Yucca Mountain, the Contractor shall be responsible for transportation infrastructure upgrading or establishment within the State of Nevada, as required. Rail shipments will require the construction of a rail spur from existing mainline rail or construction of an intermodal facility or rail yard and required upgrades to existing highways to accommodate heavy-haul transport of rail casks.

10.0 Technical Information Management Functions

The Contractor shall be responsible for maintenance of the integrated technical databases, application software and design documentation which hold field data, laboratory test results, engineering analyses, engineering designs, as-built information, waste inventory information, waste form characteristics, design information, performance assessment information, Licensing Support Network connectivity with appropriate data and information feeds to external parties, and comments and commitments to regulators and

oversight groups. The data will be traceable from collection to development and use in Site Recommendation and licensing documents, in accordance with Program quality assurance requirements.

Within thirty days of the Secretary's submittal of the Site Recommendation to the President, DOE is to make documentary material in electronic form available to the NRC and others.

11.0 Performance Confirmation Functions

Tests will continue over the life of the Program, in compliance with the NRC's requirement for a Performance Confirmation program, to validate the license application repository system performance. These tests will include surface and subsurface field tests and monitoring, laboratory tests, other research, and interpretation and analyses of resulting data.

The Contractor shall be responsible for completing the development of the performance confirmation requirements as described in NRC regulations, for DOE approval. These requirements will include but are not necessarily limited to incorporating new qualified test data and making necessary changes to the Process Model Reports of the site's natural features and processes. The natural feature Process Model Reports are: 1) an Integrated Site model, 2) a Biosphere model, 3) an Unsaturated Zone model, 4) a Saturated Zone model, 5) a Near Field Environment model, and 6) a Disruptive Events model. The Process Model Reports associated with the Engineered Barrier System, Waste Form, and Waste Package are addressed in later sections.

Process models draw on data, which must be traceable and meet the Program quality assurance requirements, from site investigations, lab testing, and design to simulate the physical processes that could be affected by repository performance. Total system performance assessment uses models abstracted from process models for its technical basis.

12.0 Performance Assessment Functions

The Contractor shall be responsible for conducting pre-closure integrated safety assessments and post-closure total system performance assessments to support the Site Recommendation, the repository license application, the construction authorization amendments, if any, and the license amendment to obtain a license to receive and possess nuclear material. The total system performance assessments will provide the basis for the suitability determination and for demonstrating reasonable assurance of the protection of

public health and safety. It must also reflect consideration of recommendations made by the NRC, the Nuclear Waste Technical Review Board, the Total System Performance Assessment Peer Review Panel, affected units of government, states and Indian Tribes.

13.0 Environmental, Safety and Health Functions

Protection of workers, the public and the environment are fundamental responsibilities of the Contractor and a critically important performance expectation. The Contractor's Environment, Safety and Health program shall be operated as an integral, but visible, part of how the organization conducts business in accordance with a documented Integrated Safety Management System, as described in 48 CFR 970.5204-2, as amplified by the OCRWM Integrated Safety Management Plan. The Contractor shall develop and maintain implementing procedures that translate the Integrated Safety Management Plan requirements into work procedures and processes. The Contractor shall monitor all work performance to ensure compliance with implementing documents.

At different phases varying agreements between the Department and regulatory agencies are required. A systematic approach is needed to ensure that all agreements between the Department and regulatory agencies are complied with fully and commitments are met. The Contractor shall ensure that their subcontractors meet the terms and conditions of these agreements in the performance of their subcontracts.

The Contractor shall perform all activities in compliance with applicable health, safety, and environmental laws, orders, regulations, and national consensus standards where applicable and appropriate; and governing agreements and permits executed between the Department and regulatory and oversight government organizations. A systematic approach is needed to ensure full compliance. The Contractor shall take necessary actions to preclude injuries and/or fatalities, keep worker exposures and environmental releases as low as reasonably achievable below established regulatory limits, minimize the generation of waste, and maintain or increase protection to the environment, public and worker safety and health.

At the award of this contract the OCRWM will have program procedures implementing the Integrated Safety Management System. The Contractor will utilize the existing programs in place. Upon review of the programs in place and throughout the length of the Contract, the Contractor will be expected to improve the Project's Integrated Safety Management System amplified by the OCRWM Integrated Safety Management Plan and its implementation. Safety and Health programs include those for industrial safety in office, field, and tunnel construction environments; industrial hygiene programs to include those for radon and silica protection; fire protection; occupational medicine;

training; self and independent assessment programs; integrated safety review processes; operational and event reporting; accident investigations; emergency management; and development and use of performance indicators and lessons learned programs. Radiological protection programs will initially be required to control radon exposures and incidental use of source materials for testing and experimentation. It is recognized that the radiological protection program has to be expanded to address work activities associated with surface facility operations and handling high level waste. Environmental protection programs include maintenance and acquisition of regulatory permits and assuring operations are maintained as required by those permits, agreements or other regulatory requirements. These include but are not limited to those under the Clean Water Act, Clean Air Act, Endangered Species Act, and State water appropriations requirements.

The Contractor shall be responsible for monitoring and data collection of the weather and other environmental conditions. These data will be used for models that support the repository design and the total system performance assessments. Monitoring results during the construction and operation phase will provide evidence of the Contractor's performance in maintaining acceptable environmental conditions.

The contractor shall be responsible for implementing the ISM QA Program to comply with the requirements described in ISM QA Program document which includes Contractor self assessments. This document will be issued as an addendum to the QARD and will be posted on the Internet upon its issuance.

The Contractor shall, as appropriate, consider Environmental Safety and Health performance in selection of its subcontractors and incorporate Environmental Safety and Health requirements into subcontracts. The Contractor shall ensure that cost reduction and efficiency efforts are fully compatible with Environmental Safety and Health performance.

14.0 Waste Forms and Waste Package Materials Testing Functions

The repository will house commercial spent nuclear fuel, DOE spent nuclear fuel, Naval spent nuclear fuel, excess plutonium and high-level radioactive waste. DOE-spent nuclear fuel presents particular complexity since there are more than 250 types. Testing of waste forms and candidate materials for waste package fabrication, under anticipated repository conditions, provides the basis for developing the Waste Form and Waste Package Process Model Reports that predict degradation of waste forms and waste packages and eventual release of radionuclides. The Contractor shall be responsible for

compiling design basis waste form characteristics for all waste forms in the Program's current and projected inventory for inclusion in the Total System Performance Assessment model.

15.0 Waste Package Functions

The Contractor shall be responsible for providing the waste package design, procurement and fabrication information to be licensed by the NRC. Currently, several different designs are planned to accommodate the diverse inventory of waste forms. The waste package design requires structural, thermal, radiation shielding, criticality, and operational analyses; development of fabrication and welding verification methods; and development of cost estimates (reference Waste Package Containment Barrier Materials and Drip Shield Selection Report, Waste Package Internal Materials Selection Report, and Waste Package Neutron Absorber, Thermal Shunt, and Fill Gas Selection Report.) Fabrication verification techniques are necessary to demonstrate that the waste package will perform as expected and will help meet post-closure performance objectives (reference Waste Package Fabrication Report.)

16.0 Subsurface and Surface Facilities Design Functions

The Contractor shall be responsible for providing subsurface designs to address, but not be limited to, waste emplacement, engineered barrier system, thermal load management, excavation stability, working environment safety, waste package retrieval, and repository closure. These designs support the Engineered Barrier System Process Model Report which in turn supports the Total System Performance Assessment model. The subsurface design will be needed to support the Site Recommendation and the License Application and amendments. The Contractor shall be responsible for developing the design products to support the development of the safety analyses, the design bases, and a general description of all underground systems. The design will include a description of the systems that are required to protect the health and safety of the workers and public and those that are required to meet post-closure repository performance objectives.

The Contractor shall be responsible for providing surface engineering designs for waste receipt, lag storage, waste transfer from shipping casks into waste packages, waste package sealing, and waste package staging for underground emplacement. Other major facility designs include a waste treatment building, transporter maintenance building, site utilities, warehouses, maintenance shops, and administrative facilities.

17.0 Building Management Functions

The Contractor shall be responsible for ensuring that the nuclear and non-nuclear buildings comply with appropriate requirements. Compliance with approved building authorization bases are required by this contract. This includes the development, use and modification, as appropriate, of safety analysis reports, operations safety requirements, technical safety requirements and hazard classification documents. A graded approach to building management shall be developed and implemented based on the hazards contained in each building to ensure cost-effective compliance without compromising worker or public safety.

The Contractor shall be responsible for ensuring that the operations of nuclear facilities comply with Limiting Conditions of Operations and Technical Specifications, occurrence reporting, and other surveillances. Occurrence reporting involves the reporting and documentation of unplanned occurrences such as spills, fires, damage to operating systems, personnel accidents, and exposure to hazardous material and includes critiques, disposition of unplanned occurrences, and tracking of corrective actions.

The Contractor shall be responsible for ensuring that those activities needed to safely operate a facility such as operations management, utilities, maintenance, nuclear safety activities (some facilities), environmental compliance, health and safety practices, technical and custodial support are provided. Facility maintenance includes preventive and corrective maintenance, ensuring that materials and equipment comply with standards and are properly calibrated. Other activities include radiological and industrial safety, lockout/tagout controls, safety systems operation, and verification of conduct of operations and maintenance.

18.0 Waste Acceptance Functions

The Contractor will support the Department's maintenance of existing Standard Contracts and data collection. The Contractor may be requested to develop plans for achieving the legal and physical transfer of spent nuclear fuel and high-level radioactive waste to the Federal Government from the owners and generators of such spent nuclear fuel and high-level radioactive waste and to assist in implementing the provisions in the Standard Contract (i.e., 10 CFR 961). If requested, this includes supporting Standard Contract settlements, contract modifications, and/or deviations; updating and publishing the Acceptance Priority Ranking and Annual Capacity Report; updating verification requirements, as required; maintaining spent nuclear fuel storage data and assumptions;

updating, validating and disseminating utility supplied spent nuclear fuel discharge and storage data; supporting the development of waste acceptance criteria; and supporting the waste acceptance process.

In the event that the Department takes title to fuel at reactor sites, the Contractor may be directed to support the required materials control and accountability functions and may be responsible for designing, constructing, licensing support, and operating at-reactor storage facilities.

19.0 National Transportation Functions

DOE may decide at a later date that the Contractor may be responsible for spent nuclear fuel and high-level radioactive waste transportation services. These include the development or acquisition of the necessary hardware, the operation of the hardware, the acceptance of spent nuclear fuel at reactor sites and DOE sites, and the necessary institutional expertise to support transportation of spent nuclear fuel and high-level radioactive waste to a DOE facility or facilities. The present DOE plans are to utilize Regional Services Contractors to provide these services, through direct DOE contracts. The integration of these activities with the Program will be the responsibility of the Contractor.

Prior to the start of any shipping campaign, DOE is responsible, as described in Section 180(c) of NWPA, to provide funds and technical assistance to States and Indian Tribes for training public safety officials of appropriate units of local government and Indian tribes through whose jurisdiction the Department plans to transport spent nuclear fuel or high-level waste. The law directs DOE to provide this assistance to States and Indian tribes to train their personnel responding to emergency situations and for safe routine transportation of the nuclear materials. As the transportation component of the system is developed, the Contractor shall be responsible for assisting the Department in the development and implementation of the technical assistance program to the States and Indian Tribes eligible for assistance.

20.0 Support Functions

The Contractor shall be responsible for ensuring that common services are provided for health, safety and environmental protection, emergency management, and real property management. Some of the key common support functions are:

- training of Contractor personnel and others as specified by DOE
- property management

- inventory control
- vehicle and grounds maintenance
- design standards
- design control procedures
- general design criteria
- planning
- work control procedures
- safety analysis reviews
- site infrastructure technical support
- energy management
- capital assets management
- procurement
- computer training
- media arts
- technical support in analyzing regulatory and legislative proposals

The Contractor shall be responsible for providing information management services, including information technology, telecommunications, records management, document production, reprographic services, and publication capabilities. All software development efforts will meet the criteria of Capability Maturity Model (CMM) Level 2 Certification or equivalent. The Contractor shall be responsible for managing, operating, and maintaining facilities and systems essential to information management system operations excluding those used by the federal staff and contractors providing direct support to the federal staff.

The Contractor shall be responsible for managing, operating, and maintaining site facilities and systems essential to site operations and surface testing. Functions may include providing electricity, water and janitorial services; controlling materials, property and warehousing supplies; operating a motor pool; providing staging for underground activities; providing utility feeds to underground operations; calibration of scientific equipment; maintaining public information capability; coordinating tours of the site; ensuring site security; and providing access control to work areas to ensure safe operations. The Contractor shall staff and operate the Yucca Mountain Science Centers.

21.0 Management, Planning, and Control System Functions

The Contractor shall maintain a management, planning and cost control structure which utilizes work packages as the basis of the performance measurement process in accordance with the Strategic System Management Policy (SSMP). The structure will ensure that, 1) at the work package level, work scope, cost, and schedule will be planned,

baselined, and performed; 2) budgets will be established for labor, travel, subcontracts, materials, and other direct costs at the work package level time phased per the program schedule; 3) actual performance will be assessed against the work package in terms of work accomplished and the actual cost of the work collected; 4) at the work package level, performance will be summarized into the Contract Work Breakdown Structure (CWBS) and the Work Breakdown Structure (WBS) at increasingly higher levels; 5) job numbers are established for the purpose of appropriately charging costs for the work being performed and tiered into the work package; 6) actual costs are reported at the work package level and summarized at each level of the WBS and CWBS.

The process of initiating job numbers will be defined and controlled by approved procedures to ensure that the work has been authorized and funded prior to costs being incurred. Actual and accrued costs will be collected at the job number level for the resources applied in the performance of the work, and the Contractor will ensure that these costs are linked to the accounting system as identified in Business Administration Functions.

22.0 Business Administration Functions

The Contractor will provide, in the Las Vegas, Nevada area, general management activities, which include but are not limited to, legal services, audit services, payroll processing, business systems management, human resources, budget preparations, financial management, industrial relations and procurement. The Contractor shall maintain necessary systems to ensure that accurate and timely information is available for program management. These systems shall be used to identify risks and priorities; support project requirements (e.g., records, financial and human resource management systems); assess performance against the baseline; allow the evaluation of the consequences (technical, cost, schedule) of new information, alternative activities and/or new financial scenarios; include estimating procedures, based on proven commercial techniques; propose, accumulate and report costs consistent with Generally Accepted Accounting Principles, Cost Accounting Standards, and DOE Accounting Policy; provide integrated financial, schedule, critical path analysis and activity tracking data to support baseline management; emphasize performance measurements, change control and trending data; provide the ability to both control and report direct and indirect costs; integrate data generated and provided by Bechtel Nevada, the National Laboratories, DOE, other prime contractors, the Contractor and its subcontractors; provide the information necessary to support the preparation of DOE reports pursuant to or as required by regulatory agreements; and provide DOE, via computerized files, periodic accounting entries covering all aspects of government operations as well as property acquisitions, dispositions, and monthly depreciation charges.

The Contractor must maintain, in Las Vegas area, a fully-integrated, automated accounting system that is linked to DOE's accounts through the use of reciprocal accounts and that has electronic capability to transmit monthly and year-end self-balancing trial balances to the Department's Primary Accounting System for reporting financial activities under this contract in accordance with requirements imposed by the contracting officer pursuant to the Laws, regulations and DOE directives clause of the contract. The system must have the capability to record the required financial transactions including encumbrances, to control and report costs by DOE reporting structure (appropriation, budget reporting number, activity, job, project number), and to produce auditable records.

23.0 Contract Transition Functions

Beginning on the date of contract award, the Contractor shall perform those activities, necessary to assume responsibility for the contract on February 12, 2001. The Contractor shall coordinate its activities with DOE and the incumbent Contractor so as to accomplish these activities in a manner that will provide effective management of personnel and work activities while minimizing the cost of this effort. The scope of activities that are to be performed and the available budget during this period shall be subject to DOE approval.

The Contractor shall utilize any government-furnished facilities and equipment as appropriate to minimize costs. The Contractor may, subject to agreement with the incumbent Contractor, utilize incumbent Contractor personnel on a loaned basis or arrange for early transition of employees to the Contractor as appropriate. In addition, the Contractor may utilize services of subcontractors of the incumbent Contractor with agreement from the incumbent Contractor, subcontractor and DOE.