

**SALT REPOSITORY PROJECT
PROJECT MANAGEMENT PLAN**



**U.S. Department of Energy
Chicago Operations Office
Salt Repository Project Office**

MARCH 1985

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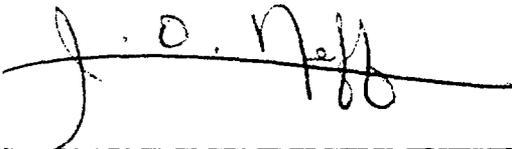
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Foreword

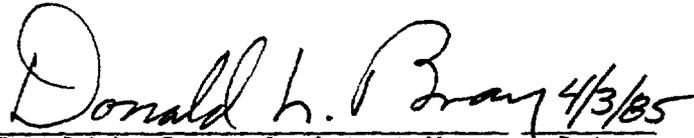
The purpose of the Salt Repository Project (SRP) Management Plan is to set forth the plans, organization and systems to be utilized by the Salt Repository Project Office (SRPO), a project element of the Civilian Radioactive Waste Management (CRWM) Program being managed by the Chicago Operations Office of the Department of Energy (DOE-CH). This plan is effective upon approval by the undersigned and shall remain in full force and effect for the execution of this Project. As the occasion arises, it will, from time to time, undergo modifications and revisions. Recommended changes shall be submitted to the Manager, Salt Repository Project Office, who shall be responsible for the coordination and resolution of proposed changes and the implementation of approved changes. This plan shall be revised as required, and shall be reviewed no less frequently than annually by the SRPO to assure that it is current.

Approved:

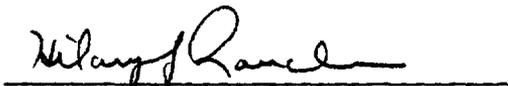
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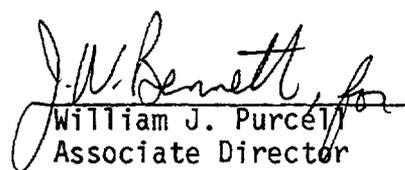
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SALT REPOSITORY PROJECT MANAGEMENT PLAN

1.0 INTRODUCTION

The objective of the Salt Repository Project (SRP) is to evaluate the suitability of candidate salt sites for hosting a geologic repository. If a salt site is selected for the geologic repository, the SRP will have the further objective to design, construct, operate and decommission the repository. The SRPO plans to carry out this project with full adherence to a legislated institutional process, while developing the sound technical data needed to support key milestones and decision points.

This SRP Management Plan identifies the scope of this Project. This document describes the plans, organizational relationships and applicable control systems the SRP Office will use, and details the Project baselines (technical, schedule and cost) necessary for accomplishing the overall objective. This management plan is the detailed Project baseline and execution extension of the summary level Project Plan entitled Facilities for National Waste Terminal Storage, dated April 15, 1982. The management responsibility, authority and accountability for this project is specified in Charter, National Waste Terminal Storage Program Office, dated December 16, 1981. A new Charter is now being developed by OCRWM which will more accurately reflect the management responsibilities, authorities and accountability now in force as a result of passage of the Nuclear Waste Policy Act of 1982.

Note: Prior to the passage of the Nuclear Waste Policy Act of 1982 on January 7, 1983, the SRPO was termed the National Waste Terminal Storage Program Office (NPO) and included the Salt Project and the Crystalline Rock Project. However, the passage of the Nuclear Waste Policy Act created the Office of Civilian Radioactive Waste Management, established a specific regulatory process under which the National Waste Terminal Storage Program must operate, and established a top-level target schedule for the decision-making process. Subsequently, the Crystalline Rock Project was split away from NPO and was established as a Project entity of its own, and NPO was redesignated the Salt Repository Project.

1.1 PROGRAM OVERVIEW

The National Waste Terminal Storage (NWTs) Program, the predecessor program to the CRWM Program, was established in 1976 to investigate alternatives and develop the technology and facilities for the safe disposal of high-level radioactive waste (HLW) and spent fuel (SF). These wastes are produced by both commercial and defense activities, and include spent fuel from nuclear power reactors and solidified wastes from the reprocessing of commercial reactor fuel. To meet the objective of isolating HLW, DOE is implementing a technical program that encompasses relevant radiological protection criteria as well as other applicable requirements established by the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Environmental Protection Agency (EPA).

The Department has selected isolation and disposal in mined repositories in stable geologic formations as the preferred means of disposal of commercially generated high-level radioactive waste and spent fuel.¹ This decision was made after evaluating various alternative means for the disposal of these materials in an environmental impact statement (EIS)², which showed that geologic disposal is both safe and environmentally sound. To carry out this decision, the Department has been conducting research and development and performing siting studies as part of the Geologic Repository Program. The decision was supported by the Nuclear Waste Policy Act of 1982 (NWPA), PL-97-425, which was enacted "to provide for the development of repositories for the disposal of high-level radioactive waste and spent nuclear fuel, to establish a program of research, development, and demonstration regarding the disposal of high-level radioactive waste and spent nuclear fuel, and for other purposes." Several types of media (salt, basalt, tuff and crystalline) are being studied in several states throughout the continental United States as potential sites for the first and second repositories. The NWPA identifies actions that must be performed to design, construct, operate and decommission a geologic repository and specifies target dates for the completion of significant events.

The Office of Civilian Radioactive Waste Management (OCRWM) has been created within DOE by direction of the NWPA. The mission of the Geologic Repository Program as part of OCRWM is to provide for the development of repositories for the disposal of high-level radioactive waste and spent fuel in a manner that fully protects the health and safety of the public and the quality of the environment. This mission has been expanded into specific goals which include: 1) selection and characterization of potential repository sites; 2) construction and operation of one or more licensed waste repositories for the permanent disposal of either or both spent fuel and high-level reprocessed wastes; 3) achieving public confidence through an effective consultation and cooperation process that encourages widespread State, Indian tribe, and public participation in the planning, decision-making, and licensing process; and 4) developing waste packages that meet all regulatory performance requirements. These goals provide the foundation upon which the Project technical planning is developed. The objective of near-term efforts is to have a licensed geologic repository safely operating in 1998.

Although the current repository planning is based on receiving primarily spent nuclear fuel, care is being taken to ensure that the Program retains the capability to accept high-level wastes from the reprocessing of spent nuclear fuel.

¹46 FR 26677, May 14, 1981.

²U.S. Department of Energy, Final Environmental Impact Statement--Management of Commercially Generated Radioactive Waste, DOE/EIS-0046F, October 1980.

1.2 PARTICIPANTS

There are many organizations involved with the implementation and execution of the SRP. These include various elements within DOE, DOE prime contractors, national laboratories, other federal agencies and subcontractors to the DOE primes.

1.2.1 Office of Civilian Radioactive Waste Management

The Office of Civilian Radioactive Waste Management, located in Washington, D.C., is the DOE component charged with implementation of the NHPA (the Act). The Director, OCRWM is responsible for the CRWM effort to isolate nuclear waste in mined repositories, and DOE has established the OCRWM per the requirements of the NHPA. Its mission is to provide for the development of repositories for the disposal of high-level radioactive waste and spent nuclear fuel, including interim storage, if required, before permanent disposal in mined repositories is established.

1.2.2 Salt Repository Project Office

The SRPO is located in Columbus, Ohio, and is organized as a Project Office element of the DOE Chicago Operations Office (DOE-CH). The SRPO is part of the Office of the Assistant Manager for Project and Technology Management (AMPTM) and reports to the Assistant Manager. The AMPTM, in turn, reports directly to the Manager of Chicago Operations Office (DOE-CH).

In addition to the full time dedicated staff of the Project Office, DOE-CH provides matrix support to the SRPO. This matrix support is provided in the areas of legal, finance, project control, travel, public outreach and press relations.

Prime contractor support to the SRPO currently includes: an overall Management and Technical Support Contractor, Battelle Project Management Division - Office of Nuclear Waste Isolation; a Construction Manager for the Exploratory Shaft Facility, Parsons-Redpath; an Architect/Engineer for the conceptual design of a repository in salt, Fluor Engineers, Inc.; and a contractor providing geologic studies, The Texas Bureau of Economic Geology. Additional contractor support currently includes technical support services provided by CER Corporation, administrative support services provided by Maxima Corporation, and project control support services provided by Systematic Management Services, Inc.

In addition to contractor support, there are Interagency Agreements with the U.S. Geological Survey, the U.S. Army Corps of Engineers, the Bureau of Land Management, the National Park Service and the Bureau of Mines. There are also Grant programs with the State of Louisiana, the State of Texas, the State of Mississippi, the State of Utah and the American Nuclear Society, and Task Agreements with several Integrated Contractors including Argonne National Laboratory, Brookhaven National Laboratory, Bendix Field Engineering Corporation, Lawrence Berkeley Laboratory, Lawrence Livermore National Laboratory, Material Characterization Center, Oak Ridge National Laboratory, Pacific Northwest Laboratory, Sandia National Laboratories, Hanford Engineering Development Laboratory, Los Alamos National Laboratory. Also there is an agreement with the Office of Scientific and Technical Information, a DOE Program Office.

1.3 PROJECT DOCUMENTS

The following documents provide guidance as to the purpose of the SRP as well as defining the criteria within which a repository will be established.

- o Public Law 97-425, Nuclear Waste Policy Act of 1982
- o Public Law 91-190, National Environmental Policy Act of 1969
- o ANSI/ASME-NQ-1-1979 - Quality Assurance Program Requirements for Nuclear Facilities
- o Salt Repository Project Office Quality Assurance Manual, Revision 2, dated July 17, 1984
- o 10 CFR 50, Appendix B - Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants
- o 10 CFR 60 - Disposal of High Level Radioactive Waste in Geologic Repositories; Licensing Procedures
- o NRC Regulatory Guide 4.17 (Draft), dated July 1984
- o Project Charter - National Waste Terminal Storage Program Office, dated December 16, 1981
- o Project Plan - Facilities for National Waste Terminal Storage, dated June 9, 1982
- o 40 CFR 191 - Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes (Draft #2, Federal Register, December 29, 1982)
- o 10 CFR 960 - General Guidelines for Recommendation of Sites for Nuclear Waste Repositories (Federal Register, December 6, 1984)
- o 10 CFR 20 - Standards for Protection Against Radiation
- o OGR Program Baseline Procedures Notebook, OGR/B-1, dated November 1984
- o Generic Requirements for a Mined Geologic Disposal System, OGR/B-2, dated October 4, 1984
- o Civilian Radioactive Waste Management Program Mission Plan, Volume I, Overview and Current Program Plans (draft), DOE/RW-0005, dated April 1984
- o National Waste Terminal Storage Program, Program Management Manual, dated April 1980
- o Salt Repository Project Office, Standard Operating Procedures, 5/30/84
- o CH 5700.4, Project Management System, dated February 15, 1983
- o DOE 1270.1, Funds-Out Interagency Agreement, 6/13/79

- o OMB Circular A-109, Major Systems Acquisition
- o DOE 1332.1, Uniform Reporting System for Contractors, 10/31/83
- o DOE 2200, Financial Management of Nuclear Waste Activities (Draft), dated 9/26/84
- o DOE 2250.1A, Cost and Schedule Control Systems Criteria for Contract Performance Measurement, 11/9/82
- o DOE 4300.1A, Real Estate Management, 7/7/83
- o DOE 5100.5, Office of Management and Budget - Budget Process, 7/21/83
- o DOE 5480.1A, Environmental Protection, Safety and Health Protection Program for DOE Operations, 8/13/81
- o DOE 5481.1A, Safety Analysis and Review System, 8/13/81
- o DOE 5440.1B, Implementation of the National Environmental Policy Act, 5/14/82
- o DOE 5700.1C, Major System Acquisitions, 9/6/83
- o DOE 5700.2B, Independent Cost Estimating and Cost Standardization, 8/5/83
- o DOE 5700.3B, Major System Acquisition Procedures, 9/8/83
- o DOE 5700.4A, Project Management System, 11/17/83
- o DOE 5700.5, Policy and Management Procedures for Financial Incentives Program, 1/12/81
- o DOE 5700.6A, Quality Assurance, 8/13/81
- o DOE 6410.1, Management of Construction Projects, 5/26/83
- o 5000.3, Unusual Occurrence Reporting System, 11/7/84
- o 5480.4, Environmental Protection, Safety and Health Protection Standards, 5/15/84
- o 5500.2, Emergency Planning, Preparedness and Response for Operations, 8/13/81
- o 5500.3, Reactor and Nonreactor Nuclear Facility Emergency Planning Preparedness, and Response Program for Department of Energy Operations, 8/13/81

The EPA standards in 40 CFR 191 address the cumulative amounts of radionuclides predicted to be released from a repository system and transported to the accessible environment. The NRC interpretive criteria in 10 CFR 60 address the performance requirements of each major subsystem of the repository (site, waste package, repository construction) such that the overall EPA standards are met.

To best satisfy these criteria the Department has drafted two documents. Generic Requirements for a Mined Geologic Disposal System, dated September 1984, identifies specific pre-closure and post-closure requirements that each subsystem of the repository must meet. This document focuses requirements sufficiently that waste package and repository conceptual and preliminary designs can be performed. General Guidelines for Recommendation of Sites for Nuclear Waste Repositories, 10 CFR 960, accomplishes two things in relation to the site. First, it enables the site selection process to narrow the number of candidate sites. This is done through preparation of Environmental Assessments which, through rating the respective sites against the Guidelines, will ultimately narrow the sites to only those three to be recommended to undergo further site characterization. The three sites to be further characterized will also, "to the extent practicable," satisfy the NWA guideline [Sec. 112.(a)] of being in different geologic media. Second, 10 CFR 60 provides a focus for the Department's Site Characterization Program. The result of the Site Characterization Program will be that the most suitable site, in relation to the Guidelines, will be recommended for construction of a repository.

In general, the overall technical performance criteria that the repository must satisfy require that the implanted waste be contained by the waste package for a period of at least 300 years, and that radionuclides, in numbers no greater than specified in 40 CFR 191, not escape the natural and engineered barriers of the repository system to the accessible environment for a period of 10,000 years.

2.2 SCHEDULE

The primary schedule objective is to be licensed to receive high-level waste for storage in the repository by January 31, 1998. For the SRP, the schedule objectives of the various schedule hierarchies are those that will enable the submittal of a License Application (LA) for a repository in salt to the NRC in May 1991. The Key (DOE-HQ) and Project (SRPO) Control Milestones for the SRP reflect the NWA and OCRWM requirements to meet the date for submittal of a LA. This will enable the January 31, 1998, date for the repository to accept high-level waste to be met. The Key Milestones are shown below.

KEY MILESTONES

- o DOE-HQ Issues Draft EAs for Public Comment. 12/84
- o Interested Parties Submit to DOE-HQ Final Comments on EAs. 03/85
- o DOE-HQ Nominates at Least Five Sites for Characterization, Public Notice Issued in Federal Register. Fall/85

- o DOE-HQ Recommends to the President Three of the Nominated Sites for Characterization as Candidate Sites. President Approves Candidate Sites. Fall/85
- o DOE-HQ Issues to NRC, Affected States and/or Indian Tribes Salt SCP for Review. 10/86
- o CM Issues to Contractors Notice to Proceed Letter to Initiate Exploratory Shaft Construction. 03/87
- o Exploratory Shafts Excavation and Lining Complete. 09/88
- o Contractor Issues to Test Contractor Notice to Proceed Letter for In Situ Testing at ESF. 01/89
- o DOE-HQ Issues to NRC, States and Interested Parties Draft Environmental Impact Statement for Comment. 06/90
- o DOE-HQ Submits to EPA and Other Agencies the Final Environmental Impact Statement for the Selected Site. 12/90
- o DOE-HQ Submits to President Site Selection Report. 01/91
- o President Sends to Congress Site Recommendation. 03/91
- o DOE-HQ Files License Application (LA) with NRC. 05/91
- o NRC Issues Construction Authorization to OCRWM. 08/93
- o Initial Shipment of Waste Accepted at Repository Site for Storage. 01/98

The Department recognizes that the acquisition of all necessary information and data to support licensing may require additional activities that require more time than is provided in the repository schedule. In that event, the Department will place priority on the acquisition of technical data and adherence to the institutional process in preference to the repository schedule. In any event, DOE will comply with all steps specified in the Nuclear Waste Policy Act.

2.3 COST

It was determined that the first repository would cost, through operation and decommissioning, in the range of \$6.7 billion.⁴ The SRP portion of this amount will depend upon many factors. In any event, it is intended that all costs to the Government for the disposal of nuclear wastes generated from commercial activities be fully recovered. The NWPA established the CRWM Program as a separate element to be financed by the Nuclear Waste Fund

⁴"Nuclear Waste Fund Fee Adequacy: An Assessment," dated February 1985, DOE/RW-0020, page 7, Table 1.

(NWPA Sec. 302). The Nuclear Waste Fund shall be established by the Secretary and obtain its revenues through fees collected as a result of contractual arrangements with domestic entities generating or holding title to high-level radioactive waste or spent nuclear fuel. The fee schedule will be reviewed and, if necessary, adjusted annually to ensure that all necessary costs incurred by the Federal Government as a result of this Program will be completely reimbursed through the Nuclear Waste Fund.

3.0 MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

3.1 OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM)

The Nuclear Waste Policy Act established the Office of Civilian Radioactive Waste Management (OCRWM), within DOE, to be headed by a Director responsible for carrying out the functions of the Secretary under the Act. The OCRWM Organization Chart is shown as Figure 1. The Director has established four offices within the OCRWM to carry out the provisions of the Act. Those offices and areas of responsibility are:

3.1.1 Office of Policy, Integration and Outreach

The Office of Policy, Integration and Outreach has primary responsibility within OCRWM for providing central staff support to the Director, OCRWM in policy formulation, program planning and general oversight of Program execution actions. The Office evaluates Program accomplishments and its Quality Assurance Program assures integration of Headquarters and field activities. In addition, the Office independently monitors Program interaction with external interests to observe effectiveness and quality of policy implementation. The Office also coordinates communications, public relations and institutional relations policy development and implementation for the OCRWM. The Office is organized as follows:

- o Policy Division
- o Program Integration Division
- o Outreach Division

3.1.2 Office of Resource Management

The Office of Resource Management has primary responsibility with OCRWM for the proper management and administration of the Nuclear Waste Fund and Interim Storage Fund. Fund management responsibilities include activities related to fee collection and payment procedures, establishment of methods for review and the actual performance of an annual review to determine fee adequacy, management of contracts for disposal and interim storage services, preparation and execution of OCRWM budgets, fund control and accounting activities, management of information and data systems, preparation of management studies of alternative means of financing, and provision of management support services to OCRWM. The Office also has responsibility for contract management and procurement support activities. The Office is organized as follows:

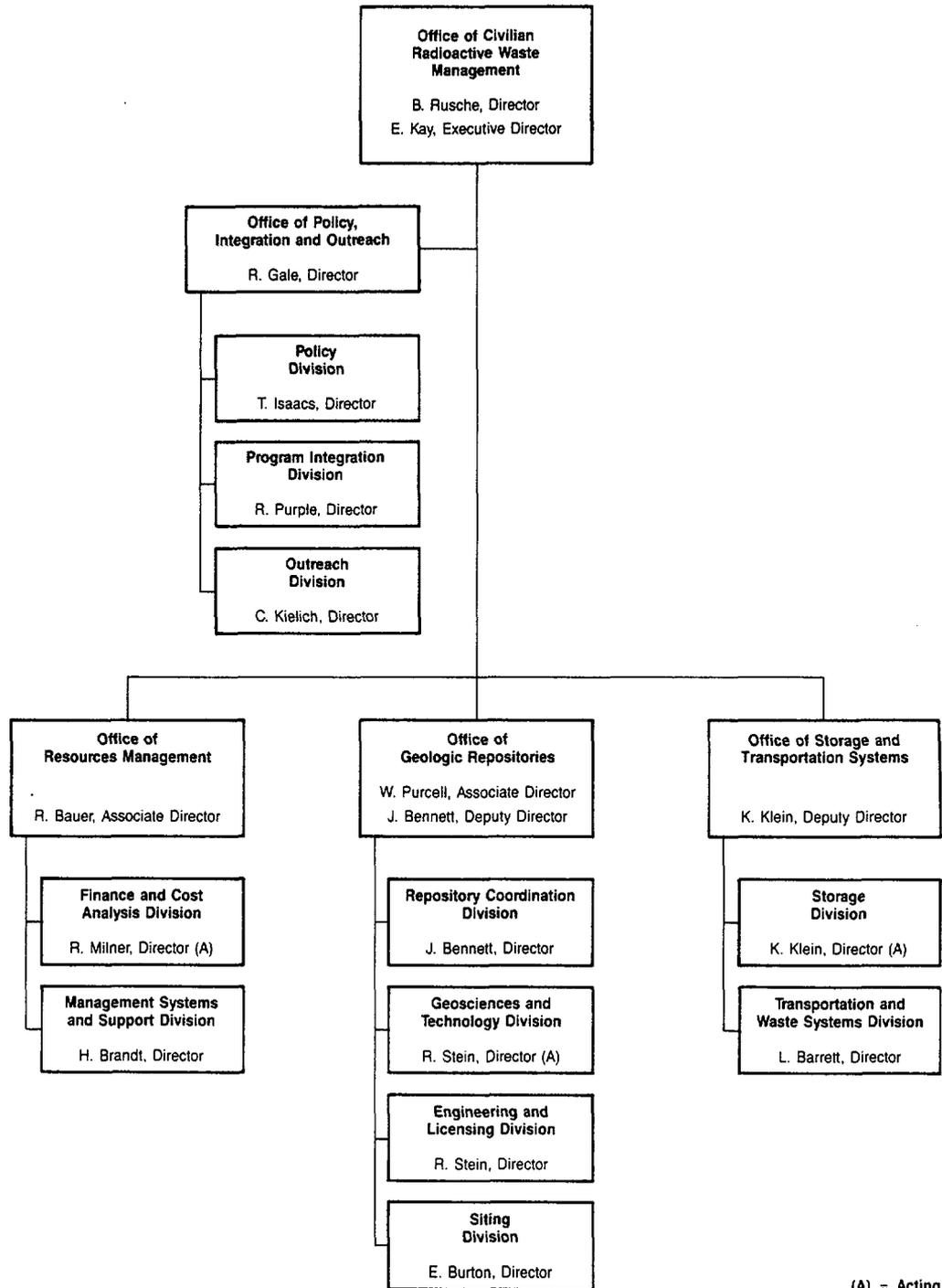
- o Finance & Cost Analysis Division
- o Management Systems & Support Division

3.1.3 Office of Geologic Repositories

The Office of Geologic Repositories has primary responsibility within OCRWM for geologic repository projects. This includes site screening for and characterization of potential geologic repository sites; recommendation for site selection; design and construction of exploratory shafts; evaluation of regulatory requirements; design, development, licensing, construction, operation and decommissioning of mined geologic repositories; design,

Figure 1

**U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**



development, siting, licensing, construction and operation of a test-and-evaluation facility (TEF); management of RD&D activities for both repositories and other means of permanent disposal; and management and coordination of safety, quality assurance and standards activities for the geologic repository deployment subprogram. In carrying out its functions, the Office interacts, develops agreements and coordinates its activities with State and local governments, Indian tribal councils, other Federal agencies, and DOE field offices. The Office is organized as follows:

- o Repository Coordination Division
- o Engineering and Licensing Division
- o Geosciences and Technology Division
- o Siting Division

3.1.4 Office of Storage and Transportation Systems

The Office of Storage and Transportation Systems has primary responsibility within OCRWM for the implementation of subtitles B and C, Title I, and Sections 218 and 220, Title II, PL-97-425, and other activities related to the interim or long-term storage of SNF and HLW, including waste packaging, handling and transportation technologies. Major projects include provision of any needed Federal interim storage facilities and preparation of a Congressionally mandated proposal for the construction of one or more Monitored Retrievable Storage (MRS) facilities for long-term storage of HLW and SNF as a backup capability for mined geologic repositories, SNF storage and disposal, international cooperation programs and development of packaging and transportation systems. The Office also encourages and expedites, through a joint demonstration program and R&D efforts, civilian at-reactor storage of SNF, and assists in licensing various SNF storage options.

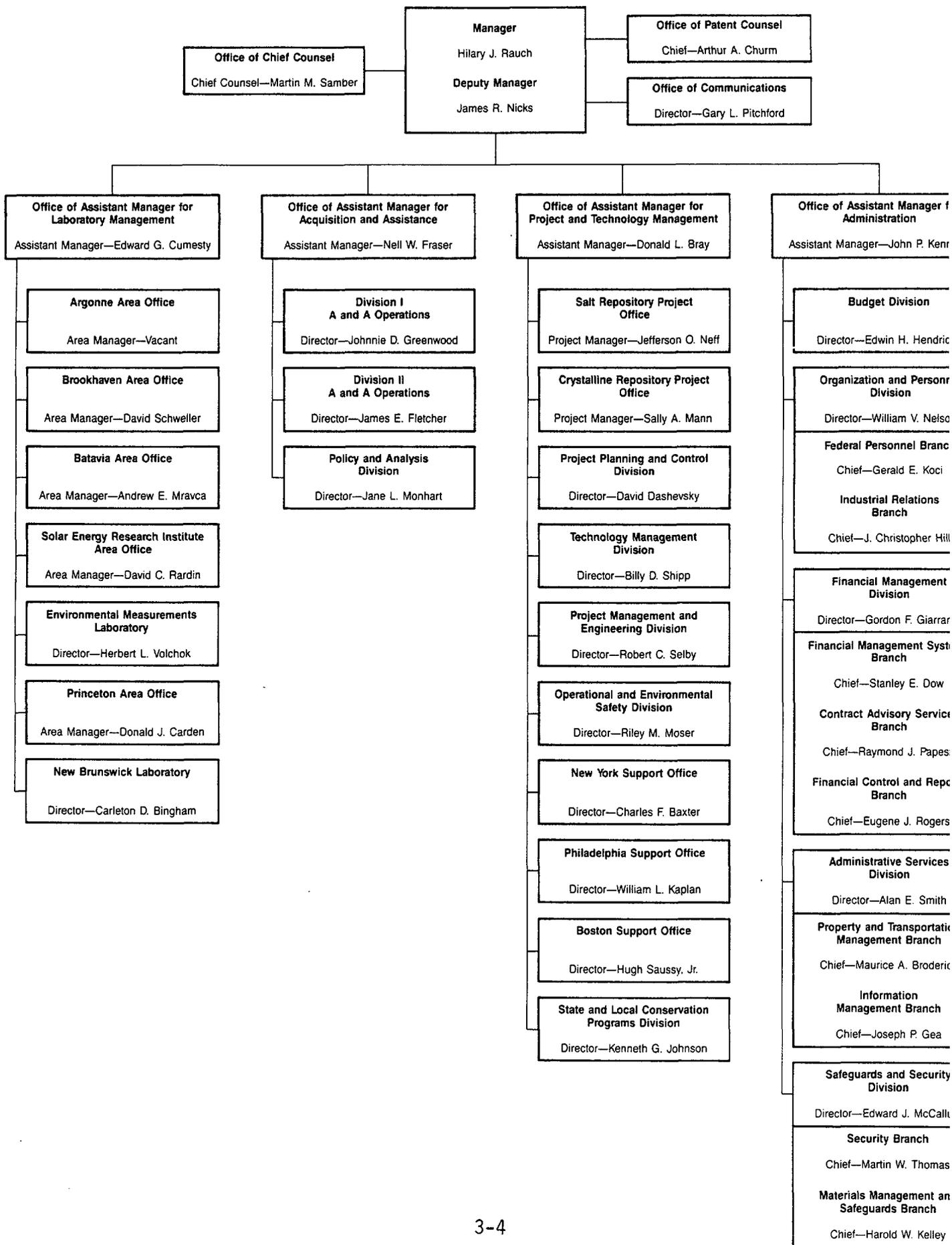
The Office is responsible for providing storage to a limit of 1,900 metric tons upon NRC determination of the need for Federal storage facilities. Development of this capability entails planning studies, site identification, facility design and development, licensing interactions, and consultations with field offices, State and local governments, Indian tribes, and other interested parties. The Office is responsible for planning and submitting to Congress a proposal with site-specific designs for MRS facilities. Upon Congressional approval to construct one or more MRS facilities, the Office is responsible for proceeding with site selection, licensing, preparation of an environmental impact statement and facility construction and operation. The Office also plans, coordinates and administers, up to the point of acceptance by the repository, DOE's responsibilities for waste package, storage and transportation activities for civilian nuclear waste. The Office is organized as follows:

- o Storage Division
- o Transportation and Waste Systems Division

3.2 CHICAGO OPERATIONS OFFICE (DOE-CH)

Figure 2 shows the organization of the Chicago Operations Office of DOE.

Figure 2
U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE



3.2.1 Manager, Chicago Operations Office

The Manager, Chicago Operations Office has line management responsibility for overall project implementation. This responsibility has been delegated by the Manager to the Assistant Manager for Projects and Technology Management.

3.2.2 Assistant Manager for Projects and Technology Management (AMPTM)

The Assistant Manager for Projects and Technology Management (AMPTM) has established a Project Office (SRPO) located in Columbus, Ohio, and with the Headquarters concurrence, has selected a Project Manager. Acting on behalf of the Manager-CH, the AMPTM has responsibility to:

- o Assure the project manager is provided necessary support, particularly personnel, to accomplish the project.
- o Assure satisfactory management of the project in accordance with the project plan, project charter and project management plan.
- o Provide independent assessment on regular reports on project status, progress, problems and variances provided to Headquarters management by the project manager.
- o Develop project management capability within the established office.
- o Assure the technical reporting requirements of the Department are met and that all scientific, technical and engineering publications are deposited in a timely fashion with the Technical Information Center.
- o Assure that adequate policy and procedures consistent with DOE policy are established to assist the project manager in accomplishing the planning and execution of the construction portion of the project.
- o Assure effective implementation of required quality assurance activities.
- o Review and approve project management plans.

3.3 SALT REPOSITORY PROJECT OFFICE (SRPO)

The SRPO is headed by the Project Manager and is composed of a mix of dedicated and matrix support positions as shown in Figure 3.

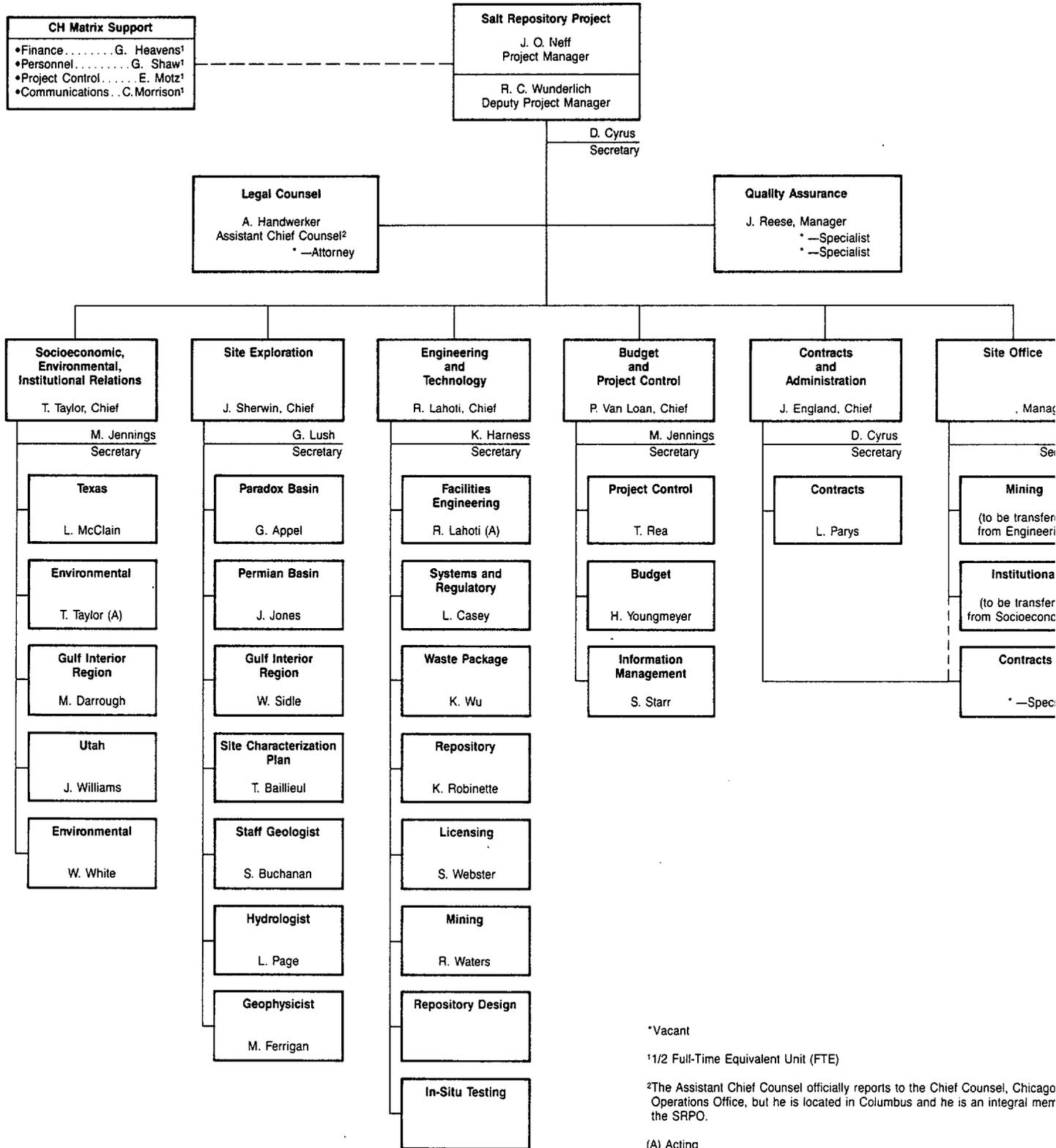
3.3.1 Project Manager, SRPO

The Project Manager, SRPO reports directly to the AMPTM-CH and has the responsibility for day-to-day management of the SRP. He is responsible for ensuring that Project policies are implemented and Project objectives are achieved and is the official point of contact for direction from OCRWM in meeting NWPAs milestones. The specific duties of the Project Manager, SRPO are to:

- o Establish, maintain and manage the cost, schedule and technical performance baselines.
- o Provide day-to-day management of the SRP.

Figure 3

**U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
SALT REPOSITORY PROJECT OFFICE**



*Vacant
 1 1/2 Full-Time Equivalent Unit (FTE)
²The Assistant Chief Counsel officially reports to the Chief Counsel, Chicago Operations Office, but he is located in Columbus and he is an integral member of the SRPO.
 (A) Acting

- o Exercise all DOE project management authorities through direction to participating contractors and other Government organizations.
- o Review and approve SRP management and technical documentation.
- o Review and approve changes to SRPO-controlled SRP baseline elements.
- o Ensure that the technical, cost and schedule performance is compared to the technical, cost and schedule baselines and provide corrective management direction when actual performance diverges from plan.
- o Ensure the preparation of environmental evaluations, environmental assessments and environmental impact statements for SRP activities.
- o Participate with DOE-HQ in resolving policy issues regarding SRP.
- o Represent SRP in communication with external institutions such as State, local and tribal governments.
- o Pursuant to appropriate delegations of authority, make purchases, enter into, extend, modify and terminate contracts; settle terminations, approve purchases, subcontracts and extensions, modifications and terminations of subcontracts; and settle terminations of subcontracts, all in accordance with Federal and DOE procurement regulations.
- o Participate in regular program reviews to assure that applicable technical, cost and schedule criteria are being met by the SRPO and that its project control system is functioning properly.
- o Establish various advisory groups or procure services of consultants, as appropriate, pursuant to appropriate delegations of authority.
- o Review and approve designs and schedules for surface and underground facilities and waste handling equipment to meet the programmatic objectives of the SRP Program.

3.3.2 Deputy Project Manager

The Deputy Project Manager reports to the Project Manager and has the authority to act for the Project Manager. The major duties of the Deputy Project Manager are:

- o Assist the Project Manager in planning and executing the Salt Project activities and in resolving issues and problems.
- o Support the Project Manager in day-to-day management of Project activities.
- o Take the lead role in planning and execution of special tasks having project-wide impact such as Environmental Assessments, Site Characterization Plans, Technical Project Plan, etc.
- o Coordinate activities of the Branch Chiefs, staff and contractors in all activities which cut across Project organizational lines.

3.3.3 Quality Assurance Manager

The Quality Assurance (QA) Manager plans, directs and coordinates activities of the QA Program. This includes monitoring and evaluating Quality Assurance Programs for a large number of complex and varied operations involving advanced R&D work crossing several technical disciplines. The QA Manager reports to the Project Manager and is responsible to:

- o Interpret DOE-HQ policy for the SRPO Project Manager in regard to quality assurance for all activities assigned to SRPO.
- o Maintain liaison with appropriate HQ components.
- o Provide evaluations and recommendations to the SRPO Chiefs and Project contractors on all phases of assigned functions, including review of procurement documents for adequate QA provisions.
- o Direct staff inspections, appraisals, audits and reviews of contractor programs and procedures, as required by DOE policies and procedures, or as otherwise necessary to achieve the highest level of quality consistent with end-product usage and consequences of failure of the product or process.
- o Notify responsible management of unsatisfactory work or unapproved practices and, if necessary, stop unsatisfactory work with administrative approval of the SRPO Project Manager.
- o Prepare, coordinate, issue and control the SRPO Quality Assurance Manual, including the procedures therein, and revisions.

3.3.4 Branch Chiefs

The SRPO organization has five personnel designated as Branch Chiefs. These Chiefs report to the Project Manager and have management responsibility and authority for specific technical or administrative portions of the Project. These responsibilities include:

- o Direction and supervision of Project staff within the branch.
- o Direction of and interaction with prime contractors.
- o Advise and consultation with the Project Manager and Deputy Project Manager.
- o Interaction with other Project Offices for specific program areas.
- o Interaction with the OCRWM counterparts for specific program areas.

Four of the Branch Chiefs areas of responsibility correspond to the Work Breakdown Structure level two elements:

- o Chief, Engineering & Technology
 - WBS 1.3.1 Systems
 - WBS 1.3.2 Waste Package
 - WBS 1.3.4 Repository
 - WBS 1.3.6 Exploratory Shaft
 - WBS 1.3.7 Testing

- o Chief, Site Exploration
 - WBS 1.3.3 Site
- o Chief, Socioeconomic, Environmental, Institutional Relations
 - WBS 1.3.5 Regulatory & Institutional
 - WBS 1.3.8 Land Acquisition
- o Chief, Budget and Project Control
 - WBS 1.3.9 Project Management

The Chief, Contracts Administration has responsibility for all contractual matters involving the Project. The Chief, Contracts Administration works with the other Branch Chiefs and their staff, but reports directly to the Project Manager.

In addition to the responsibilities stated above, specific areas of responsibility below WBS level two have been assigned to the SPRO staff. The complete Project Responsibility Assignment Matrix is shown in Figure 4.

3.3.5 Matrix Support

The Salt Repository Project receives support from the Chicago Operations Office in the area of legal expertise, project management, finance, personnel, quality assurance and communications. The supporting legal position requires one full time person at the Project Office. The other staff support employees are stationed at the Operations Office. Matrix support staff interact with all levels of staff at the SRPO, but report to their DOE-CH supervisors.

3.3.6 Staffing Plans

The SRPO is currently allocated 37 direct personnel, one matrixed legal advisor located at the Project Office and three full time equivalent (FTE) matrix support staff from DOE-CH. The total (FTE) staff allocation is 41. Current and projected staff (in FTEs) is:

	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
Dedicated Project staff	37	39	41
Matrix support	4	4	5
Total	41	43	46

3.3.7 SRPO Site Office

SRPO intends to establish an office at the salt site approved by the President for site characterization. Establishment of this office will involve transfer of several Project staff and hiring of additional personnel. The Site Office Manager will report to the SRPO Project Manager. The initial Site Office staff will consist of the Site Office Manager, Mining Engineer, Institutional Specialist, Contracting Officer and a Secretary. The staff necessary for establishing the Site Office is included in the staffing requirements shown in Section 3.3.6 of this plan.

SALT REPOSITORY PROJECT RESPONSIBILITY ASSIGNMENT MATRIX

PREPARED BY: *P. S. Van Loan* 1/18/85
 P. S. Van Loan, Chief B&PC-SRPO

APPROVED BY: *J. O. Neff* 1/18/85
 J. O. Neff, Manager
 Salt Repository Project Office

DOE SRPO ORGANIZATION

MANAGER	DEPUTY	LEGAL	SOCIOECONOMICS ENVIRONMENTAL INSTITUTIONAL RELATIONS	SITE EVALUATION	ENGINEERING AND TECHNOLOGY	BUDGET AND PROJECT CONTROL	QA	CA
J. O. NEFF	R. WUNDERLICH	L. MOY	L. MULLAN	J. SHERRIN	R. LAUDIT	J. REESE	J. ENGLAND	L. PARIS
A. HADWERNER	T. ANGLY	L. MOY	M. SUZUKI	G. APPEL	L. CASEY			
	L. MOY	L. MOY	M. SUZUKI	J. JONES	R. WU			
	L. MOY	L. MOY	M. SUZUKI	W. SOLE	K. RO			
	L. MOY	L. MOY	M. SUZUKI	S. BALLEW	S. WEBSTER			
	L. MOY	L. MOY	M. SUZUKI	L. RICE	R. WATERS			
	L. MOY	L. MOY	M. SUZUKI	W. FERRIGAN	P. VAN LOAN			
	L. MOY	L. MOY	M. SUZUKI		T. REA			
	L. MOY	L. MOY	M. SUZUKI		S. SHARR			
	L. MOY	L. MOY	M. SUZUKI					

LINE NO.	PSWBS ELEMENTS										
	CODE	TITLE	J. O. NEFF	R. WUNDERLICH	L. MOY	L. MULLAN	J. SHERRIN	R. LAUDIT	J. REESE	J. ENGLAND	L. PARIS
1	1.3	SALT REPOSITORY PROJECT	●								
2	1.3.1	SYSTEMS									
3	1.3.1.1	MANAGEMENT AND INTEGRATION									
4	1.3.1.2	SYSTEMS ENGINEERING									
5	1.3.1.3	TECHNICAL DATA BASE MANAGEMENT									
6	1.3.1.4	TOTAL SYSTEM PERFORMANCE ASSESSMENT									
7	1.3.2	WASTE PACKAGE									
8	1.3.2.1	MANAGEMENT AND INTEGRATION									
9	1.3.2.2	WASTE PACKAGE ENVIRONMENT									
10	1.3.2.3	WASTE FORMS AND MATERIALS TESTING									
11	1.3.2.3.1	WASTE FORM									
12	1.3.2.3.2	METAL BARRIERS									
13	1.3.2.3.3	OTHER BARRIERS									
14	1.3.2.3.4	INTEGRATED TESTING									
15	1.3.2.4	DESIGN, FABRICATE, AND PROTOTYPE TESTING									
16	1.3.2.5	WASTE PACKAGE PERFORMANCE ASSESSMENT									
17	1.3.3	SITE									
18	1.3.3.1	GENERIC									
19	1.3.3.1.1	MANAGEMENT AND INTEGRATION									
20	1.3.3.1.2	GEOLOGY									
21	1.3.3.1.3	HYDROLOGY									
22	1.3.3.1.4	GEOCHEMISTRY									
23	1.3.3.1.5	DRILLING									
24	1.3.3.1.6	ENVIRONMENT									
25	1.3.3.1.7	SOCIOECONOMIC									
26	1.3.3.1.8	SITE PERFORMANCE ASSESSMENT									
27	1.3.3.1.9	DEFERRED SITE CLOSE-OUT									
28	1.3.3.2	PARADOX BASIN									
29	1.3.3.2.1	MANAGEMENT AND INTEGRATION									
30	1.3.3.2.2	GEOLOGY									
31	1.3.3.2.3	HYDROLOGY									
32	1.3.3.2.4	GEOCHEMISTRY									
33	1.3.3.2.5	DRILLING									
34	1.3.3.2.6	ENVIRONMENT									
35	1.3.3.2.7	SOCIOECONOMIC									
36	1.3.3.2.8	SITE PERFORMANCE ASSESSMENT									
37	1.3.3.2.9	DEFERRED SITE CLOSE-OUT									
38	1.3.3.3	PARADOX BASIN									
39	1.3.3.3.1	MANAGEMENT AND INTEGRATION									
40	1.3.3.3.2	GEOLOGY									
41	1.3.3.3.3	HYDROLOGY									
42	1.3.3.3.4	GEOCHEMISTRY									
43	1.3.3.3.5	DRILLING									
44	1.3.3.3.6	ENVIRONMENT									
45	1.3.3.3.7	SOCIOECONOMIC									
46	1.3.3.3.8	SITE PERFORMANCE ASSESSMENT									
47	1.3.3.3.9	DEFERRED SITE CLOSE-OUT									
48	1.3.3.4	GULF COAST SALT DOMES									
49	1.3.3.4.1	MANAGEMENT AND INTEGRATION									
50	1.3.3.4.2	GEOLOGY									
51	1.3.3.4.3	HYDROLOGY									
52	1.3.3.4.4	GEOCHEMISTRY									
53	1.3.3.4.5	DRILLING									
54	1.3.3.4.6	ENVIRONMENT									
55	1.3.3.4.7	SOCIOECONOMIC									
56	1.3.3.4.8	SITE PERFORMANCE ASSESSMENT									
57	1.3.3.4.9	DEFERRED SITE CLOSE-OUT									
58	1.3.4	REPOSITORY									
59	1.3.4.1	MANAGEMENT AND INTEGRATION									
60	1.3.4.2	DEVELOPMENT AND TESTING									
61	1.3.4.2.1	ROCK MECHANICS									
62	1.3.4.2.2	EQUIPMENT/INSTRUMENTATION DEVELOPMENT									
63	1.3.4.2.3	SEALING									
64	1.3.4.3	FACILITIES									
65	1.3.4.3.1	SITE PREPARATION									
66	1.3.4.3.2	SURFACE FACILITIES									
67	1.3.4.3.3	SHAFTS, RAMPS									
68	1.3.4.3.4	SUBSURFACE EXCAVATIONS									
69	1.3.4.3.5	UNDERGROUND SERVICE SYSTEMS									
70	1.3.4.4	OPERATIONS AND MAINTENANCE									
71	1.3.4.5	DECOMMISSIONING									
72	1.3.4.6	REPOSITORY PERFORMANCE ASSESSMENT									
73	1.3.5	REGULATORY AND INSTITUTIONAL									
74	1.3.5.1	MANAGEMENT AND INTEGRATION									
75	1.3.5.2	LICENSING									
76	1.3.5.3	ENVIRONMENTAL COMPLIANCE									
77	1.3.5.4	COMMUNICATION AND LIAISON									
78	1.3.5.5	FINANCIAL AND TECHNICAL ASSISTANCE									
79	1.3.6	EXPLOREORY SHAFT									
80	1.3.6.1	MANAGEMENT AND INTEGRATION									
81	1.3.6.2	SITE PREPARATION									
82	1.3.6.3	SURFACE FACILITIES									
83	1.3.6.4	FIRST SHAFT									
84	1.3.6.5	SECOND SHAFT									
85	1.3.6.6	SUBSURFACE EXCAVATIONS									
86	1.3.6.7	UNDERGROUND SERVICE SYSTEMS									
87	1.3.6.8	OPERATIONS									
88	1.3.6.9	TESTING									
89	1.3.6.10	DECOMMISSIONING									
90	1.3.7	TEST FACILITIES									
91	1.3.7.1	MANAGEMENT AND INTEGRATION									
92	1.3.7.2	TESTING									
93	1.3.7.2.1	ASSE									
94	1.3.7.2.2	URL									
95	1.3.7.2.3	STRIPA									
96	1.3.7.2.4	CLIMAX									
97	1.3.7.2.5	NSTF									
98	1.3.7.2.6	AVERY ISLAND									
99	1.3.7.2.7	G-TUNNEL									
100	1.3.7.3	NEW FACILITY ACQUISITION									
101	1.3.8	LAND ACQUISITION									
102	1.3.8.1	MANAGEMENT AND INTEGRATION									
103	1.3.8.2	EXPLOREORY SHAFT									
104	1.3.8.3	REPOSITORY									
105	1.3.9	PROJECT MANAGEMENT									
106	1.3.9.1	MANAGEMENT AND INTEGRATION									
107	1.3.9.2	PROJECT CONTROL									
108	1.3.9.3	QUALITY ASSURANCE									

LEGEND:
 ● - PRIME RESPONSIBILITY

3.4 OTHER SRP PARTICIPANTS

There are many project participants involved in the SRP. Their names and the areas of the PSWBS in which they are involved are as shown in the Salt Repository Project PSWBS/Performing Organization Matrix, Figure 5. The name of the DOE person with overall responsibility for that area is shown in Figure 4.

3.4.1 Matrix Support

Included in those listed under Prime Contractors are three companies providing matrix support to the SRPO through contracts with the Chicago Operations Office. These are Maxima Corporation, providing administrative and clerical support services, Systematic Management Services, Inc., providing project control support services, and CER Corporation, providing technical support services.

3.4.2 Prime Contracts

At this time there are at least six major prime contracts projected as necessary to accomplish the primary execution of the SRP. Four of these contracts are currently in place and are so noted below:

- o Management and Technical Support Contractor (M & TS contractor) - Battelle Project Management Division, Office of Nuclear Waste Isolation (BPMD-ONWI) - DE-AC02-83CH10140
- o Construction Manager, Exploratory Shaft Facility (CM/ESF) - Parsons-Redpath (P-R) - DE-AC02-83CH10125
- o Repository Architect/Engineer (A/E) - Fluor Engineers, Inc. (FEI) - DE-AC02-83WM46656
- o Geologic Studies - Texas Bureau of Economic Geology (TBEG) - DE-AC97-83WM46651
- o Repository Construction Manager (CM) - TBD
- o Repository Operations, Maintenance and Decommissioning (OM&D) - TBD

3.4.2.1 Management and Technical Support Contractor

Through direction from SRPO, the Management and Technical Support Contractor provides overview management and overall integration of SRP technical activities. The detailed Statement of Work (SOW) for BPMD-ONWI, who is currently fulfilling this requirement, can be found in Contract DE-AC02-83CH10140. The general scope of the M & TS contractor effort is as follows:

Using SRPO guidance, the M & TS contractor allocates the overall project technical requirements to specific elements under the contract and ensures the appropriate integration of the individual contract elements. The SRPO guidance must be aligned with program, statutory and regulatory requirements. In this regard, the M & TS contractor is responsible for subcontracts to design, fabricate and test waste packages, and to evaluate the interaction of candidate waste forms with projected waste package environments.

In the area of site characterization, the M & TS contractor performs studies to collect sufficient information to determine site suitability for a repository and to support the repository license application to the NRC. This site characterization will be accomplished in accordance with methodology developed by DOE. The M & TS contractor directs geologic, hydrologic, environmental, geochemical and socioeconomic investigations of potential sites. The M & TS contractor also directs the development of models to predict how a site will perform in isolating radioactive waste. After the President approves the sites recommended, the M & TS contractor will conduct site characterization activities on the selected salt site(s). Site characterization shall be conducted in accordance with the SRPO developed Site Characterization Plan and its updates.

For repository development, the M & TS contractor assists DOE in the refinement of the technology requirements, and assures compliance with these requirements, for repository design, construction, monitoring, operation and decommissioning. Many of these requirements are regulatory in nature and the M & TS contractor assures compliance with licensing, NEPA and other requirements. The M & TS contractor assists DOE in preparing licensing documentation and assists in information exchanges and other meetings with regulatory agencies in order to synchronize regulatory requirements and contract activities, and provides the basic mechanisms for adequate communication with audiences and groups that have an interest or role in the decision making process.

The M & TS contractor is responsible for the design of the ESF and planning the Test Program to be conducted there. In addition, the M & TS contractor provides technical integration support for the construction and operation of the ESF. The M & TS contractor will assist DOE in acquiring property interests sufficient to protect the integrity of test facility site(s) and final repository site(s).

In the area of management, the M & TS contractor provides the technical, financial, schedule, procurement, quality assurance and any other resources necessary to effectively support orderly accomplishment of the project work and to integrate total SRP management in accordance with DOE direction.

3.4.2.2 Repository A/E

Fluor Engineers, Inc. (FEI) is the Architect/Engineer currently contracted to provide a conceptual design for a waste repository in a salt medium. The detailed SOW for FEI can be found in Contract DE-AC02-83WM46656. Management objectives in completing repository conceptual design are to:

- o Establish a reasonable technical basis to aid the selection of a final site for a nuclear waste repository.
- o Identify the Exploratory Shaft Facility design impact on the repository design.
- o Identify and define technical approaches to repository design.
- o Establish the technical and engineering data basis for repository detailed design.

- o Establish the engineering concepts to be used in repository design.
- o Prepare a definitive conceptual design report for the nuclear waste repository in salt.
- o Estimate Title I, II and III design costs.
- o Develop a plan and outline for Title I salt repository design activities.

All of the A/E's effort is in the area of 1.3.4, Repository, except for any efforts that SRPO may require to provide a conceptual design of a Test and Evaluation Facility under PSWBS 1.3.7, Test Facilities and Excavations, and directed effort that the A/E will perform to support the SRPO preparation of the initial Site Characterization Plan under PSWBS 1.3.5.2, Licensing.

The FEI contract includes separate options for Title I, Title II and Title III Services respectively for the continuing effort to design a repository in salt.

3.4.2.3 Construction Manager - Exploratory Shaft Facility

Parsons-Redpath (P-R), a joint venture of the Ralph M. Parsons Company and the J.S. Redpath Corporation, is currently under contract to perform construction management (CM) services for the installation and completion of the Exploratory Shaft Facility under PSWBS element 1.3.6. A detailed SOW for the P-R effort can be found in Contract DE-AC02-83CH10125. Basically, CM/ESF will construct or procure through competitively bid contracts the construction capability to complete the Site, Surface Facilities, Shaft and Subsurface Facilities, and provide or procure through competitively bid contracts the operation and maintenance capability for the total facility, as well as providing access and logistic support to the M & TS contractor subcontractor who will perform the In Situ Test Program for the Salt Exploratory Shaft Facility.

3.4.2.4 Geologic Studies - Permian Basin

The Texas Bureau of Economic Geology (TBEG) has been providing geologic services to the CRWM Program since 1977. The current work scope calls for providing responses to SCP submittals, evaluation of data bases, and ongoing studies of the Palo Duro Basin to gain information about the quality and stratigraphic distribution of the bedded salt strata including factors that could potentially affect the hydrologic or physical integrity of the bedded salts. All of the TBEG effort is concerned with the Earth Sciences Characterization of the Permian Basin, an element under PSWBS element 1.3.3, Site.

3.4.2.5 Other Prime Contracts

In addition to the above is the requirement to select contractors to manage the construction of the repository and to operate it. These major prime contracts will be awarded through a competitive solicitation process that will be the responsibility of the Operations Office for the particular media in which the repository will be constructed (DOE-CH if a salt site is chosen).

3.4.3 Integrated Contractors

The integrated contractors provide a wide range of support to the SRP. Their involvement is obtained through task agreements primarily detailed on a fiscal year basis and include such diverse activities as waste package studies, earth sciences characterization and peer review of documents. The PSWBS/Participating Organization Matrix indicates the specific areas in which each of the integrated contractors are currently performing tasks.

3.4.4 Grants

The NWPA provides for a variety of grants to be made to host states and affected Indian tribes (Sections 116 and 118) at different stages of the Project.

Seven of the nine potentially acceptable first repository sites are in salt media. These are located in four states (see Figure 6): two locations in the bedded salt of the Palo Duro Basin in Deaf Smith and Swisher Counties, Texas; two sites in bedded salt in the Gibson Dome (at Davis Canyon and Lavender Canyon) in the Paradox Basin, Utah; and three salt domes in the Gulf Interior region (the Richton and Cyprus Creek Domes in Mississippi and the Vacherie Dome in Louisiana). Each of the four states has implemented a program defining information requirements and a schedule of formal meetings which utilizes the Federal Grant monies. These grant monies are provided under PSWBS element 1.3.5.5, Financial and Technical Assistance.

3.4.5 Interagency Agreements

SRPO currently has Interagency Agreements (IAs) with five other Federal agencies: the U.S. Geological Survey (USGS), the U.S. Army Corps of Engineers (COE), the U.S. Bureau of Land Management (BLM), the U.S. Bureau of Mines (BOM), and the National Park Service (NPS). These organizations perform tasks on an agreement basis in which SRPO can utilize their particular expertise in PSWBS elements as indicated on Figure 5. These agreements are on a fiscal year basis and must be renewed annually.

3.4.5.1 USGS

The USGS has provided Earth Sciences characterization support in the siting phase under PSWBS element 1.3.3, Site. They have provided geologic support in the development of the screening methodology used in the site selection process.

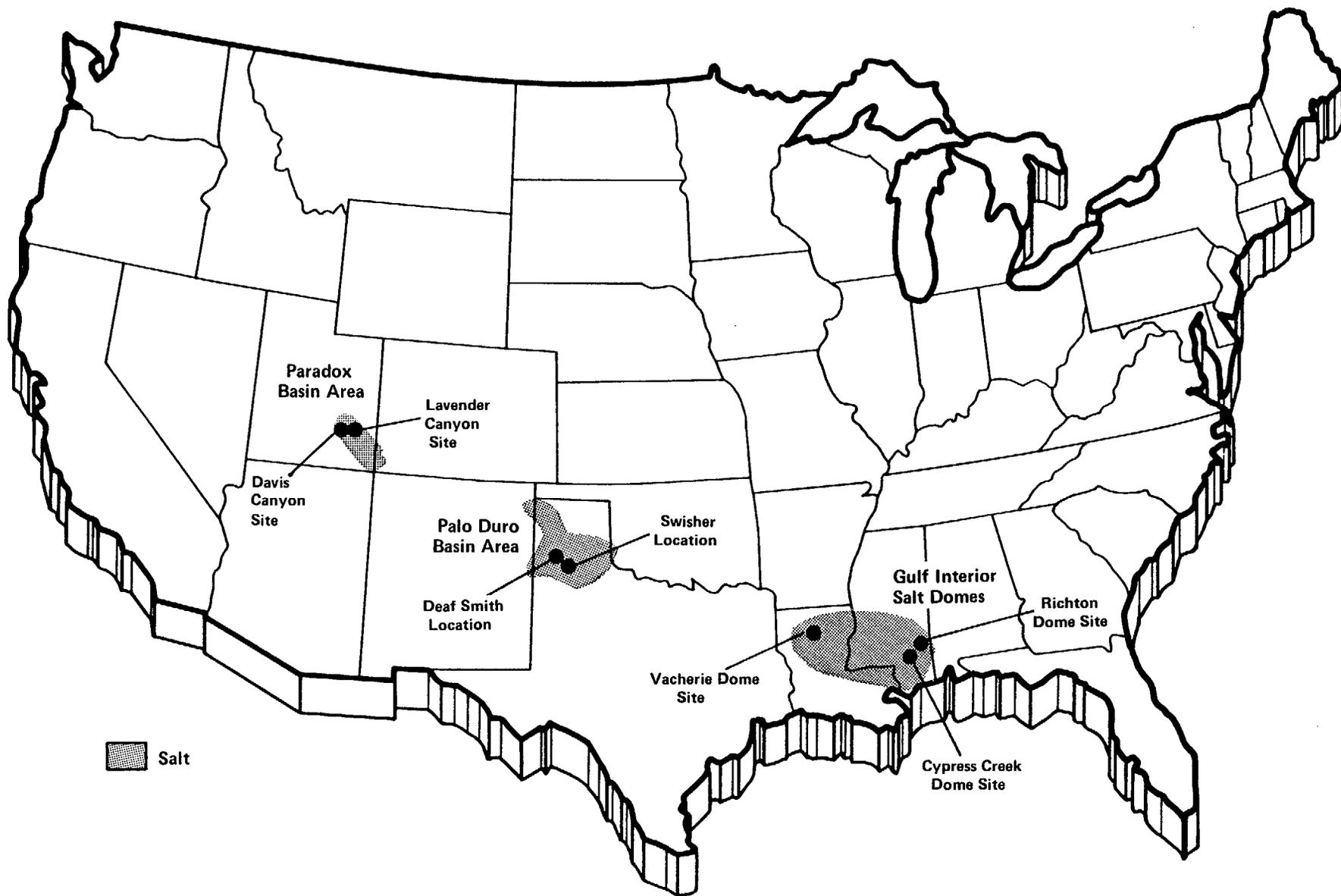
3.4.5.2 U.S. Army COE

The COE is currently providing resource personnel to discuss the land access activities for the exploratory shaft facility and the repository. These activities are covered under PSWBS element 1.3.8, Land Acquisition.

The COE also has other Interagency Agreements concerned with the Sealing System of the repository, under PSWBS element 1.3.4, Repository, and the review of exploratory shaft facility A/E prepared estimates and drawings under PSWBS element 1.3.6, Exploratory Shaft Facility.

Figure 6

3-16



POTENTIALLY ACCEPTABLE SALT SITES FOR THE FIRST REPOSITORY

3.4.5.3 BLM

The IA with the BLM, an element of the Department of Interior, involves the required negotiations for the SRPO to do site characterization on any public lands, a possible issue in the Paradox Basin. This Agreement falls under PSWBS element 1.3.3, Site.

3.4.5.4 BOM

The Bureau of Mines is also an element of the Department of Interior. The IA with the BOM is currently under development and will call for them to provide generic salt environment information concerning methane occurrences and its hazards, in-mine drilling techniques, in situ stress measurements and mine systems modeling. These tasks will fall under the Geochemistry activity of PSWBS element 1.3.3, Site, and under Rock Mechanics Development and Testing activity of PSWBS element 1.3.4, Repository.

3.4.5.5 NPS

The National Park Service has agreed to review and comment on the Environmental Assessments for the two potential sites in the Paradox Basin, participate in workshops held on EAs for the two sites and provide technical assistance to DOE where required with particular emphasis on assessing potential impacts and potential strategies for impact mitigation as regards Canyonlands National Park.

3.4.6 Federal Oversight Agencies

Not shown on the SRP PSWBS/Participating Organization Matrix are the Procedural Agreements/Reviews required by the NHPA. The NRC is the ultimate decision maker in the licensing process. To mitigate to the maximum extent any possible problems that might be encountered later during the licensing process, a NRC representative has been located at the SRPO in Columbus, Ohio. This provides immediate and direct interface and is intended to keep the NRC as well informed as possible about the issues as they evolve, and the steps being taken to resolve those issues.

The Government Accounting Office (GAO) also has a direct involvement with the Program. Since the CRWM Program is being funded through a surcharge on public utilities generating electricity through the use of nuclear power, it is especially important that the management processes and financial controls of each of the Program elements, including the SRPO, be capable of withstanding the closest scrutiny. Per a requirement of the NHPA [Sec. 304 (d)], the Comptroller General will perform an annual audit of those records deemed necessary for the audit's preparation. A report will be sent to Congress on the results of each audit.

4.0 WORK PLAN

4.1 PROJECT PLANNING DOCUMENT HIERARCHY

The Project phases identified in this section are those included in the Draft Mission Plan for the CRWM Program, 4/84.⁵ The hierarchy of key Project planning documents are shown below.

1. PL-97-425 Nuclear Waste Policy Act of 1982, 1/7/83
2. DOE/RW-0005 Draft Mission Plan for the CRWM Program, 4/84
3. SRP-PSWBS, Rev. 2, 10/30/84
4. Repository Project Decision Schedule, 1/85
5. DOE/CH-9 Draft SRP FY 85 Technical Project Plan, 12/84
6. Final SRP FY 85 Technical Project Plan (Forecast for Completion 3/85)

4.2 PROJECT PLANS - ACTIVITIES PLANNED AND PRODUCTS DEVELOPED

The activities planned and products to be developed are described in the following sections by PSWBS element.

4.2.1 Site Nomination and Recommendation

Site Nomination and Recommendation began with the determination that a geologic repository would be the preferred method of disposal. The Project then proceeded with a site screening methodology that for the SRP was a structured approach to the identification of potential salt sites. This process consisted of four stages. First, national or province surveys were conducted taking into account locations of potential host rock, earthquake zones, faults, land use, volcanic activity, etc. The process next identified those regions in the conterminous United States that contained possible repository locations in salt. The screening process subsequently narrowed the regions to the most likely areas, and then to the most likely sites within those areas. This is where the Project is today. The seven remaining salt sites all have the potential to be selected as the first repository. Site Nomination and Recommendation will end with Presidential approval of at least three sites for characterization.

In FY 85, DOE-HQ issued the final siting guidelines as required by the NHPA. These siting guidelines have the concurrence of the Nuclear Regulatory Commission. The NHPA requires that the siting guidelines be followed in developing the environmental assessments (EAs) which must accompany each site nomination. Draft EAs were completed for each of the seven salt sites. The Draft EAs were issued December 20, 1984, and distributed to States, Tribes, Federal Agencies and other interested parties for review and comment.

⁵Ref: DOE/RW-0005 Mission Plan for the CRWM Program (draft), 4/84.

The current schedule calls for issuance of Final EAs in the fall of 1985 followed by recommendation by the Secretary and Presidential approval of sites to be characterized.

4.2.1.1 Systems

The Systems area will be involved with several significant tasks. One will be the development of a salt-specific generic requirements document, Salt Generic System Requirements Specification (SG-SRS), that will provide a bridge between the overall Program requirements detailed in DOE/NE/44301-1 Generic Requirements for a Mined Geologic Disposal System (GR) and the SRP. In addition, as the functional design criteria for the major components of the overall repository system are developed, e.g. for Waste Package and Repository, the Systems task will be to ensure that this development is initially in compliance with the Salt Generic Functional Design Criteria for a High Level Nuclear Waste Repository targeted for completion in March of 1985.

During this same period Systems will be concerned with the establishment and maintenance of the SRP baseline management system and the development, initial operation and maintenance of an integrated technical data/information management system for use by the SRP and with access by outside agencies. Performance assessment activities during the site selection time frame will be involved with providing input to the EAs and to siting efforts.

4.2.1.2 Waste Package

The activities in the Waste Package area will include continuing testing and evaluation of waste package materials and the award of a subcontract by the M & TS contractor for conceptual design studies. This will support the initial establishment of functional design criteria.

4.2.1.3 Site

Much of the activity in the Site WBS in FY 85 will be to do an in-depth data needs analysis based upon a review of the regulatory documents which the site characterization tasks must be targeted to satisfy. These include the Guidelines, Regulatory Guide 4.17 and the SCP Annotated Outline. The outcome of these data needs analyses will direct the detailed geotechnical, environmental and socioeconomic planning necessary to accomplish these characterization activities. Integrated, detailed test plans will result that will ensure data validity and noninterference among data gatherers. In addition, topical reports will be completed to support the finalization of the EAs.

4.2.1.4 Repository

The specific objectives of this task for FY 85 will be to support the preparation of the Salt SCP and the Site Characterization Program. This includes the integration of the exploratory shafts into the repository design. In addition, there will be continued development of repository performance assessment modeling techniques as well as sealing and rock mechanics technology.

4.2.1.5 Regulatory and Institutional

The Project activity of utmost importance in FY 85, the finalization of the required salt environmental assessments, is the major objective of this element. The draft EAs were made available to the public December 20, 1984. The comment period for states and other interested parties, which includes a series of hearings and meetings in the area of each of the sites, is scheduled to be closed by March 20, 1985. Comment resolution and EA update is then to be undertaken with the final EAs projected to be available to the public by August 29, 1985. This will provide the data for the nomination by DOE-HQ to the Secretary of five sites, from which the Secretary will choose three sites for recommendation to the President on September 5, 1985.

During the EA finalization, the development of the initial Site Characterization Plan will be underway. FY 85 activities will be concerned with the establishment of the SCP Annotated Outline which will provide a guideline to the information/data needs required for resolution of licensing issues. The activities in FY 85 will be primarily generic in nature with site-specific planning being initiated by the recommendation of sites for characterization by the Secretary to the President.

The Project communications and liaison activities will continue during this period. These information meetings, public presentations and disseminations of reports and exhibits, including the bi-monthly meeting with representatives of the salt states are designed to aid understanding and facilitate participation in decision making by States, Indian tribes, local communities and other members of the public. These activities are augmented by financial and technical assistance made available to the States and Indian tribes (NWSA Sec. 116-118). The financial grants and technical assistance are made available to assist these groups to participate in the Project decision-making process to the greatest extent possible.

4.2.1.6 Exploratory Shaft Facility

The most important activities being conducted in this element for FY 85 include development of the preliminary design for the Exploratory Shaft Facility by the ESF A/E and continued development of the overall In Situ Test Program. In support of this effort, the ESF Construction Manager will be developing detailed estimates based upon several construction options as well as generic planning efforts concerned with shaft sinking.

4.2.1.7 Test Facilities

Primary efforts during FY 85 will be to monitor the results of testing being done at locations such as the Asse Mine in the Federal Republic of Germany.

4.2.1.8 Land Acquisition

FY 85 will be devoted to the selection of a land agent by SRPO who will be responsible for developing the necessary documentation and obtaining access for SRP to the ESF site. In addition, a Land Acquisition Plan that describes the actions that must occur for the SRP to have access, protection of required land interests and ownership at the appropriate times for the Engineering Design Boreholes, ESF and Repository will be developed.

4.2.1.9 Project Management

Project Management activities for FY 85, in addition to planning, controlling, coordination, quality assurance and reporting activities, will include the finalization of this management plan, the establishment of the formal Project change control process (Change Control Board), accomplishment of the FY 87 WPAS input, and establishment of an updated SRP Master Schedule and Logic Network.

4.2.2 Site Characterization

Site Characterization activities will begin following site approval. The salt Site Characterization Program is designed to address the engineering design requirements, the performance assessment requirements and the licensing requirements for each of the principal system elements. The system elements include the repository in the salt horizon, shafts which will connect the repository facilities with the ground surface, and the associated surface facilities.

4.2.2.1 Systems

Code verification and validation will be accomplished as the iterative cycle of updating codes, defining data needs in the SCP update, comparing test results to code output, etc., is performed. Also, in the area of performance assessment, computer codes will continue to be developed and tested, credible disruptive event scenarios will be postulated and evaluated, and data uncertainties and system sensitivities will be analyzed. Systems Engineering will ensure that the emerging waste package and repository designs are integrated into the overall repository system.

4.2.2.2 Waste Package

Waste Package development will continue on barrier materials testing and analyses as well as the laboratory and engineering scale testing of packages. The results of these activities will form the basis for the preliminary waste package design. The preliminary design for the waste package will be completed supported by the input of the site characterization test results. Detail design of the waste package will begin.

4.2.2.3 Site

Engineering design boreholes will be drilled as soon as possible after site selection in order to provide site-specific data to support the final design of the ESF and the Repository. Surface-based site characterization, such as the monitoring of shallow aquifer wells, the drilling of geologic and hydrologic boreholes, geophysical logging, seismic reflection surveys, trenching and environmental monitoring, will be initiated in accordance with additional test plans.

Paralleling the exploratory shaft drilling, a series of deep hydrologic test well nests will be drilled around the site to describe the underground patterns. These deep aquifers must be characterized in order to define the most likely avenue for radionuclide transport to the accessible environment. The data from the test well nests will be used for performance assessment model development, verification and validation of codes, and other analytical

efforts to be used in licensing proceedings. The analysis of these site characterization test results will be used in the License Application along with additional data that are gathered for the draft environmental impact statement (DEIS) preparation.

4.2.2.4 Repository

The development of supporting technology and designs will continue for the candidate salt site. As site characterization testing proceeds, the repository advanced conceptual design will be completed and the repository license application design will be initiated. In support of the SCP, site-specific repository SCP design studies will be completed, and ultimately new data acquired from the Site Characterization Program will be used in the formulation of license application design criteria.

The repository design will reflect completed efforts in related areas, such as repository sealing, and equipment and instrumentation development. These license application designs will support the preparation of the site selection report, the environmental impact statement (EIS) and the LA.

4.2.2.5 Regulatory and Institutional

The information to be collected during site characterization will be specified in a Site Characterization Plan (SCP) that is to be submitted for review and comment to the NRC, the state in which the site is located, and to the governing body of any affected Indian tribe. Before sinking shafts at the candidate site in March 1987, the SCP will be made available to the public and public hearings will be held in the site vicinity. The results of the characterization work and any necessary changes to the Site Characterization Plan will be shared with the affected parties and documented in Site Characterization Plan Progress Reports, issued every six months to the NRC and to affected States and Indian tribes.

The preparation of documentation required for the License Application (LA) will begin during this phase for the candidate site and will be developed in consultation with the NRC.

In addition, as required in the NWA [Sec. 117.(c)], upon approval of sites for characterization by the President, SRPO will initiate proceedings with the affected salt state to formulate a Cooperation and Consultation agreement. The affected state is eligible for impact-mitigating grant monies due to the characterization activities to be conducted (NWA Sec. 116).

4.2.2.6 Exploratory Shaft Facility

During site characterization, the SRP will carry out activities to assure that the candidate salt site does not contain any features that would prohibit it from being developed as the first repository. Thus, all necessary information for design and licensing purposes will be obtained. Along this line, programmatic and regulatory considerations require that detailed in situ (at depth) testing be conducted to properly determine the site's suitability for the permanent emplacement of waste. This must occur before a selection can be made from among the candidate sites in different media that were recommended for detailed site characterization.

Site characterization activities include the construction of two exploratory shafts for the tests and studies to be made at repository depth. The testing at depth in the exploratory shafts is planned to provide data as expeditiously as possible. After the required permits and the land access are obtained, the shafts will be mined, this being following by shaft lining and outfitting with utilities and service lines. In situ testing will be phased to be coordinated with the completion of shaft sinking and outfitting and the development of underground test tunnels in order to maximize the data to be gathered. In situ testing will be conducted in accordance with site-specific exploratory shaft test plans and coordinated with the NRC and affected parties.

4.2.2.7 Test Facilities

At this point, planned activities in Test Facilities during site characterization are confined to the monitoring of test results from operations underway elsewhere such as in the Asse Mine in the Federal Republic of Germany.

4.2.2.8 Land Acquisition

The objective of the Land Acquisition element is to acquire real property interests sufficient to conduct site characterizations and to maintain the integrity of the potential repository sites. This includes all efforts for the acquisition of licenses, leases and fee simple titles for principle boreholes, exploratory shafts, geologic and environmental studies, and a repository. Activities include obtaining title information for the ES site, access for presite characterization activities, access for EDBH, fee simple ownership of the ESF site, fee simple ownership of the repository site, and land protection at early stages for potential sites.

4.2.2.9 Project Management

During site characterization, Project Management will provide overall management of the Project including strategic planning and analysis, maintenance of the cost/schedule control system, budgeting and financial analysis, computer support services, progress reporting, procurement and subcontract administration, implementation and maintenance of the SRPO Quality Assurance Program, legal services and administrative services.

4.2.3 Site Selection

The preparation of documentation required for the LA will be accomplished for the candidate salt site. In situ testing and other site characterization activities will be completed to allow for the determination of site suitability, based on the DOE siting guidelines (10 CFR Part 960), the NRC criteria in 10 CFR Part 60 and the EPA Standards in 40 CFR Part 191. These activities will also allow for the preparation of repository-selection documentation, including the EIS. The results of these activities will be documented in a final SCP Progress Report for the candidate site. Testing in support of the license application may continue. The DEIS is planned for release in June 1990; the final environmental impact statement (FEIS) will be issued approximately six months later after public and agency reviews are completed. The Secretary of Energy will make a final recommendation of the first repository site to the President in accordance with the NWPA. Finally, the President must submit to the Congress his final selection of a site for

the first repository. The scheduled date for site selection by the President is in March 1991.

LA preparation begins during site characterization. An integrated schedule of reviews and updates will be followed during site selection so that the application can be docketed with the NRC in May 1991, 60 days after the site selection is effective and within the 90 days required by the NWA.

4.2.4 NRC Licensing Review

Following site approval, the Department will submit a repository License Application to the Nuclear Regulatory Commission based on supporting designs of the repository and waste package. After the construction authorization from the Nuclear Regulatory Commission is received, the construction of the repository will begin.

In order to facilitate the Nuclear Regulatory Commission licensing process, the Department has planned a significant amount of interaction with the Nuclear Regulatory Commission before requesting a construction authorization. Areas of interaction include the siting guidelines and the site characterization plans and their implementation. The Department's approach to licensing reflects an overriding commitment to protect public health and safety as well as the quality of the environment. The Department also plans to continue an open two-way communication with the Nuclear Regulatory Commission before submitting a License Application. It is hoped that this approach will allow technical issues to be identified in the prelicensing phase. The issues can then be either resolved without delay or activities leading to a resolution can be initiated in a timely manner.

The repository design will be completed during the Nuclear Regulatory Commission's review of the License Application. It will provide the basis for construction and the application for a license amendment to allow DOE to receive and store radioactive waste. This will be submitted to the Nuclear Regulatory Commission while construction is proceeding. Included in the final procurement and construction design of the repository will be the final waste package designs. This will be based on data from tests conducted on waste packages of the preliminary designs, the Department's extensive research program and performance modeling results.

4.2.5 Repository Construction

Upon receipt of construction authorization, the Department will begin construction of the surface and subsurface facilities. During the final stages of construction, the Department will complete any necessary pre-operational testing in order to receive a license to accept waste and operate the facility.

4.2.6 Operational

Operational activities will include receipt, inspection, overpacking, if required, handling and emplacement of waste; continued underground construction of the waste emplacement rooms and supporting services (ventilation, power, etc.); storage and management of mined rock for later use as repository backfill material; conduct of a Performance Confirmation

Program throughout the operational period in accordance with 10 CFR Part 60; maintenance of other support services (security and administration); and the possible retrieval of the waste, if required. The facility, equipment and the waste packages will be designed to allow waste retrieval up to 50 years after initiating waste emplacement operations. This capability will provide sufficient time, in accordance with 10 CFR 60 requirements, to successfully complete the Performance Confirmation Program and the permanent closure of the underground facilities and shafts.

4.2.7 Decommissioning

After the repository has been filled to capacity and the Performance Confirmation Program has been completed to the satisfaction of the Nuclear Regulatory Commission, an application for a closure amendment to the License to Operate will be prepared and submitted to the Nuclear Regulatory Commission. After Nuclear Regulatory Commission approval, the Department will begin sealing the repository and decommissioning the surface facilities. Repository shafts will be sealed, surface facilities decontaminated and dismantled, mined salt (not used in backfilling) stabilized or moved off the site, the surface area returned to its original natural condition to the extent feasible, permanent markers erected, and postclosure monitoring or surveillance installed as necessary. The last step is the termination of the repository license.

4.3 SRPO QUALITY ASSURANCE PROGRAM

4.3.1 Policy Statement

It is the policy of the SRPO to establish, implement and maintain a Quality Assurance Program to be utilized in repository activities. Activities which will contribute significantly to quality and the achievement of Program and Project objectives in a safe, reliable and predictable manner include: 1) site characterization, design, construction, installation, test, operation, maintenance, modification, decontamination and the decommissioning of facilities; 2) technology development; and 3) the acquisition of research, development and demonstration data.

SRPO will comply with the requirements of DOE Order 5700.6A, Quality Assurance. Any or all of these requirements, and supplementary requirements when appropriate, may be delegated to qualified contractors, but SRPO shall retain responsibility for the delegated functions or activities.

Quality assurance is a multidisciplinary system of management controls which addresses environmental protection, safety, reliability, maintainability, operability, performance and other technical concerns. Quality assurance shall not be regarded as the sole domain of the SRPO Quality Assurance Manager; rather, line organizations should look to this person as an advisory resource in performing their quality assurance activities.

The SRPO QA Manual describes the basic Quality Assurance Program at SRPO. The Manager, SRPO will approve all original or revised SRPO quality assurance procedures contained in this manual. This approval indicates that the procedure shall be used on SRPO-related work.

4.3.2 Status of SRPO QA Plan

Revision 2 of the SRP QA Manual was transmitted to DOE-HQ for approval on June 17, 1984, and DOE-HQ comments have been received. The SRPO QA Manual will undergo complete review and revision as required to assure that it is in conformance with the NRC Review Plan for Quality Assurance Programs for Site Characterization of High Level Nuclear Waste Repositories, and to incorporate applicable comments received from DOE-HQ. After review, revision and incorporation of DOE-HQ comments, the revised SRPO QA Manual will be resubmitted to DOE-HQ.

Assessment of the QA plan and its implementing procedures for compliance, completeness and adequacy, will continue as required. New QA procedures, as necessary, will be prepared and implemented on a continuing basis.

5.0 PROJECT SUMMARY WORK BREAKDOWN STRUCTURE

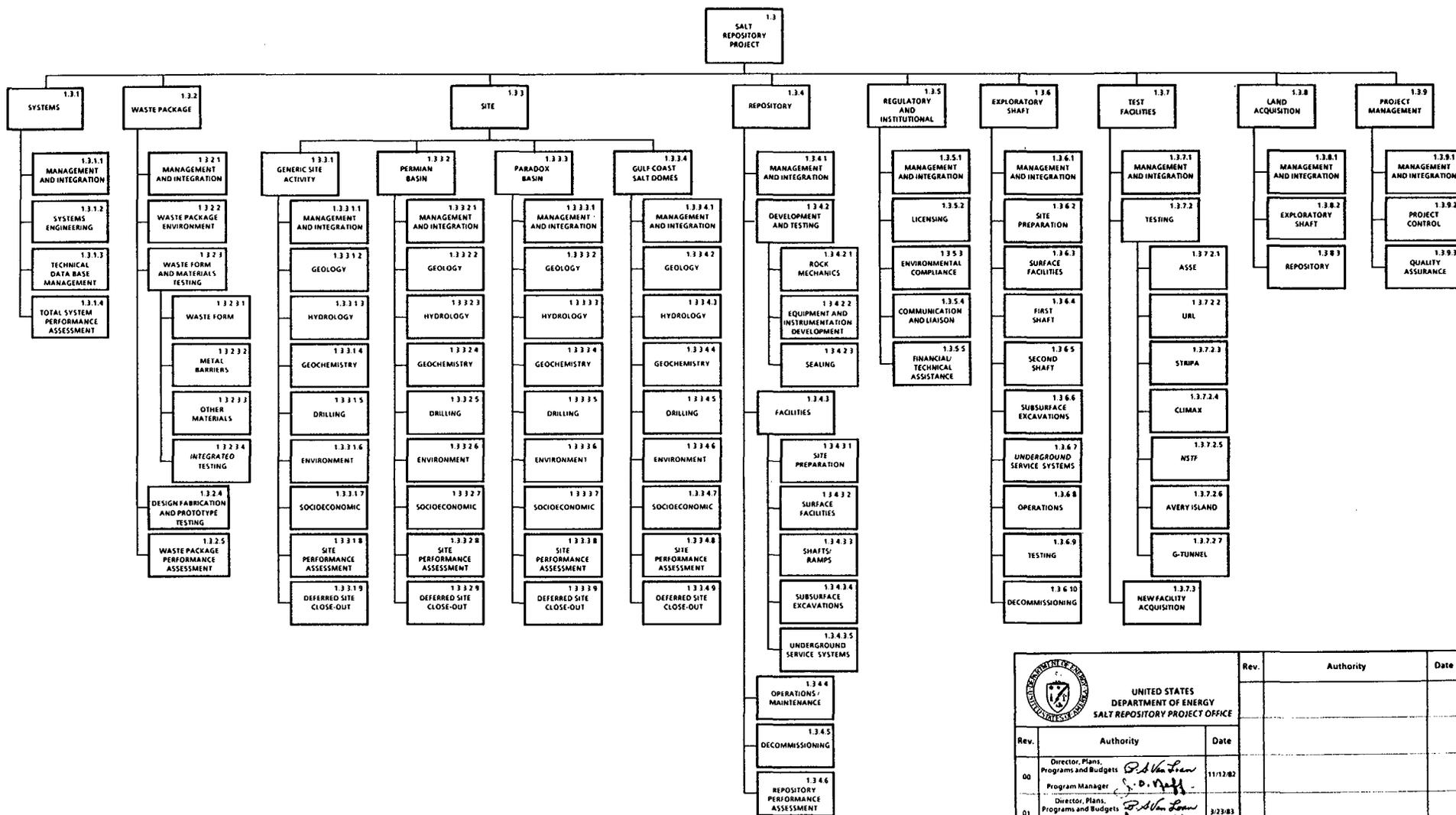
The Salt Repository Project Summary Work Breakdown Structure (PSWBS), shown in Figure 7, identifies the major products and systems of the Project. The Work Breakdown Structure subdivides these major items into increasingly more detailed and more manageable products. The PSWBS is used as the basis to plan, schedule, budget and authorize work, collect costs, monitor performance, and report progress of the Project.

The PSWBS was developed in accordance with the Cost and Schedule Control System Criteria for Contract Performance Measurement - Work Breakdown Structure Guide, DOE/MA-0040. Additionally, the PSWBS directly supports the Office of Geologic Repositories Work Breakdown Structure (Baseline Document OGR/B-4) and is in consonance with DOE 5700.4A, Project Management.

The PSWBS Dictionary (Index and Element Definitions) contains detailed explanations of each lowest level PSWBS element. The PSWBS Dictionary is a Project baseline document and, as such, proposed revisions to it are controlled by the Baseline Management System (see Section 11.2.8). The SRPO Chief, Budget and Project Control is responsible for the development, issuance and maintenance of the PSWBS Dictionary.

Figure 7

SALT REPOSITORY PROJECT SUMMARY WORK BREAKDOWN STRUCTURE



5-2

 UNITED STATES DEPARTMENT OF ENERGY SALT REPOSITORY PROJECT OFFICE			Rev.	Authority	Date
00	Director, Plans, Programs and Budgets Program Manager	<i>P. Van Leeuwen</i> <i>J. O. Naff</i>	11/2/82		
01	Director, Plans, Programs and Budgets Program Manager	<i>P. Van Leeuwen</i> <i>J. O. Naff</i>	3/23/83		
02	Chief, Budget and Project Control Program Manager	<i>P. Van Leeuwen</i> <i>J. O. Naff</i>	10/30/84		

6.0 PROJECT MASTER SCHEDULE

The Salt Repository Project Master Schedule is the time-phased baseline plan for accomplishing the Project objectives. It contains all the Key, DOE-HQ and the SRP Control Level milestones necessary to accurately determine progress so that efficient management and control of the Project can be effected. The Key and DOE-HQ milestones can only be established and changed by DOE-HQ. The Project Master Schedule includes the DOE-HQ milestones and extends them by including those Project-level milestones (Project-level decision points and events) for which the timely accomplishment is necessary to fulfill the Key Milestones. The combination of these DOE-HQ and SRPO milestones comprise the control-level milestones designated as the SRP Master Schedule. The SRP Master Schedule by second level PSWBS element (see Figure 8) contains a legend to explain schedule symbols.

The SRP Master Schedule is a Project baseline document and proposed revisions to it are therefore controlled by the Baseline Management System (see Section 11.2.8). The SRPO Chief, Budget and Project Control is responsible for the development, issuance and maintenance of the SRP Master Schedule.

7.0 PROJECT SUMMARY LOGIC NETWORK

The Salt Repository Project Summary Logic Network, displayed in Figure 9, depicts the major elements, in network form, necessary to complete all activities through the end of the Advanced Development Phase of the SRP. The interrelationship of activities is shown including constraining activities and their scheduled completion dates. This summary network is derived from those activities and events shown on the SRP Master Schedule. As such, the responsibility for the development, issuance and maintenance of this network is vested with the SRPO Chief, Budget and Project Control.

**THIS PAGE IS AN
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DRAWING OR
FIGURE,
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**"SALT REPOSITORY PROJECT
MASTER SCHEDULE"**

**WITHIN THIS PACKAGE..
OR BY
SEARCHING USING**

D-01

**THIS PAGE IS AN
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FIGURE,
THAT CAN BE VIEWED AT
THE RECORD TITLED:
"SRP SUMMARY NETWORK"
WITHIN THIS PACKAGE..**

D-02

8.0 PERFORMANCE CRITERIA

Long-term disposal of radioactive waste materials to protect the health and safety of the public is the primary objective of the OCRWM Program. The Mined Geologic Disposal System (MGDS) is the primary means for accomplishing this objective. The overall objective has been subdivided into specific functional requirements that must be met by the MGDS subsystems in order to satisfy the highest level objective.

The development and documentation of functional and performance requirements assure that all Project participants have a uniform, consistent reference for the integrated disposal system. As a starting point, the salt waste disposal system requirements are predominantly based on generic disposal system requirements (common to all repository projects of the Office of Geologic Repositories) established at the program level along with applicable NRC, EPA and other government standards, e.g., those of the Occupational Safety and Health Administration (OSHA) and Mine Safety and Health Administration (MSHA). The OGR Program has established some of these requirements as a baseline, e.g., the Generic Requirements for a Mined Geologic Disposal System. As a next step, the Project will expand those requirements to reflect salt-specific needs or constraints and, ultimately, requirements for a selected salt site. These requirements will be documented and included in the SRPO Baseline Management System (see Section 11.2.8).

8.1 TECHNICAL DESIGN & CONSTRUCTION CRITERIA DOCUMENT HIERARCHY

The MGDS design and construction criteria included in this section were obtained from the Generic Requirements for a Mined Geologic Disposal System (GR-MGDS), 9/84. The hierarchy of key technical design and construction documents and the location of the GR-MGDS in that hierarchy are shown below. The Salt Project technical design and construction criteria are defined by the documents listed below.

1. PL-97-425 Nuclear Waste Policy Act of 1982, 1/7/83
2. DOE/RW-0005 Draft Mission Plan for the CRWM Program, 4/84
3. DOE/NE/44301-1 Generic Requirements for a Mined Geologic Disposal System (GR-MGDS), 9/84
4. Salt Generic System Requirements Specification (SG-SRS) (Forecast for Completion 12/85)
5. Salt Generic Functional Design Criteria for High-Level Nuclear Waste Repository (Forecast for Completion 5/85)
6. Salt Site-Specific System Requirements Specification (SS-SRS) (Forecast for Completion 12/86)
7. Salt Waste Package Advanced Conceptual Design Specifications (Forecast for Completion 9/86).
8. Salt Site-Specific Functional Design Criteria for High-Level Nuclear Waste Repository

8.2 DESCRIPTION OF MGDS DESIGN & CONSTRUCTION CRITERIA

The MGDS is a system, requiring licensing by the NRC, that is used for the disposal of high-level radioactive waste in excavated geologic media.

The functional requirements are (1) to dispose of radioactive waste, and (2) to isolate the disposed radioactive waste from the accessible environment.

The performance criteria are (1) the MGDS will be capable of disposing of 70,000 metric tons of heavy metal (MTHM) in its operating lifetime [NHPA 114(d)], and (2) the MGDS must isolate the emplaced nuclear waste from the accessible environment such that the release of radionuclides to the accessible environment due to reasonably foreseeable processes and events in the 10,000 years following permanent closure will not exceed the radionuclide release limits specified in EPA regulations (40 CFR 191).

The constraints are listed as follows:

- o The first Mined Geologic Disposal System shall be limited to a quantity of spent fuel not exceeding 70,000 MTHM or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation [NHPA 114(d)].
- o The site shall be located on land for which the DOE can obtain, in accordance with the requirements of 10 CFR 60, ownership, surface and subsurface rights, and control of access that are required in order that potential surface and subsurface activities at the site will not be likely to lead to radionuclide releases greater than those allowable under the requirements specified in 10 CFR 960.
- o The site shall be located such that (1) the quality of the environment in the affected area during this and future generations will be adequately protected during repository siting, construction, operation, closure and decommissioning and projected environmental impacts in the affected area can be mitigated to an acceptable degree, taking into account programmatic, technical, social, economic and environmental factors; and (2) during repository siting, construction, operations, closure and decommissioning, the public and the environment shall be adequately protected from the hazards posed by the disposal of radioactive waste as specified in 10 CFR 960.
- o Any part of the restricted area of repository support facilities shall not be located within the boundaries of a component of the National Park System, the National Wildlife Refuge System, the National Wilderness Preservation System, or the National Wild and Scenic Rivers System as specified in 10 CFR 960.
- o The presence of the restricted area or the repository support facilities shall not conflict irreconcilably with the previously designated resource-preservation use of a component of the National Park System, the National Wildlife Refuge System, the National Wilderness Preservation System, the National Wild and Scenic Rivers System, or National Forest Lands, or any comparably significant State-protected resource that was

dedicated to resource preservation at the time of the enactment of the Act as specified in 10 CFR 960.

- o Present and projected effects from nearby industrial, transportation, and military installations and operations, including atomic energy defense activities, (i) will not significantly affect repository siting, construction, operation, closure or decommissioning, or can be accommodated by engineering measures, and (ii) when considered together with emissions from repository operations and closure, will not be likely to lead to radionuclide releases to an unrestricted area greater than those allowable under the requirements specified in Performance Criterion for the MGDS level as specified in 10 CFR 960.

8.3 STATUS OF SRPO DESIGN & CONSTRUCTION CRITERIA

In FY 85, SRPO will concentrate on preparation and baselining of the SG-SRS. The SG-SRS will be based on the GR document and applicable government standards. It will provide an integrated, central source of requirements for a repository in salt. Incompatibilities among the GR document and lower-level requirements documents will be identified and resolved via the SG-SRS. Studies and analyses will be conducted to check the allocation of requirements among the subsystems and to specify critical interfaces.

Following the recommendation of a candidate salt site in FY 85, a site-specific version of the SRS will be initiated. Data from detailed site characterization will enable review of decisions on the allocation of requirements to system components. A baseline version of the SS-SRS will be produced in early FY 87. As more site characterization data and repository and waste package design details become available, the SS-SRS will be periodically updated throughout the course of the Project.

9.0 COST AND MANPOWER ESTIMATES

9.1 PROJECT COST ESTIMATES

The following cost estimates are provided for the SRP for fiscal years 1985 through 1990. Work Breakdown Structure (WBS) element identifiers are as shown in Section 5.0.

(\$ Millions)*

<u>WBS Element</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>	<u>FY 89</u>	<u>FY 90</u>
1.3.1	6.1	7.4	7.7	6.6	5.4	4.0
1.3.2	5.8	9.4	9.1	7.8	6.9	5.6
1.3.3	26.4	68.9	40.6	32.9	20.7	18.4
1.3.4	14.0	30.7	35.9	43.2	47.5	40.5
1.3.5	27.2	19.4	23.4	30.0	34.1	34.1
1.3.6	13.8	18.5	69.5	66.8	51.4	26.2
1.3.7	.5	.5	.6	.6	--	--
1.3.8	.3	12.7	7.9	3.7	3.7	3.7
1.3.9	<u>9.6</u>	<u>10.6</u>	<u>11.1</u>	<u>11.3</u>	<u>11.5</u>	<u>11.7</u>
TOTAL	103.7	178.1	205.8	202.9	181.2	144.2

*Data from November 14, 1984, SRPO Budget Presentation to Headquarters, with Headquarters requested modifications. Data does not include DOE staff costs and expenses.

9.2 PROJECT MANPOWER ESTIMATES

The chart below depicts estimated manpower requirements for fiscal years 1985 and 1986. WBS element identifiers are as shown in Section 5.0.

(Manpower - FTEs)*

<u>WBS Element</u>	<u>FY 85</u>	<u>FY 86</u>
1.3.1	39	51
1.3.2	45	55
1.3.3	182	177
1.3.4	93	209
1.3.5	174	139
1.3.6	63	98
1.3.7	3	3
1.3.8	3	7
1.3.9	<u>82</u>	<u>88</u>
TOTAL	684	827

*Data from November 14, 1984, SRPO Budget Presentation to Headquarters. Data does not include DOE staff.

9.3 SRPO COST ESTIMATES

The estimated costs for the DOE staff and expenses are as follows for fiscal years 1985 through 1987.

(\$ Thousands)

	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
Salaries, Other Compensation & Benefits	1,654	2,058	2,160
Contractual Services	656	755	787
Travel	<u>292</u>	<u>350</u>	<u>375</u>
TOTAL	2,602	3,163	3,322

9.4 SRPO MANPOWER ESTIMATES

The estimates of required DOE staff for the SRPO are as follows for fiscal years 1985 through 1987.

(DOE Manpower - FTEs)

<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
41	43	46

10.0 PROJECT FUNCTIONAL REQUIREMENTS

Figure 10 depicts the formal lines of authority and responsibility that affect the activities of the SRP. There are, however, other significant functional relationships that are very important to the effective and timely completion of the Project mission. These relationships are detailed below.

Per DOE 5700.A, the Project Manager has direct primary responsibility and accountability for the execution and implementation of the Project in accordance with the approved Project plan, Project charter and Project management plan. The actions of the Project Manager include, but are not limited to, implementing technical objectives, authorizing work and procurements, reviewing and approving baseline documents and Project plans, providing direction to the contractors (within contractual requirements), coordination of administrative and technical support, and approving deliverables. Authority to perform these functions may be delegated by the Project Manager consistent with Federal and DOE regulations, but primary responsibility cannot be delegated.

With this in mind, one set of intra-office formal relationships has been defined by the SRPO Project Manager. The Project Manager has designated that:

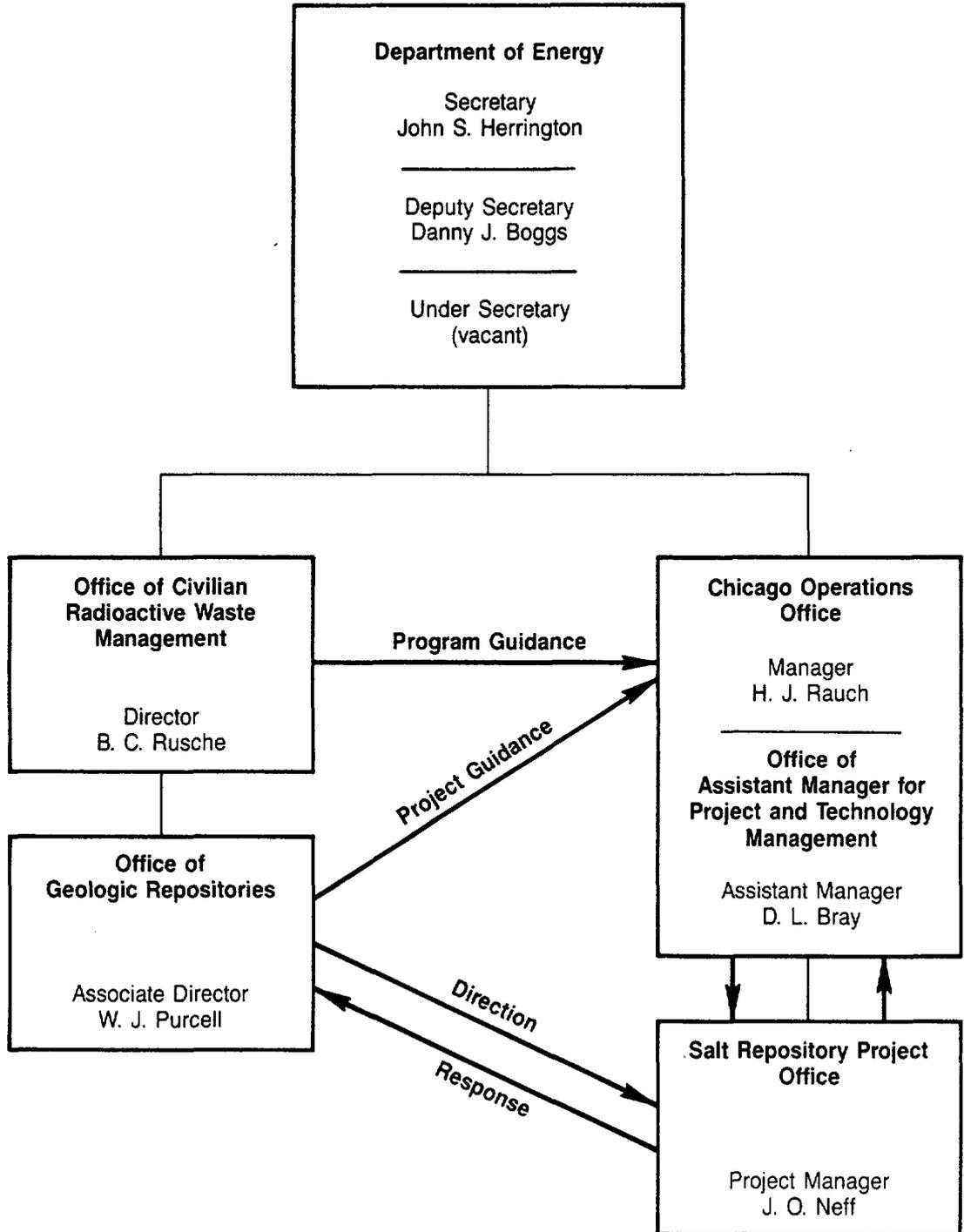
Signature authority within the Salt Repository Project Office is hereby delegated to the Chief of Site Exploration; the Chief of Engineering and Technology; the Chief of Socioeconomic, Environmental and Institutional Relations; and the Chief of Budget and Project Control for their respective program areas of responsibility...This delegation of authority specifically excludes contracting officer signature authority, changes in DOE-HQ controlled milestones and contract technical administrator authority except where it has been specifically authorized.

Some specific guidelines for delegation of signature authority to the Chief level are as follows:

- 1) The Chief of Site Exploration, Engineering and Technology and the Chief of Socioeconomic, Environmental and Institutional Relations may sign correspondence addressed to the Manager of ONWI. It is the responsibility of the originating Chief to assess whether this correspondence could affect ongoing or planned work sponsored within the Salt Repository Project by the other Chiefs or the Salt Repository Project as a whole or have actual or potential impacts in the areas of legal, contractual, project control, information/records management and budget. If any impact is likely or if the originating Chief is unsure of potential impacts, then the appropriate key SRPO staff should be provided an opportunity to concur on outgoing correspondence.

Figure 10

LINES OF AUTHORITY



- 2) In addition, the Chiefs of Site Exploration; Engineering and Technology; and Socioeconomics, Environmental and Institutional Relations may sign correspondence addressed to DOE-HQ at the Technical Division or Team Leader level, DOE-CH at the Division Directors Level, the CRWM Projects below the Project Managers level, and other DOE offices at a level comparable to the SRPO Chief's level. The guidelines for concurrence established under Item 1 above are also applicable. Correspondence going to State officials should be signed by the Manager, SRPO, or by the Chief of Socioeconomics, Environmental and Institutional Relations with concurrence from the Manager, SRPO.
- 3) The signature authority for the SRPO Quality Assurance Manager was authorized by letter dated October 19, 1984.
- 4) The signature authority for the SRPO Deputy Program Manager is the same as for the Manager of SRPO with the exception of the SRPO Manager's Contracting Officer's authority and other exceptions specifically identified by the Manager of SRPO.
- 5) The Chief, Budget and Project Control is delegated authority to act for the Manager of SRPO with regard to all budget and financial matters relating to the M & TS contractor and DOE and may specifically sign correspondence to the M & TS contractor Manager, DOE operations offices, Assistant Manager level or lower, and Headquarters Associate Director(s) which authorizes or requests changes in approved funding levels or changes in financial planning or budget preparation or execution matters. The Chief of Budget and Project Control is also authorized to sign correspondence and related Package Change Records and requests relating to cost and schedule control or cost and schedule control systems. For those cost and schedule activities controlled by Headquarters, prior approval by Headquarters must be given to the SRPO before changes are authorized. Changes in cost, schedule or budget are to be reviewed and concurred in by the affected SRPO Program Office Chief(s).

The delegation of authority to Branch Chiefs within SRPO has been extremely important to the smooth operation of the Office. Two factors that are key to the successful delegation of authority are that these delegations be carefully defined and that the delegation be done by a supervisor to an employee in a manner which enhances the level of control.

As alluded to in the letter, other authorities have been excluded from this delegation. Contracting officer signature authority is specifically reserved for the Manager, SRP or his designee in Contracts and Administration. DOE-HQ controlled milestones cannot be changed without the approval of DOE-HQ (see Section 11.2.5, Schedule Control System). Contract technical administrator authority is designated on an individual basis and cannot be re-delegated by the designee. This authority essentially allows the designee to communicate directly with a contractor as the Contracting Officer's Technical Representative on a basis primarily derived from the "Technical Direction" clause of the contract, but does not allow the designee to negotiate terms or modify the terms and conditions of the Scope of Work contained in the contract.

In addition to the functional relationships defined above that primarily deal with organizational interactions below the SRPO Project Manager on the authority ladder, there exists organization elements designed to further the information flow and consistency of approach among the various repository projects. One such entity is the monthly Project Managers meeting in which issues of importance to all the projects are discussed by the repository project managers and representatives of DOE-HQ. This provides a forum in which a full and open discussion and resolution of program-wide issues can be effected.

Another set of elements that provide lateral information flow between repository projects are the coordination groups. These include such groups as the Performance Assessment Coordination Group, the Waste Package Coordination Group, the Repository Coordination Group, the SCP Coordination Group and the Quality Assurance Coordination Group. The groups are made up of appropriate members from each of the repository projects. Regular meetings of these groups supported by special workshops conducted by DOE-HQ help to ensure a consistent approach to the strategies of similar WBS elements within each project as well as a program-wide basis to resolve programmatic issues involving specific WBS elements.

11.0 PROJECT MANAGEMENT SYSTEMS

11.1 PROJECT MANAGEMENT POLICY

The SRPO is managing this Project through the operation and use of its Project Management Control System (PMCS) which complies with the concepts and procedures outlined in CH-5700.4 Project Management System, dated February 15, 1983. This system is compatible with, and fulfills the requirements of the following governmental policy guidance:

OMB Circular A-109	Major Systems Acquisition
DOE Order 5700.1C	Major Systems Acquisitions
DOE Order 5700.4A	Project Management System
DOE Order 2250.1A	Cost and Schedule Control Systems Criteria
DOE Order 1332.1	Uniform Reporting System for Contractors
DOE Order 1270.1	Funds-Out Interagency Agreements
DOE Order 1331.1A	Procurement and Assistance Data System
DOE Order 5700.6A	Quality Assurance
DOE Order 6410.1	Management of Construction Projects

The Project Management Control System was derived from the following basic policy guidelines and is utilized by all Project participants such that:

- o all work must be defined and subdivided into a Work Breakdown Structure (WBS) (See Section 5.0, Project Summary Work Breakdown Structure);
- o all work must be planned using the framework of the WBS, and must be authorized prior to work initiation;
- o all work will be included in a hierarchy of schedules using the WBS framework which contains successively more detail and which supports milestones reflected in higher level schedules (see Section 6.0, Project Master Schedule);
- o Key and Project control level milestones will be established and controlled by the OCRWM and the SRPO, respectively;
- o all work must be scheduled, budgeted, incurred costs collected, and cost and schedule performance measured and reported by work breakdown structure element;
- o the earned value concept will be used to determine and report the value of work accomplished on all Project work;
- o the amount of funds required to support all Project work will be identified in a timely manner;
- o the total technical and engineering effort required to transform technical requirements into operational facilities or other products will be accomplished in a systematic and structured manner;
- o the functional and physical characteristics of Project systems, equipment, and other designated items will be identified and controlled;

- o significant requirements between contractors will be identified, defined, scheduled, and their status communicated through a structured system;
- o a documented Quality Assurance Program will be established prior to performing activities affecting quality and its verification;
- o procurement of materials, equipment and services will be controlled through the review and approval provisions of Federal and DOE Procurement Regulations;
- o equipment and facilities will be designed in accordance with all applicable safety codes and standards; documented safety measures will be established for test and/or construction sites; and
- o cost and schedule performance data and technical progress data will be determined, analyzed and displayed in a consistent manner using the framework of the WBS.

The basis established by these guidelines defines the necessary content of the PMCS. Due to the wide-ranging disciplines requiring management control in any reasonably comprehensive project, the PMCS of necessity becomes an integrated set of interrelated systems. For the SRP, ten systems have been identified which describe the overall management of the Project. These systems include:

- o Work Definition*
- o Work Authorization*
- o Cost Control*
- o Funds Management*
- o Schedule Control*
- o Management Analysis and Data Utilization*
- o Engineering Management
- o Baseline Management*
- o Quality Assurance
- o Safety Management

In accordance with DOE Order 2250.1A, Cost and Schedule Control System Criteria for Contract Performance Measurement, the verification of the implementation and use of the systems marked by an asterisk above (*) are accomplished through the demonstration review process on designated SRP prime contractors. These criteria establish standards for basic planning and control functions and require demonstrable proof of the existence and use of characteristics and capabilities inherent in sound project management control systems in accordance with DOE Systems Review and Surveillance Guide (DOE/MA-0047).

The objectives of implementing and using the above marked systems (*) are several and include:

- o verifiable integration of work scope, schedule and budget in a single baseline plan;
- o consistent methods for measuring and reporting the value of planned work accomplished;
- o timely and auditable reporting of cost, schedule and technical results, both current and cumulative; and
- o timely and systematic updates of estimates at completion and projected funds requirements.

Additionally, the criteria require that the SRP Contractors' Management Control Systems include capabilities for the following:

- o organization and definition of authorized work to a formal Contract Work Breakdown Structure (CWBS);
- o establishment and disciplined maintenance of a schedule baseline;
- o establishment and disciplined maintenance of a Contract Budget Baseline (CBB) equal to the contract target (estimated) cost;
- o establishment and disciplined maintenance of an integrated cost and schedule Performance Measurement Baseline (PMB), against which performance is measured using the Earned Value concept;
- o accumulation and segregation of incurred and/or applied costs consistent with the manner in which work is planned and accomplished; and
- o analysis of cost and schedule data generated by the systems to determine the cause and impact when actual performance deviates from plan, along with proposed corrective actions to minimize project degradation.

The selected prime contractors on the Salt Project are required to implement, use, document and demonstrate that their Project Management Control Systems meet the above requirements during a normal DOE team review of their systems. After approval and acceptance of the systems by DOE, continued effective operation and use of the systems by each prime contractor is verified through periodic surveillance reviews conducted by DOE representatives in accordance with DOE Systems Review and Surveillance Guide (DOE/MA-0047). A C/SCSC Implementation Plan will be developed by DOE for each major prime contractor. Following validation and acceptance of each prime contractor's management system, a final report will be issued documenting these actions.

11.2 PROJECT MANAGEMENT SYSTEMS

11.2.1 Work Definition System

11.2.1.1 System Objective

The objective of the Work Definition System is to assure that all functional requirements which must be met to achieve the Project goals are translated into a common framework of work elements. Work elements must be clearly identified, communicated to Project participants and used for planning, scheduling, budgeting, measuring performance and reporting.

11.2.1.2 System Description

Translating functional requirements into identifiable elements of work (products and services) is done from the highest level into successively smaller, more identifiable, and more manageable parts. The vehicle for accomplishing this is the Work Breakdown Structure (WBS). The Office of Geologic Repositories (OCRWM-OGR) has issued the Program WBS (OGR document OGR/B-4). Elements of the OGR WBS are further subdivided and defined in the Project Summary Work Breakdown Structure (PSWBS) issued by SRPO. These documents are discussed further in Section 5.0 of this plan.

Prime contractors to SRPO are required to develop a Contract Work Breakdown Structure (CWBS) which further subdivides and defines elements of the PSWBS specific to their contract scope of work. The contractors further subdivide the work into cost accounts, where functional responsibility is assigned for accomplishing the work. The cost accounts are further subdivided into work packages, which are the building blocks for the completion of work defined in the cost account. Contract Work Breakdown Structures are submitted to the SRPO for approval and may not be modified without SRPO approval.

11.2.2 Work Authorization System

11.2.2.1 System Objective

The objective of the Work Authorization System is to ensure that the work identified in the Work Definition System is authorized to be accomplished on a basis that is consistent with funds availability and the Project cost and schedule baseline.

11.2.2.2 System Description

The Work Authorization System takes the results from the work definition, cost, schedule and funds planning processes and officially begins the execution phase of the required work. The Work Authorization System is hierarchical in nature and consists of three parts: 1) authorization from OCRWM to the Projects; 2) authorization by the Salt Repository Project Office to principal Project participants such as prime contractors, other agencies (State and Federal) and DOE-integrated contractors; and 3) authorization by the participants to their internal staff or subcontractors.

As a result of the project and budget planning processes, the OCRWM on at least an annual basis provides project technical and financial guidance and authorization to the Project. This authorization is normally in the form of a

memorandum from the director of OCRWM or the Associate Director of the Office of Geologic Repositories to the Manager of the Chicago Operations Office with copies to the SRPO.

Based on the technical and financial guidance and funding availability the Project Office provides authorization to the Project participants. The authorizations may take the form of a letter from the contracting officer's technical representative if funds are available on the contract and the work scope is only being rescheduled. If the authorized work requires additional funds to be added to the contract, this work will be authorized by a contract modification signed by the contracting officer. Where additional funds are added to the contract, the contract modification may be followed by more specific work authorization from the contracting officer's technical representative.

Once the Project participants receive technical and funding authorization, work is authorized in accordance with their internal procedures.

11.2.3 Cost Control System

11.2.3.1 System Objective

The objective of the Cost Control System is to establish a Project cost performance baseline and then to control and maintain that baseline through timely management decisions made possible by analysis of cost performance data and forecasts provided by Project participants to the Project Office.

11.2.3.2 System Description

Cost control is hierarchal in nature. The DOE-HQ cost baseline includes the SRP as one element in the total program baseline. The control of the program cost baseline is effected by DOE-HQ through a funds control mechanism for each of its component projects. The Work Definition and Work Authorization Systems identify the work the SRP should accomplish, and who will accomplish it. The Schedule Control System establishes when the work must be accomplished and estimates are made of what the work will cost. Each of these steps is constrained by the guidance and resource limitations provided from DOE-HQ. This is a dynamic, iterative process. Status information and changing requirements passed from the Project to DOE-HQ can result in updated guidance from DOE-HQ modifying the cost, schedule and technical baselines.

At the SRP level, then, the cost baseline reflects the Project's estimate of costs over time to successfully accomplish the SRP mission within the guidance and refined constraints imposed by DOE-HQ. At the lowest level within the Project, cost control is implemented by the Project participants who control the resources provided to them to perform project work. SRPO becomes a partner with the participants in cost control by analyzing their cost reports and then working with the participants to make decisions which will improve project cost performance (see Sections 11.2.6, Management Analysis and Data Utilization System).

The Cost Control System verifies that participants:

- (1) establish time-phased cost control goals (budget baseline) for authorized work;

- (2) set goals consistent with available funds and milestone schedules;
- (3) have a cost control system in place that enables timely performance information to be captured;
- (4) measure performance against the established goals; and
- (5) modify goals only for appropriate reasons with Project Office approval as required.

When SRPO reviews the participant's Cost Plan, Manpower Plan, and Milestone Schedule and Status Report (MSSR), the time-phasing of budgets must be directly related to the scheduled milestones which are planned to occur within the budgeted periods. The Cost Plan is the sum of the planned monthly cost for lower tier work packages. The schedule for each of these lower tier packages directly supports the participant's Major Milestone Schedule. Therefore, the Cost Plan and the MSSR should be based upon the same detail plans. For any WBS or functional element, the monthly sum of the detail plans comprising it form the Budgeted Cost of Work Scheduled (BCWS) for that element. This holds true for all summary levels up to and including total contract. Performance against these plans is measured and expressed in terms of actual costs versus planned cost and, for selected prime contracts (those with DOE 2250.1A imposed), in terms of budgeted cost of work performed (BCWP) versus actual costs of work performed (ACWP).

The participant provides periodic Cost Management (DOE Form 533M) and/or Cost Performance Reports (DOE Forms 144) to the SRPO as specified by the contract/agreement. The Cost Plan (DOE Form 533P) and Cost Management Report and Cost Performance Reports are developed as specified in DOE 1332.1.

Flexibility and control of needed changes to the contractor's budget baseline may be accommodated by the establishment and maintenance of a management reserve by the Contractor to handle unforeseen, unplanned but in-scope work and an undistributed budget to temporarily hold budget in higher level planning packages pending detailed work definition.

The participant's cost control system must provide for the segregation and accumulation of actual incurred costs by CWBS element and organizational structure element consistent with the manner in which budgets were established by the participant. The participant estimates the cost-to-complete of unfinished work at designated WBS level(s) on a regular basis. This estimate, when added to the costs already incurred, provides a current estimate at completion (EAC).

A Cost Performance Report (Formats 1, 2 and 3) for selected contractors and/or a Cost Management Report are submitted to SRPO by participants monthly. Data is used for advising internal SRPO management and for reporting to DOE-HQ.

With the aid of the Project Control Support Services contractor (PCSS), SRPO reviews the Cost Plan submitted by each participant. When the Cost Plan does not comply with funding constraints or is out of synch with work scope or schedular constraints, the participant is informed of the deficiencies and that the Cost Plan cannot be approved. The participant must then submit a new Cost Plan addressing SRPO's concerns. The sum of all the approved Cost Plans

plus available contingency (Project level management reserve) must conform to DOE-HQ budgetary guidance and becomes the SRP cost performance baseline.

Copies of approved Cost Plans are provided to the M & TS contractor who maintains the Project cost performance baseline for the SRP. The M & TS contractor and SRPO also jointly estimate budgetary requirements for that work which is beyond the end point of current contracts/agreements, but within the mission of the Project. This enables the SRP cost performance baseline to be extended to the end of the Project (or to some recognized, established future point, e.g. submittal of the License Application to construct a repository to the NRC currently being used).

The Total Project Cost (TPC) for the SRP is established and kept current through the input of revised EAC information from participants on a regular basis and from updated budgetary guidance from DOE-HQ. The TPC must be reviewed by DOE-HQ, who will revise it as necessary and approve the TPC for the Project.

As work is performed by Project participants, costs are incurred and recorded and cost performance is measured for each WBS and organizational element. The participants measure and report cost performance to the SRPO monthly. These reports are provided to the M & TS contractor by SRPO. The M & TS contractor combines the data from the other participants with its own and produces a consolidated status report for the Project on a monthly basis. SRPO establishes a method for determining the budgeted cost of work performed (BCWP) for each of the other participants whose Project role is not large enough to warrant the establishment of a management system in compliance with the criteria in DOE 2250.1A. The M & TS contractor implements these determinations into its system to produce the monthly consolidated report and detail backup reports.

For each participant, in those areas where the variance between the budgeted cost of work performed (BCWP) and the actual cost of work accomplished (ACWP) is greater than established thresholds, the participant defines the problem, projects its impact on the EAC, and, if the variance is adverse, discusses any action the participant is implementing to mitigate the effects of the variance.

The SRPO evaluates the submitted reports for both compliance with established guidelines (URSC) and to ascertain any potential or actual problems requiring SRPO or DOE-HQ action. If action by SRPO is deemed necessary, the situation is analyzed, options are developed, and the most effective action to mitigate the effects of the problem is established. The participant is directed to implement the action.

The information from the monthly consolidated report is used to provide the cost information for the monthly Project Status Report transmitted to DOE-CH and the monthly Project Manager's Progress Report provided to DOE-HQ per the requirements of DOE Order 5700.4A. These reports, in part, assess the cost status of the Project and alert the receiving organizations of potential problems that may require action (see Section 12.0).

11.2.3.3 Change Procedures

Cost performance baseline proposed changes can be initiated by prime contractors/agencies, the Project Office or DOE-HQ. Prime contractor/agency proposed changes to their own Performance Measurement Baseline (PMB) can be resolved in several ways. If the change involves doing an in-scope task one way rather than another, e.g., a decision to "make" rather than "buy," as long as the planned start date has not passed (no retroactive changes to the PMB are allowed), the contractor can accomplish the change through an internal replan. If the change involves doing work deemed in-scope but unplanned, then the contractor can effect the change internally through a documented draw from Management Reserve.

Work resulting from changes proposed by participants which are assessed as outside the Contract Budget Base can only begin when authorized by the SRPO. If the change involves the use of DOE management reserve or impacts the Project's cost performance baseline, control milestones or technical baseline, a Baseline Change Proposal (BCP) must be submitted to the SRPO Change Control Board (see Section 11.2.8, Baseline Management System). If work is authorized to begin prior to the consummation of negotiations, the participant modifies his baseline by the amount of his proposed cost for doing the work. After negotiations are complete, the proposed cost amounts are deleted and the negotiated cost values are added to the baseline.

In some cases it may become obvious to the Project Office and to the contractor that the cost baseline for the contract no longer reasonably represents the scope of work being performed. In these extreme cases, as authorized by the Project Office, the contractor may adjust his baseline plan and replan the remaining work based upon work performed to date. The proposal to effect such a baseline change is subject to Project Office approval, and the resulting adjustment and replan must be fully documented, and reviewed and approved by SRPO before the change may be implemented.

Each participant must submit a Cost Plan (DOE Form 533P) to the Project Office for approval immediately after contract award, after each contract change affecting cost, and annually, 60 days prior to the beginning of a new government fiscal year.

Proposed changes affecting the budget baseline that are initiated by SRPO can also have several resolutions. Those that would breach programmatic guidance from DOE-HQ must be submitted to DOE-HQ for approval. Those that affect participants' baselines can involve work either in-scope or out-of-scope to that participant. Changes deemed to be in-scope by the SRPO will be transmitted to the participant in the form of a technical direction. Technical direction may cause elements of a cost baseline to be replanned, but it must have a net cost impact of zero. Scope of work changes which require a contract modification, will cause the contractor's PMB to be modified as described above.

11.2.4 Funds Management System

11.2.4.1 System Objective

The objective of the Funds Management System is to: 1) formulate detailed budgets defining funds requirements sufficient for optimum technical and

schedule performance of the Project; 2) accurately account for the execution of the Project budgeted resources through the commitment, obligation, costing and outlay cycles; and 3) ensure that cash disbursements are planned, controlled and accounted for on a basis consistent with the Nuclear Waste Policy Act of 1982.

11.2.4.2 System Description

The work definition, cost and schedule system outputs are used as the basis for formulating the Project budgets submitted to the OCRWM on an annual basis. The budget submission covers a triennial period of the budget year plus two additional years [NWPA Sec. 302.(e)(2)]. Also the budget includes information and assumptions regarding the current execution year and the following year (budget year minus one).

11.2.4.2.1 Budget Formulation

The budget formulation cycle is identified in Figure 11, which outlines budget activities conducted in FY 1985. The budgets are prepared in accordance with applicable DOE orders along with format and content guidance provided by the OCRWM on an annual basis. The principle budget documents are: 1) the Field Work Package Proposal/Agreement (WPAS), DOE Form 5120.1, which summarizes the total Project's funding, personnel, resource and technical schedule requirements for the budget periods; 2) Field Task Proposal/Agreement, DOE Form 5120.2, which summarizes the Project's funding, personnel, resource and technical schedule requirements at the second level of the Project Work Breakdown Structure, i.e., for the SRP, the Systems, Waste Package, Site, etc. level; 3) Schedule 47 which is a data sheet for operating expense funded construction projects, such as the Exploratory Shaft; and 4) Schedule 44, which is a data sheet for Construction Funded projects.

11.2.4.2.2 Budget Execution

The Budget Execution Cycle is briefly described below:

Upon approval of an appropriation bill, OMB allots funds to DOE. The Controller's Office, based on the request of OCRWM, allots funds to the Operations Office and issues an Approved Funding Program (AFP) plan to the Operations Office which identifies the authorized and available funds for the Project. The Project initiates procurement requests to commit funds for approved work. Upon certification of funds availability by the DOE-CH Financial Management Division, the contracting officer signs contracts, grants or interagency agreements which obligate funds. The Finance Division receives a copy of the executed contract and formally obligates the funds in DOE's Financial Information System (FIS) as shown in Figure 12, Flow Chart of Budget Execution.

Authorization of work to be performed by DOE integrated contractors for the Project is based on approved Field Task Proposal Agreements. Upon approval of the Field Task Proposal Agreement, the Project requests an AFP change through the DOE-CH Budget Division to OCRWM. The OCRWM sends the request for change to the Controller's Office. SRPO notifies the receiving Operations Field Office of approval of the Field Task Proposal Agreement and that an AFP change has been requested. The Controller's Office makes the change in the AFP for

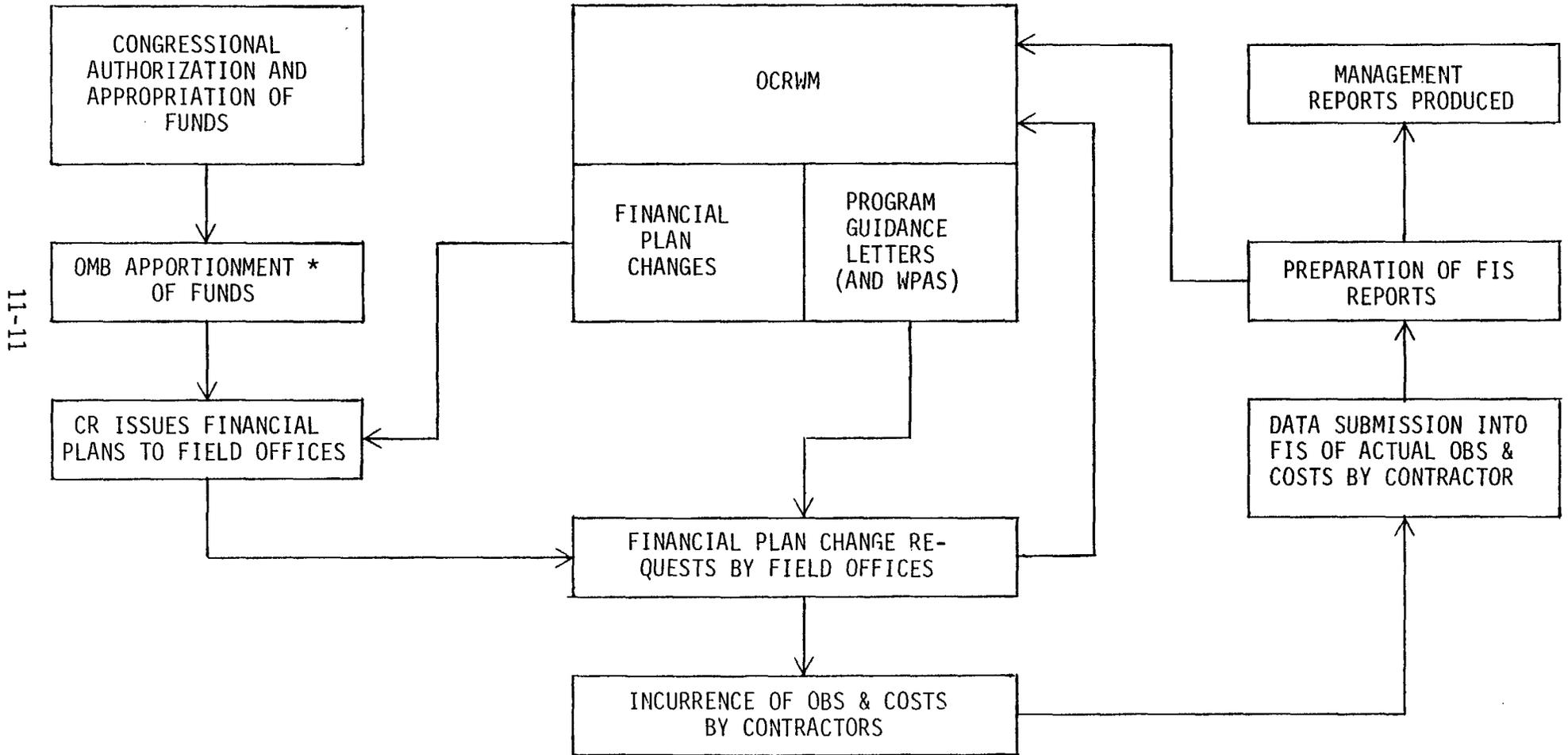
Figure 11

Budget Formulation Cycle

Months of FY	Budget Year Minus Two (FY 1985)	Budget Year Minus One (FY 1986)	Budget Years FY 1987, FY 1988, FY 1989 (Plus FY 1990 & FY 1991)
Oct.	Funds allotted by DOE Controller	OMB Briefed on 1986 Budget	
Nov.	FY 85 Budget Execution	OMB Budget Markups Received	
Dec.	FY 85 Budget Execution	Appeal Budget Mark & Finalize Budget	
Jan.	FY 85 Budget Execution	President's Budget goes to Congress	Budget Guidance from OCRWM
Feb.	FY 85 Budget Execution	Congressional Hearings on FY 1986 Budget	Budget Call Letter to Contractors
Mar.	FY 85 Budget Execution	Congressional Hearings on FY 1986 Budget	Contractors Submit Their Budgets
Apr.	FY 85 Budget Execution		Projects Submit Budget to OCRWM
May	FY 85 Budget Execution	Congress Authorizes Budget	Projects/OCRWM Interaction on Budgets
Jun.	FY 85 Budget Execution		OCRWM Submits Internal Review Budgets
Jul.	FY 85 Budget Execution		DOE Holds Internal Budget Reviews
Aug.	FY 85 Budget Execution	Congress Appropriates Funds	Budget Markups Given to OCRWM
Sep.	FY 86 Budget Sent to OMB	OMB Allots Funds to DOE	DOE Budgets Submitted to OMB

Figure 12

FLOW CHART OF BUDGET EXECUTION



* NOT REQUIRED FOR NUCLEAR WASTE FUND.

DOE-CH (SRPO) and the receiving Operations Field Office. The receiving office then makes the necessary contract modifications.

As contractors incur obligations, commitments and costs, and make payments for work performed, they provide accounting data reflecting these transactions to the DOE-CH Financial Management Division (FMD). The DOE-CH FMD records this information into the official DOE FIS.

11.2.4.2.3 Cash Management

The Project accounting, cash management and reporting is done on a basis consistent with DOE Order 2200, which was jointly prepared by the OCRWM and the Controller's Office. The order includes an enhanced system for cash management which is needed to implement the provisions of the Nuclear Waste Policy Act of 1982. The cash management activities include forecasting of cash disbursements, reporting of daily revenue and cash expenditures plus any borrowing and investing activities. Of these activities the SRP is involved in the forecasting, reporting and subsequent accounting for cash disbursements. Variances against the forecasts are reported quarterly to OCRWM through the DOE-CH Budget Division.

The Operations Offices are responsible for reporting daily disbursements to the Controller's Office. The M & TS contractor provides their prior day activity on the letter of credit to DOE-CH FMD by 11 a.m. Throughout the month, estimated disbursements are used for the integrated contractors because they charge their payments against the predominant appropriation. Adjustments are routinely made at the end of the month to ensure payments recorded in FIS equal the SF 224, "Statement of Transactions."

11.2.5 Schedule Control System

11.2.5.1 System Objective

The objective of the Schedule Control System is to ensure that all Project work is planned and scheduled to meet critical need dates, to identify interfaces between participants, and to provide the visibility of work progress and valid schedule information necessary to make timely management decisions.

11.2.5.2 System Description

Project scheduling is accomplished by the development and use of a hierarchy of schedules, the lower levels of which contain successively more detail. The tiers of the SRP Schedule Control System consist of the following:

- (1) The Key and DOE-HQ Milestone Schedule is a document which establishes the milestones controlled by DOE-HQ. Key Milestones are selected jointly by DOE-HQ and SRPO reflecting key decision points and Project events including any statutory dates imposed by Congress. These are used by DOE-HQ to track and measure Project performance at the program level. The Key Milestone schedule dates should be established with the participation of the Project Manager since they will be used to track the Project's progress.

- (2) The Project Master Schedule which contains the Project Control Milestones is prepared by SRPO. The Control Milestones, including all Key Milestones, are selected by SRPO for their significance in measuring Project performance and importance to DOE interests. The Control Milestones are developed jointly by SRPO and Project participant personnel and are controlled by SRPO.
- (3) Participant Major Milestone schedules, with major milestones which support the Project Master Schedule Control Milestones, are prepared by the Project participants in sufficient detail for them to manage and control their work content and to report to SRPO. Lower level schedules are developed by participants based upon the complexity and size of their work scope.

Strict schedule milestone traceability through the hierarchy is maintained, and all schedules are directly oriented to WBS elements.

The Salt Repository Project Master Schedule has been established through adherence to this hierarchy. After discussions between DOE-HQ and the Project Office, DOE-HQ Schedule Guidance specifying Key Milestones was submitted to the Project Office. The Project Office incorporated the HQ guidance plus Project-level schedule strategy and assumptions and, with the support of the M & TS contractor and PCSS contractors, developed a Project Master Schedule and supporting Summary Level Logic Network.

After review by the technical staff and approval by the Project Manager, the Project Master Schedule is sent to major Project participants with a letter detailing the schedule strategy and assumptions used in its development. The process is iterative in nature with revised strategies being passed on to the Project participants where, as a result of this process, the Project participants initiate detailed planning, where applicable, in response to Project Office Schedule Guidance. The higher level data from the detailed plans become the participants Major Milestone Schedule and are submitted back to the Project Office for approval.

The Major Milestone Schedule, submitted on DOE Form 535, Milestone Schedule and Status Report, including a Milestone Log, indicates the participant's control level schedule and must include those Project-level milestones from the Project Master Schedule that are applicable to the participant as well as additional milestones in enough detail that the SRPO can be assured that schedule progress can be tracked with sufficient clarity for potential problems to be identified as early as possible. Upon approval by SRPO, the participant's Major Milestone Schedule then becomes the primary vehicle with which schedule progress is reported to SRPO on a monthly basis.

In addition, those major prime contractors and other participants considered of adequate size and complexity are required to develop and maintain a logic network for their contract using the critical path method (CPM). Initially these networks contain activities/events that directly support the dates of those events on the Major Milestone Schedule. The CPM networks are dynamic documents, however, that are utilized to project impacts on the Major Milestone Schedule that result from the actual performance of activities on the contract, and can change on a daily basis. The CPM networks are often used to answer "what if" questions to enhance schedule performance, are valuable tools used in developing work around plans to mitigate the effects of

actual or projected schedule delays, and must identify the key interface points between the contractor and others. The M & TS contractor establishes and maintains the Summary Level Logic Network for the SRPO (see Section 7.0, Project Summary Logic Network).

The Project participants submit schedule progress reports to SRPO monthly. Each progress report includes a narrative explanation format for the Milestone Schedule Status Report (MSSR), which includes a Milestone Log and a problem analysis for missed Control Milestones.

In addition, those contractors selected to implement cost and schedule control systems in compliance with DOE 2250.1A will report schedule status through the use of milestones used to measure performance. When the detailed level schedules have been developed, the budget resources necessary to accomplish each schedule segment are allocated based upon the negotiated cost of the contract. These time-phased, work package budgets are summarized to successively higher levels in the WBS. This summary forms the Performance Measurement Baseline which specifies the Budgeted Cost of Work Scheduled (BCWS) in dollars by month for all levels of the PWBS. As specified in Section 11.2.3, Cost Control System, the M & TS contractor maintains the Project-level Project Performance Measurement Baseline for SRPO.

As work is accomplished, the specific start and stop points for each work package, for milestones within the work package indicating work accomplishment, or for some other objective indicator that specifically identifies work progress (e.g., pre-established standards) enable a measurement of the progress of the work to be made in terms of the dollars budgeted to do the work. This is the Budgeted Cost of Work Performed (BCWP). Thus, for each work package, and for successively higher summary levels, a comparison of BCWP and BCWS provides a status of progress against an established schedule in terms of dollars.

Variance thresholds established as part of the contracts require the participants to explain reporting level variances on Cost Performance Reports (DOE Form 144, Formats 1 & 2) or on Cost Management Reports for participants of less size and complexity, greater than the established range. This analysis, provided as part of the Project Status Report, at a minimum, defines the problem, projects the impact that the problem will have on the EAC, and if the variance is adverse, discusses any action the contractor is implementing or has implemented to mitigate the effects of the variance.

The SRPO with the aid of the PCSS contractor evaluates all submitted reports for compliance with established guidelines (URSC), for consistency of data reported between the MSSR and the Cost Performance Report, and to ascertain any potential or actual problems requiring SRPO or DOE-HQ action. If action by SRPO is deemed necessary, the situation is analyzed, options are developed, and the most effective action to mitigate the effects of the problem is established. The participant is directed to implement the action.

11.2.5.3 Change Procedures

The Key Milestone Schedule is a Program baseline document and, as such, requires the approval of DOE-HQ for any proposed change. The Project Master Schedule is a Project baseline document and, as such, any proposed change involving a Control Milestone must follow formal change procedures (see Section 11.2.8, Baseline Management System).

- (1) Key Milestone Schedule - Key Milestone Schedule changes can be initiated by the Project Office, DOE-HQ or the Project participants. Any change to the Key Milestone Schedule requires the ultimate approval of DOE-HQ.
- (2) Project Master Schedule - Project Master Schedule changes can be initiated by the Project Office, DOE-HQ or the Project participants. Project Office initiated changes are first reviewed by the Project participants. Any comments or problems surfaced by the participants are then resolved to the satisfaction of the Project Office. Project Office initiated changes to Key Milestones must be submitted to DOE-HQ for approval. DOE-HQ initiated changes are as previously described.

Project participant initiated changes that affect the Project Master Schedule are submitted to the Project Office for review and approval. These Control Milestone change requests will include milestone ID, milestone title, scheduled completion date, reason for change and impact of the change on Project budget and schedule. These change requests will be signed by the designated manager and will include the name of persons to whom questions can be addressed. Reasons for changing Control Milestones and Key Milestones will generally be limited to changes in scope of work, changes in funding, or other reasons outside the participant's control. Participant or subcontractor performance is not a valid reason for changing a Control Milestone or Key Milestone. The Project Office will advise the participant of approval or disapproval by the SRP Change Control Board (see Section 11.2.8) after reviewing the request except where a change to a Key Milestone is requested. Changes to Key Milestones must be submitted to DOE-HQ for approval.

- (3) Participant Major Milestone Schedules - Participants develop internal change procedures. The Major Milestone Schedules must be changed as appropriate when the Project Control Milestones incorporated in the schedules change or when participant-controlled milestones are changed by the participant.

11.2.6 Management Analysis and Data Utilization System

11.2.6.1 System Objective

The objective of the Management Analysis and Data Utilization System is to ensure that the collection, processing, analysis and dissemination of management information is accurate, timely, thorough and meaningful.

11.2.6.2 System Description

Prime contractors, integrated labs, Federal agencies and grantees are contractually required to report their performance and status against established cost and schedule baselines. The individual performance reporting is compiled into a monthly Consolidated Project Status Report by the Management and Technical Support Contractor. This Project Status Report provides a cumulative and a monthly view of the Performance Measurement Baseline; variances from the baseline; and the various performer's analyses of those variances, their impact and corrective action taken. The Project Status Report also provides a record of funding information.

11.2.6.3 Data Utilization and Analysis

The cost control process at the Project level for each Project participant begins with the contract/agreement award. The negotiated contract value is established as the initial Contract Budget Baseline. With the development and issuance of the DOE Form 537, Reporting Requirements Checklist (see DOE Order 1332.1, Uniform Reporting System for Contractors), by SRPO to the participant, the cost reporting mechanism is set in place. The Checklist also provides a menu of standard baseline, technical and status reports from which SRPO can specify such things as the required documentation of the participant's management system, the necessary cost baseline and schedule baseline projections, and the technical reports and periodic status reports that the contractor must provide to SRPO. The Checklist specifies the documents that the participant must provide as well as special instructions regarding the level of reporting within the participant's CWBS, the frequency of reports, the distribution of reports, and the additional constraints of quality assurance requirements and variance analysis thresholds with which the contractor's systems and reports must comply. The reporting requirements are established by the SRPO Technical Representative for each particular contract/agreement with support from Project Control. The requirements are made commensurate with the contract's size, length and complexity.

Essentially, the output reports provided by the Cost and Schedule Control Systems form the basis for accomplishing Data Utilization and Analysis. The Project Status Reports from prime contractors and the Consolidated Project Status Report are submitted monthly to the SRPO. These reports are reviewed by SRPO Project Control staff to assure accuracy, consistency, completeness and compliance with the contractual reporting requirements. Errors, inconsistencies or other reporting problems are identified to the contractor(s) for correction.

Project Control completes a summary Project analysis, highlights trends in performance, projects impacts of the trends and advises SRPO Managers of their findings. SRPO managers review the Project Status Reports and the findings from Project Control. Detailed analyses are performed on high visibility and other selected portions of the Project and transmitted to SRPO managers. Items requiring further explanation by the contractor(s) and areas requiring additional guidance from SRPO are identified as topics for discussion and resolution at Monthly Management Reviews. The monthly reviews are held with the Management and Technical Support Contractor and with major prime contractors.

11.2.6.4 SRPO Reporting

Utilizing data in the Project Status Report(s), SRPO Project Control prepares the SRPO Monthly Project Status Report to DOE-CH and the SRPO Project Manager's Progress Report (in accordance with DOE Order 5700.4A) to HQ-OCRWM.

11.2.6.5 System Reviews

SRPO, with support from HQ-MA/OPFM and CH-PPC reviews prime contractors systems for compliance with the Cost Schedule Control System Criteria (per DOE Order 2250.1A) and conducts surveillance reviews of contractor's systems to assure continued compliance.

11.2.7 Engineering Management System

11.2.7.1 System Objective

The objective of the Engineering Management System is to ensure that the process leading to detailed design, construction, operation and decommissioning of the MGDS is conducted in a manner consistent with Project technical requirements and regulatory requirements.

11.2.7.2 System Description

In order to achieve the stated objective, the Engineering Management System will provide for the following:

- o Establish Project technical requirements.
- o Identify those items resulting from the evolving design that should be included in the technical baseline and subject to the controls of the Baseline Management System discussed in Section 11.2.8.
- o Establish methods by which the progress of technical tasks can be monitored and evaluated relative to the Project technical requirements.
- o Establish a system for formal review and documentation to ensure that major technical decisions and the design evolution are defensible and traceable.
- o Maintain a Systems Engineering function to integrate the technical efforts of the various Project disciplines and to define necessary interfaces and trade-offs.
- o Ensure that the MGDS design process addresses all appropriate engineering disciplines including such areas as reliability, safety, human factors, etc.
- o Ensure that the proper liaison exists between the Engineering Management System and the Work Definition, Management Analysis and Data Utilization, Baseline Management and Quality Assurance Systems.
- o Formal, documented design reviews to ensure that the MGDS design as it actually evolves is in conformance with the Project technical requirements.
- o Construction management for the MGDS, including formal design reviews, evaluation of technical adequacy and progress with respect to Project goals and requirements, and the establishment of a system for design change control at the MGDS site.

11.2.8 Baseline Management System

The SRP Baseline Management System and implementation procedures are fully described in the SRP Baseline Procedures Notebook.

11.2.8.1 System Objective

The objective of the Baseline Management System is to identify, document and ensure implementation of the Project cost, schedule and technical baselines, control changes to Project baselines, and to assure all Project work performed recognizes and conforms to the approved baselines.

11.2.8.2 System Description

Utilizing the baseline established by requirements of the Nuclear Waste Policy Act and by the Office of Geologic Repositories (OGR-OCRWM) Change Control Board, the SRPO established the Project baselines. This is accomplished by formal adoption of the DOE-HQ baseline(s) by the SRPO Change Control Board (SCCB) and by adoption of the Salt Repository baselines by the SCCB. These baselines consist of cost, schedule and technical requirements and provide the basis for measuring Project performance.

Any change to the Project baselines must be submitted to the SCCB as a change proposal. Approved change proposals are incorporated into the revised baseline and communicated to all affected Project participants.

SRPO will establish a system to assure implementation of baseline changes and to periodically audit that implementation.

11.2.8.3 SRPO Change Control Board

The SRPO Change Control Board (SCCB) consists of the Chairman, Secretary and five members. The Chairman is the SRPO Project Manager and has sole authority for SCCB decisions. The Project Manager has the only vote in any action taken by the SCCB. The Secretary and all other SCCB members are DOE-SRPO staff. The Secretary is the Manager of Project Control. The other members are the Deputy Project Manager; the Chief, Engineering and Technology Branch; the Chief, Site Exploratory Branch; the Chief, Socioeconomic, Environmental and Institutional Relations Branch; and the Chief, Budget and Project Control. These non-voting members function in an advisory capacity to the Project Manager.

The SCCB will hold regularly scheduled meetings, but may meet more frequently as needed. Formal minutes will be maintained of all meetings, and a formal record of all decisions will be established. Any member, any Project participant or any interested party may submit a change proposal to the Board. The Secretary will transmit established baselines to all affected parties and will also transmit official baseline changes. The Chairman, Secretary or Board members may request participation of contractors and other parties as needed.

11.2.8.4 SRPO Baselines

Though the formal approval process by the SCCB is not yet complete, the Project cost and schedule baselines are outlined in Sections 6.0 (Project Master Schedule) and 9.0 (Cost and Manpower Estimates) of this plan. The basis for the technical baseline is Office of Geologic Repositories document number OGR/B-2, Generic Requirements for a Mined Geologic Disposal System and the performance criteria detailed in Section 8.0 (Performance Criteria).

11.2.9 Quality Assurance System

11.2.9.1 System Description

Quality Assurance is a management system to assure that activities are conducted in a planned and controlled manner and that there is a written, signed record to document those activities. QA manuals are prepared to describe and document SRPO's quality-related activities and requirements, and to comply with DOE and NRC requirements for quality assurance. The QA Program

described in the SRPO QA manual is intended to comply with 10 CFR 60 and 10 CFR 50, Appendix B, ANSI/ASME NQA-1, DOE and CH Orders 5700.6A, OGR Baseline Document OGR/B-3, and the NRC Review Plan for Site Characterization.

The overall QA Program provides for written procedures within plans and manuals. Assessment is made of the plans, manuals and procedures for compliance, completeness and adequacy. Training is conducted for personnel performing quality assurance functions. Planning and procurement documents are reviewed for appropriate and consistent QA requirements. Designated QA records are prepared and maintained. New QA procedures as necessary are prepared and implemented on a continuing basis. Corrective action is requested for identified problems and corrective action follow-up and evaluation assure that problems are resolved. Independent verification and assessment of the QA Program effectiveness is accomplished through audits, surveillances, management reviews and similar activities.

11.2.9.2 System Responsibilities

Responsibilities for quality assurance are not limited to QA personnel. All SRPO management, professional and administrative personnel are responsible for participation in QA planning and implementation, compliance with the requirements of QA plans and programs, and execution of the responsibilities as assigned in the plans and programs.

11.2.9.3 Quality Assurance During Siting and Site Characterization

Data gathered and analyzed during siting and site characterization activities will be used by SRPO to assess impacts of a planned repository on the health and safety of the public, and to support a license application for the disposal of high-level radioactive waste.

The SRPO has developed, implemented and maintains an effective quality assurance (QA) program to assure that all activities performed by SRPO and its contractors are performed in accordance with prescribed quality standards, and the data gathered are of a quality that will permit safety assessments and licensing determinations to be made with confidence.

11.2.10 Safety Management System

11.2.10.1 System Objective

The Safety Management System is to be implemented at the earliest time a field site is established. The objective of this system is to prevent injury to personnel or damage to property, and to mitigate effects of any injury or damage which might occur.

11.2.10.2 System Description

Prior to establishing a field site the Construction Management Contractor for the Exploratory Shaft will develop a site-wide safety plan to be submitted to SRPO for approval, after review by the DOE-CH Safety Division.

DOE Contractors at the field site will be required to develop safety plans which comply with the requirements of this plan.

11.2.10.3 Safety Monitoring

Safety monitoring will be conducted per the requirements of DOE 5480.4. These requirements will be specified in the SRP Construction Management Contracts.

12.0 INFORMATION AND REPORTS

The following tables describe the documents and reports that Project participants are routinely required to provide SRPO, and those documents and reports that SRPO provides to DOE-HQ and DOE-CH.

Table 1
PARTICIPANT REPORTS/DOCUMENTS
BASELINE DOCUMENTS

REPORT/DOCUMENT	RELEVANT SYSTEM	FREQUENCY	CONTENTS
Management Plan	Overall Management System	One-time, revised as required	Summary description of the Project, organizational roles and responsibilities, and a management system description which includes policies, methods, and procedures used by the contractor for management of his Project work.
CWBS Dictionary (Forms 142A & 142B)	Work Definition	One-time, revised as required	Complete work breakdown structure for the contract, extended from the PSWBS, with definitions for each element. May be included in the Management Plan.
Milestone Schedule & Status Report (Plan) (Form 535)	Schedule Control	One-time, revised as required	Participant baseline schedule for specified CWBS elements.
Quality Assurance Plan	Quality Assurance	One-time, revised as required	Participant methods, policies and procedures to assure that products and services will perform adequately during operation.
Safety Plan	Safety	One-time, revised as required	Participant safety policies and procedures.
Cost Plan (Form 533P)	Cost Control	One-time, revised as required	Participant baseline of planned costs by month.

Table 1 (Continued)

PARTICIPANT REPORTS/DOCUMENTS

BASELINE DOCUMENTS (Continued)

REPORT/DOCUMENT	RELEVANT SYSTEM	FREQUENCY	CONTENTS
Manpower Plan (Form 534P)	Cost Control	One-time, revised as required	Participant baseline of planned manhours by month.
Management Control System Description	Overall Management System	One-time, revised as required	Extends the contractor's Management Plan by describing the control systems implemented that are in compliance with the <u>Cost and Schedule Control System Criteria</u> specified in DOE Order 2250.1A.
Data Deliverables List	Engineering	One-time, revised as required	Displays title, expected delivery date(s), frequency, and document identification number of documents, reports, test data, etc., specified as deliverable data in the contract/agreement.

Table 2
PARTICIPANT REPORTS/DOCUMENTS
PROGRESS REPORTS

REPORT/DOCUMENT	RELEVANT SYSTEM	FREQUENCY	CONTENTS
Project Status	All	Monthly	Normally includes other progress reports. Presents participant's assessment of work effort status. Discusses variances from plans, accomplishments, issues and problems.
Cost Performance (Forms 144, 144A, 144B)	Cost Control, Schedule Control	Monthly	Contractor cost status and schedule status against performance baseline in dollars.
Milestone Schedule & Status (Form 535)	Schedule Control	Monthly	Barchart schedule and Milestone Log depicting progress against the baseline plan by WBS element.
Cost Management (Form 533M)	Cost Control	Monthly	Shows actual costs spent versus baseline costs planned for the month and cumulative from inception, and projects status at completion by WBS element and by cost element.
Manpower Management (Form 534M)	Cost Control	Monthly	Shows actual manhours spent versus baseline manhours planned for the month and cumulative from inception, and projects status at completion by WBS element.
Contract Management Summary Report (Form 536)	Cost Control, Schedule Control	Depends on contract value and type	Presents a top-level graphic and tabular summary of cost, manhour and schedule status against baseline plans.

Table 3

PARTICIPANT REPORTS/DOCUMENTS

SPECIAL REPORTS

REPORT/DOCUMENT	RELEVANT SYSTEM	FREQUENCY	CONTENTS
Conference Record	Engineering	As required	Documents participant's understanding of decisions or actions resulting from meetings with DOE representatives.
Hot Line	Engineering	As required	Communicates rapidly any problem situations or technical breakthroughs.

Table 4

PARTICIPANT REPORTS/DOCUMENTS

TECHNICAL INFORMATION REPORTS

REPORT/DOCUMENT	RELEVANT SYSTEM	FREQUENCY	CONTENTS
Technical Progress Report	Engineering	As required, fiscal year	Summarizes the work performed during a specific time period, often a fiscal year, emphasizing results achieved.
Topical Report	Engineering	As required	Comprehensively documents the technical results of work performed on a specific task.
Final Technical Report	Engineering	As required	Comprehensively describes results achieved on a specific task/project including all supporting data.

Table 5

SRPO REPORTS/DOCUMENTS

MANAGEMENT BASELINE DOCUMENTS

REPORT/DOCUMENT	RELEVANT SYSTEM	FREQUENCY	CONTENTS
Project Management Plan	Overall Management System	One time, revised as required	Sets forth the plans, organization and systems those responsible for the Project will utilize and is the detailed Project baseline and execution document.

Table 6

SRPO REPORTS/DOCUMENTS

STATUS DOCUMENTS

REPORT/DOCUMENT	RELEVANT SYSTEM	FREQUENCY	CONTENTS
Project Manager's Progress Report	Management Analysis & Data Utilization	Monthly	Describes the overall status of the Project in terms of cost, schedule and technical progress, as well as a personal assessment of the status of the Project by the Project Manager.
Project Manager's Quarterly Supplemental Reports	Management Analysis & Data Utilization	Quarterly	Provides detailed graphical schedule and cost status information as well as manpower status and photographs of physical progress if required.
Project Status Report	Management Analysis & Data Utilization	Monthly	Summarizes information in the Project Manager's Progress Report into two pages for DOE-CH.
Weekly Highlights Report	Overall Management System	Weekly	Details the issues, concerns, accomplishments and upcoming events of the Project.
Notice of Upcoming Meetings	Overall Management System	Weekly	Lists the meetings and events concerning the Project that are of interest to other agencies and the States.

ANNEX I

ADVANCE ACQUISITION OR ASSISTANCE PLAN

I.1 PROJECT WORK

In accordance with the Nuclear Waste Policy Act of 1982 (PL-97-425), the U.S. Department of Energy has the prime mission to dispose of commercial high level nuclear waste in licensed, underground repositories. As part of this mission the Chicago Operations Office, through the Salt Repository Project Office (SRPO), is responsible for siting, design, construction, operation and decommissioning of a nuclear waste repository in salt. To aid in accomplishing this mission, Battelle Memorial Institute/Battelle Project Management Division was selected to serve as Management and Technical Support Contractor for the Salt Repository Project (SRP). Management is performed under Contract No. DE-AC02-83CH10140 administered by SRPO.

I.2 AWARD SCHEDULE

Though the Management and Technical Support Contractor is charged with integrating all contract activities and providing an overview of the SRP, the SRPO is directly responsible for negotiations and administration of DOE prime contracts with the Exploratory Shaft Facility Construction Management Contractor (Parsons-Redpath) and the Repository Architect-Engineer (Fluor Engineers, Inc.). Additionally SRPO negotiates and administers grants with four effected states identified as having potential repository sites.

Future planned procurement actions include contracts for Repository Construction Management and for Repository Operations, Maintenance and Decommissioning.

ANNEX II

TEST AND EVALUATION PLAN

II.1 SCOPE OF TEST PROGRAMS

In a "standard" project, the initial series of testing would involve developmental tests. These would be conducted after the development of a prototype and would be used to refine the prototype design such that established performance criteria would be met with increasing certainty, i.e., reduced risk. While there is certainly a significant amount of this type of testing planned for the SRP, the preponderance of test resources will be used to conduct what might be termed performance testing.

The key to this terminology is found in the objective of the Salt Repository Project and its corresponding performance criteria. The objective is the long term disposal of radioactive materials in a manner that will protect the health and safety of the public. Thus, the primary early emphasis of the SRP Test Program is to determine if the storage of waste materials in a salt regime can satisfy the performance criteria (see Section 8.0, Performance Criteria).

The categories of tests to be performed during Site Characterization are as follows:

II.1.1 Site Characterization Tests

Tests carried out at the salt site to determine if the characteristics of the site will satisfy the performance criteria of a repository, and, if so, within what risk parameters.

o In-Situ Tests

Tests conducted near the base of an Exploratory Shaft at a depth that would be within the "repository horizon."

o Surface Based Tests

Tests conducted from the earth's surface in the area at or near the nine square miles of the potential repository site.

II.1.2 Development Tests

Tests performed to determine and enhance the capability of individual elements of a repository system necessary to the storage of waste to satisfy established performance criteria.

o Waste Form and Materials Tests

Tests conducted to characterize the behavior:

- and determine radionuclide release rates and mechanisms for spent fuel, commercial HLW and defense HLW under anticipated repository conditions;

- and determine corrosion rates and corrosion modes including the interaction between the metal barrier and its surrounding environment;
 - of candidate packing materials under anticipated repository conditions;
 - of the integrated combination of the waste form, barrier materials and surrounding environment.
- o Prototype Tests
- Tests conducted on prototype waste packages to qualify the design in terms of the performance criteria.
 - Tests conducted on prototype excavation, waste handling and processing, and post closure seal and backfill equipment to determine the capability of equipment to perform within the repository horizon and design parameters.
- o Rock Mechanics Tests
- Tests conducted to determine the properties of salt required for the repository design.
- o Sealing Tests
- Tests conducted to evaluate the performance of the design and of the materials to be used for sealing shafts, underground excavations and boreholes.

II.2 STRATEGY

The various elements in the Test Program are to be performed in a manner that systematically provides answers or qualifying data to the Performance Assessment Program. Performance assessment involves the prediction of expected behavior using computer codes or other analytic techniques. The data from tests are used to validate the capability of the codes to accurately predict behavior. This becomes an iterative process as each test series satisfies certain data needs identified by the codes, which, in turn, identify additional data needs for the next test series.

The expected behavior and observed results of the field tests are compared through analysis and application of the field data. If expected and observed behavior are not consistent, an assessment is made as to whether the field test was correctly planned and designed to address the issue of model prediction. If not, then additional information needs are determined and a new test is developed as necessary. If the understanding was not adequate, then the conceptual model or the input to the code was flawed, and further tests are necessary to determine properties and relationships. If the observations are consistent with expectations, the need for the field test is considered satisfied, either through a resolved issue or a validated model. The test results are then applied to further development (in the case of issue resolution) or performance assessment (in the case of model validation).

At each decision point, the assessment of "sufficiency," "adequacy," or "resolution" is made by careful consultation and peer review within the technical community to assure that a consensus or concurrence exists for the decision made.

II.3 TEST PROGRAM IMPLEMENTATION

Because test programs require large expenditures of funds and dedication of significant capital resources, it must be ensured that the Test Program accurately and fully addresses an identified requirement. This is accomplished by adherence to the following test implementation procedures:

II.3.1 Issue Identification

"Key Issues," "Issues" and "Information Needs" are generically identified in the Mission Plan. The SRP test program will clearly state the relationship between the planned tests and the issues or information needs. Certain design criteria and requirements will dictate inclusion of additional needs for information not currently envisioned. Test plans will include tests to answer these additional needs. Issues are identified through interaction between the various elements of repository development.

II.3.2 Test Program Planning

Each major test program in the repository development project has or will have a specific plan associated with it. These test plans describe the issues to be addressed by that test program, the tests that will be performed, and the required analyses and application of the test results.

II.3.3 Test Conduct

The tests described in the test plans are performed under carefully controlled conditions. Quality assurance is an important part of this process to assure that the test results are reliable and can be traced to accepted standards.

II.3.4 Data Analysis and Performance Assessment

In order to obtain closure on an issue, it must be shown that the data obtained through the Test Program supplies the required information. Site Characterization test data should be adequate to describe the conditions and characteristics of the site. Field test data should confirm pre-test predictions of behavior.

II.4 TEST SCHEDULE

The test schedule and interrelationship of the test programs to the other components of the Salt Repository Project are shown in the SRP Master Schedule (see Section 6.0) and the SRP Summary Level Logic Network (see Section 7.0) respectively.

ANNEX III

ENVIRONMENTAL SAFETY AND HEALTH PROTECTION IMPLEMENTATION PLAN

III.1 PLAN OBJECTIVE

It is the policy of the SRPO to assure that the Project activities do not adversely impact the environment, cause illness or injury to the public or SRP employees, or result in damage to private or Government property. To assure this, SRPO will comply with the requirements of the National Environmental Policy Act (NEPA) and requirements set forth in, but not limited to, DOE Orders:

- o 5000.3, Unusual Occurrence Reporting System, 11/7/84
- o 5440.1B, Implementation of the National Environmental Policy Act, 5/14/82
- o 5480.1A, Environmental Protection Safety and Health (ES&H) Program, 8/13/81
- o 5480.4, Environmental Protection, Safety and Health Protection Standards, 5/15/84
- o 5481.1A, Safety Analysis and Review System (SARS), 8/13/81
- o 5482.1A, Environmental, Safety and Health (ES&H) Appraisal Program, 8/13/81
- o 5484.1, Environmental Protection, Safety and Health Protection Information Reporting Requirements, 2/24/81
- o 5500.2, Emergency Planning, Preparedness and Response for Operations, 8/13/81
- o 5500.3, Reactor and Nonreactor Nuclear Facility Emergency Planning Preparedness, and Response Program for Department of Energy Operations, 8/13/81

SRPO is defining the requirements, specific to the Salt Repository Project, to comply with the above cited documents and is developing plans to meet those requirements. Implementation of these plans will be contractually required by SRPO. SRPO will monitor the implementation of and compliance with these plans and conduct on-site verification visits.

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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

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