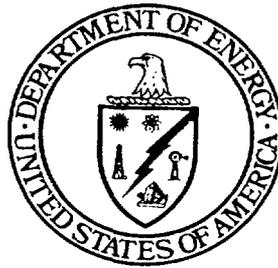


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**SALT REPOSITORY PROJECT  
FY 85 TECHNICAL PROJECT PLAN**



*June*  
**-MAY 1985**

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

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## ABSTRACT

The FY 85 technical plan for the Salt Repository Project is briefly presented. The objectives of the project in relation to the Civilian Radioactive Waste Management Program are discussed, and the technical activities directed toward accomplishing these objectives are detailed.

A budget is presented for each of the Level 2 work breakdown structure tasks (Systems, Waste Package, Site, Repository, Regulatory and Institutional, Exploratory Shaft, Test Facilities, Land Acquisition, and Project Management) in the various sections. An overall description, current status, and planned activities are presented for each of the subtasks which make up the above-mentioned Level 2 tasks.

A strategy diagram and a master schedule are included and each of the milestones is also listed chronologically in the sections.

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## LIST OF ABBREVIATIONS

A/E	architect-engineer
BA	budget authority
BO	budget outlay
DOE	U.S. Department of Energy
EA	environmental assessment
EDBH	engineering design borehole
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESF	Exploratory Shaft Facility
FRG	Federal Republic of Germany
LA	license application
MGDS	Mined Geologic Disposal System
NEPA	National Environmental Policy Act of 1969
NRC	U.S. Nuclear Regulatory Commission
NWPA	Nuclear Waste Policy Act of 1982
ONWI	Office of Nuclear Waste Isolation
PNL	Pacific Northwest Laboratory
QA	quality assurance
SCP	site characterization plan
SRS	System Requirements Specification
SRP	Salt Repository Project
WBS	work breakdown structure

## 1 INTRODUCTION

This document describes the technical plan for the Salt Repository Project (SRP) for FY 1985. It is the initial agreement between the U.S. Department of Energy's (DOE) Salt Repository Project Office and the SRP prime contractors regarding the activities to be conducted and the milestones scheduled for the coming fiscal year. The project strategy, accomplishments, current status, and future plans are included to the extent necessary to place this year's activities in the proper context.

The Nuclear Waste Policy Act of 1982 (NWPAA) identifies actions that must be performed to design, construct, operate, and decommission a geologic repository and specifies the dates for activity completions. This technical plan is responsive to NWPAA and to subsequent guidance from the Civilian Radioactive Waste Management (CRWM) Program's Office of Geologic Repositories. Included are plans for the Office of Nuclear Waste Isolation (ONWI) of Battelle Project Management Division, Fluor Engineers, Inc., Parsons-Redpath, and other prime contractors.

### 1.1 REPOSITORY PROJECT MISSION

Under the direction of the Office of Civilian Radioactive Waste Management (created within the DOE by direction of the NWPAA), the mission of the geologic repository program 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.

The mission statement 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) achievement of public confidence through an effective consultation and cooperation process that encourages widespread State, Indian tribe, and public participation in the planning, decision, and licensing process; and (4) development of waste packages that meet all regulatory performance requirements.

The SRP goals are abstracted from the Mission Plan for the Civilian Radioactive Waste Management Program (DOE, 1984a) and provide the foundation for the SRP technical planning presented in the following chapters. FY 1985 guidance from the Office of Geologic Repositories supplies the direction for the immediate activities planned to meet these long-range goals.

## 1.2 STRATEGY

The SRP strategy up to submission of the license application (LA) is portrayed in the logic chart of Figure 1-1, which provides continuity with the FY 84 technical project plan and highlights key anticipated field activities. As shown in Figure 1-1, the project is divided into three phases: (1) site nomination and recommendation which culminates with Presidential approval of sites for detailed characterization, (2) site characterization which is completed when sufficient in situ testing has been accomplished for preparation of the environmental impact statement (EIS), and (3) site selection which concludes when the initial repository selection becomes effective under the terms of the NWPAs and the LA is submitted.

This plan provides a discussion of the activities and expected accomplishments in FY 1985. The discussion of the overall SRP strategy and logic in this chapter is designed to place the near-term effort into its long-range context.

### 1.2.1 Site Nomination and Recommendation Phase

In FY 1984, DOE issued draft final siting guidelines (DOE, 1984b) as required by the NWPAs. The U.S. Nuclear Regulatory Commission (NRC) has concurred with these siting guidelines in the form of a statutory requirement. The NWPAs require that the siting guidelines be followed in developing the environmental assessments (EAs) which must accompany each site nomination.

The EAs are being reviewed for the seven potentially acceptable salt sites. Two of these sites are located in the bedded salt of the Palo Duro Basin (in Deaf Smith and Swisher Counties) of the Permian Basin, Texas; two sites are in bedded salt in the Gibson Dome (at Davis Canyon and Lavender Canyon) in the Paradox Basin, Utah; and three salt domes are in the Gulf Coast

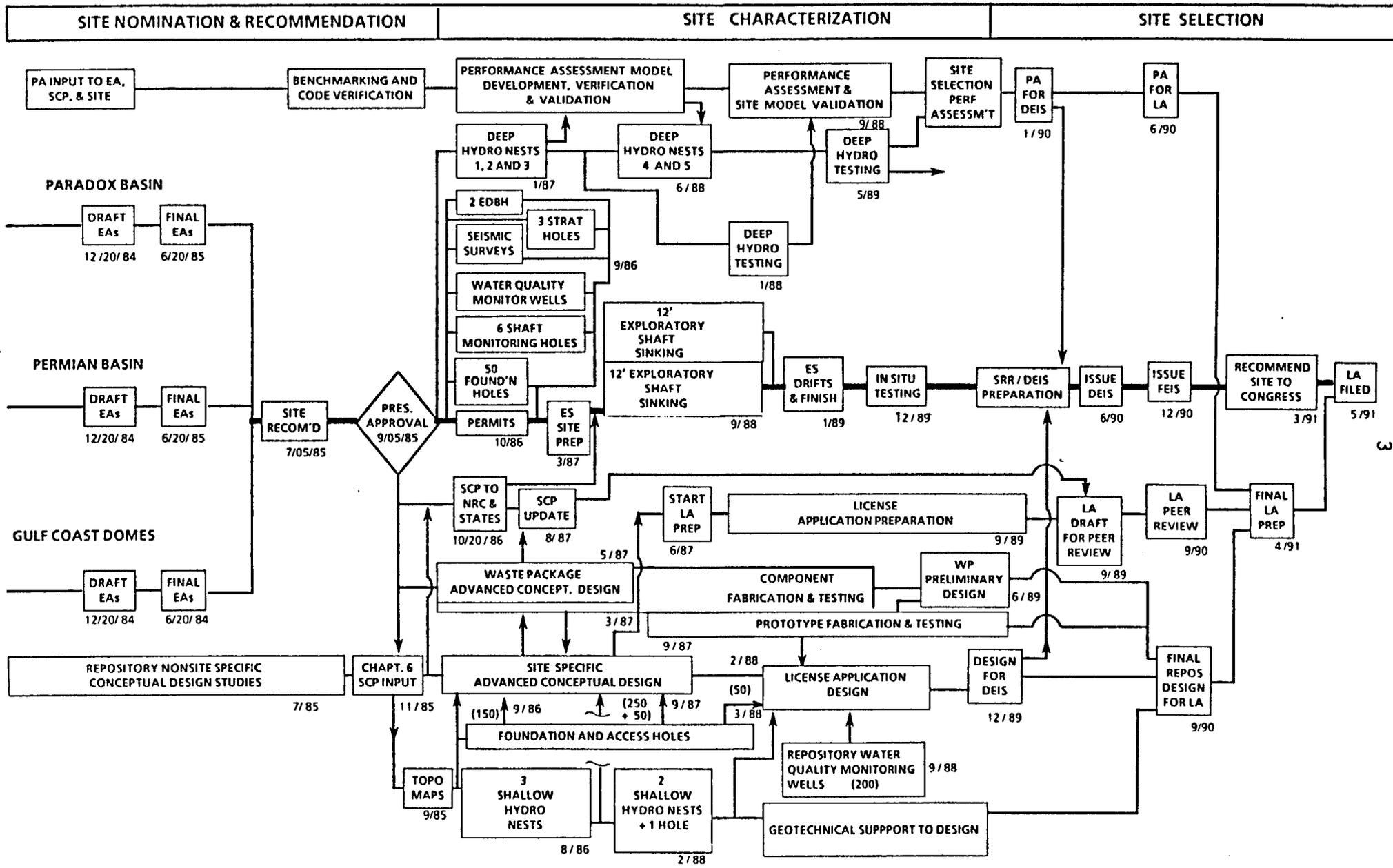


FIGURE 1-1. SALT REPOSITORY PROJECT STRATEGY

Salt Dome Basin (the Richton and Cypress Creek Domes in Mississippi and the Vacherie Dome in Louisiana). These EAs will be used to designate the nominated sites in FY 1985. The SRP planning assumes that the Secretary of Energy will recommend a single salt site to the President by July 5, 1985. The President may immediately approve or disapprove the recommendation, may permit the characterization to proceed by approving or taking no action within 60 days, or may delay the decision for 6 months, if, in his opinion, sufficient information is not available to warrant a decision.

The present planning assumes that Presidential approval will occur by September 5, 1985, and includes no major field activities in the period before site characterization starts in October of 1985.

In parallel with the site selection process, significant tasks will be either continued or initiated during FY 1985 in preparation for the site characterization phase. These preparatory tasks include detailed geotechnical, environmental, and socioeconomic planning based on data-need analyses as well as conceptual design studies of the repository and waste package; and preliminary design of the exploratory shaft facility (ESF). The development of integrated, detailed test plans to ensure data validity and noninterference among the data gatherers is a critical activity during this phase of the program.

Performance assessment activities during the site selection will provide input to the EAs and to siting efforts, with code verification and validation to follow during the next phase.

### 1.2.2 Site Characterization Phase

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.

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, to 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, the SCP will be made available to the public, and public hearings will be held in the site vicinity.

During site characterization, the SRP will carry out its 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, necessary information required for the LA 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 recommended for detailed site characterization.

Site characterization activities include the construction of two 12-foot-diameter exploratory shafts for the tests and studies to be made at repository depth. Engineering design boreholes (EDBH) will be drilled as soon as possible after site selection to provide site-specific data to support the final design of the ESF. 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, lined, and outfitted with utilities and service lines. In situ testing will be coordinated with the completion of shaft sinking and outfitting and the development of underground test tunnels 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. Surface-based site characterization, such as the monitoring of shallow aquifers, 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. The results of the characterization work and any necessary changes to the SCP will be shared with the affected parties and documented in SCP progress reports, issued every 6 months to the NRC, affected States, and affected Indian tribes. Steps will be taken to ensure access to, and the acquisition of, land as necessary to allow these site characterization activities to be conducted and to preserve the integrity of the candidate site as a future repository location. The analysis of these

site characterization test results will be used in the LA, along with additional data gathered for the draft EIS preparation.

The development of supporting technology and designs will continue for the candidate site. Site-specific conceptual design studies will be completed, and new data acquired from the salt site characterization program via the exploratory shafts will be used in the formulation of preliminary design criteria. Waste package development will continue in parallel. A site-specific conceptual design for the waste package will be completed, and design inputs will be used in the ongoing repository design, performance assessment, and in situ testing programs. Efforts 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.

Paralleling the exploratory shaft construction, a series of deep test wells (hydrology clusters) will be drilled around the site to describe the deep aquifer flow patterns. These deep aquifers must be characterized to define the most likely avenue for radionuclide transport to the accessible environment. The data from the hydrology clusters will be used for performance assessment model development, verification and validation of codes, and other analysis efforts to be used in licensing proceedings. In the area of performance assessment, computer codes will be developed and tested, reasonably credible disruptive event scenarios will be postulated and evaluated, and data uncertainties and system sensitivities will be analyzed.

As site characterization testing proceeds, preliminary and detailed designs for the repository and final designs for the waste package will be initiated for the candidate site. The designs will reflect completed efforts in related areas, such as repository sealing and equipment and instrumentation development. These preliminary (Title I) designs will support the preparation of the site selection report, the EIS, and the LA. The preparation of documentation required for the LA will begin during this phase for the candidate site and will be developed in consultation with the NRC.

### 1.2.3 Site Selection Phase

The preparation of documentation required for the LA will be conducted for the candidate 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 (DOE, 1984b), the NRC criteria in 10 CFR Part 60 (NRC, 1983), and the U.S. Environmental Protection Agency (EPA) standards in 40 CFR Part 191 (EPA, 1984). 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 update for the candidate site. Testing in support of the LA may continue. Draft EIS preparation will begin in FY 1989 with the draft EIS planned for release in June 1990; the final EIS will be issued approximately 6 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 is in May 1991.

The LA preparation begins in 1987, during the site characterization. An integrated schedule of updating and reviews will be followed during site selection so that the LA can be docketed with the NRC in July 1991, 60 days after the site selection is effective and within the 90 days required by the NWPA.

### 1.3 MASTER PHASING/MILESTONE SCHEDULE

This schedule shows the major program events by work breakdown structure (WBS) element and also identifies the level of control imposed on those milestones (Figure 1-2).

A number of milestones on the master phasing/milestone schedule are written as being "issued to the public." This terminology highlights the SRP's intention of making information available in a referenceable manner and accessible through normal library channels to project personnel as well as any interested parties which, for inclusive purposes, are termed "the public." Formal reviews and public hearings, when intended, are in addition to these publications and are shown separately.

### 1.4 WORK BREAKDOWN

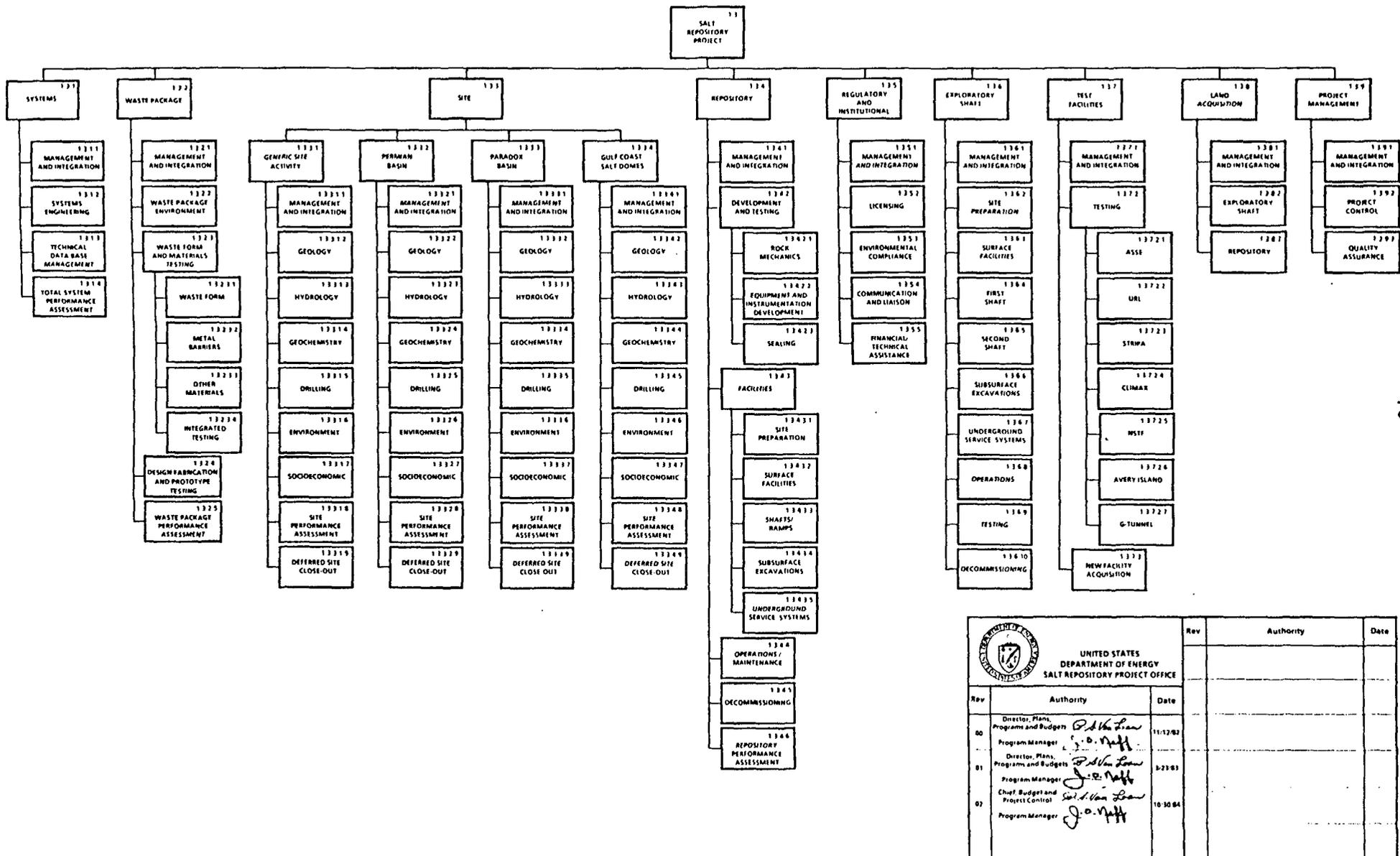
Within any program as large and complex as the CRWM Program, the work must be formally organized into tasks and logically scheduled to meet the needs of project management.

The work to be performed by the SRP is subdivided into tasks in accordance with a WBS that conveniently groups like activities. This year, the WBS has been restructured at a level lower than that previously used. The new WBS, shown in Figure 1-3, is designed to provide commonality for planning and reporting at this lower level for all the Office of Geologic Repository projects. Subsequent chapters of this plan describe WBS elements and provide information as to the status of the planned activities as well as the schedules and budgets for each.

### 1.5 BUDGET SUMMARY

The budget authority (BA) and the budget outlay (BO) by WBS for the SRP from FY 1985 through FY 1991 are shown in Table 1-1.

Refer to the pocket at the end of this report for  
Figure 1-2, the Master Phasing/Milestone Schedule



Rev		Authority	Date
00	Director, Plans, Programs and Budgets	<i>P. Van Leeuwen</i>	11-12-82
01	Program Manager	<i>J. D. Naff</i>	02-23-83
02	Director, Plans, Programs and Budgets	<i>P. Van Leeuwen</i>	10-30-84
	Program Manager	<i>J. D. Naff</i>	

FIGURE 1-3. SALT REPOSITORY PROJECT SUMMARY WORK BREAKDOWN STRUCTURE

TABLE 1-1. Salt Repository Project - Total BO Funds (\$ Millions)

WBS	FY 85		FY 86		FY 87		FY 88		FY 89		FY 90		FY 91	
	BA	BO	BA	BO										
1.3.1 Systems	3.8	5.7	6.5	6.6	5.9	6.0	4.5	4.6	4.0	4.1	3.0	3.2	1.8	1.8
1.3.2 Waste Package	5.2	5.6	9.3	9.7	9.5	9.8	7.4	7.5	6.8	6.9	5.6	5.7	3.8	3.8
1.3.3 Site	36.7	27.5	50.3	68.8	36.6	36.9	33.5	36.1	18.7	19.1	15.6	16.5	8.5	8.5
1.3.4 Repository	12.3	14.1	28.3	28.6	33.8	33.2	43.6	43.1	50.7	50.5	49.8	48.8	46.8	46.8
1.3.5 Regulatory and Institutional	15.5	26.3	20.0	19.2	26.7	26.3	29.0	28.5	32.2	32.3	29.2	31.0	16.5	16.5
1.3.6 Exploratory Shaft	5.1	13.1	21.4	19.0	79.5	70.8	61.8	66.2	47.0	51.2	24.2	27.0	9.2	9.2
1.3.7 Test Facilities	0.4	0.6	0.7	0.7	0.9	0.9	0.7	0.8	--	--	--	--	--	--
1.3.8 Land Acquisition	3.3	0.3	12.0	13.1	6.6	8.3	3.7	3.7	3.9	3.9	3.9	3.9	2.6	2.6
1.3.9 Project Management	7.5	10.5	12.5	12.4	13.4	13.6	12.5	12.4	13.2	13.2	12.7	13.1	8.6	8.6
TOTAL SALT FUNDS	89.8	\$103.7	161.0	\$178.1	212.9	\$205.8	196.7	\$202.9	176.5	\$181.2	144.0	\$149.2	97.8	\$97.8

## 2 SALT REPOSITORY PROJECT ELEMENT PLANS

Presidential approval of a salt site for detailed characterization will occur by September 5, 1985, based on the EAs which were initiated in FY 1984. During FY 1985, the highest priority project activities are those which lay the groundwork for near-term efforts, such as the finalization of the EAs, the preparation of the SCP, obtaining permits for the exploratory shaft, and beginning the work on waste package and repository designs. Plans for these and other required activities are presented in this section according to the WBS.

### 2.1 SYSTEMS, WBS ELEMENT 1.3.1

The Systems task includes four major subtasks: Management and Integration, Systems Engineering, Technical Data Base Management, and Total System Performance Assessment.

The WBS element milestone schedule for Systems activities is presented in Figure 2-1; the milestone log and the FY 1985 BO are presented in Tables 2-1 and 2-2, respectively.

#### 2.1.1 Management and Integration, WBS Element 1.3.1.1

Overall Description. Based on the overall technical objectives of the project, the program-level requirements and planning, and the fiscal year technical guidance from DOE-HQ, the Systems management and integration activity provides coordination between project elements.

This activity also provides for the overall management of the systems efforts including planning, scheduling, budgeting, and reporting.

Current Status. The technical project plans for FY 1984 and FY 1985 (draft) were published, and a revision of the detailed program networks was initiated to incorporate recent changes in program strategy and schedules.

Planned Activities. The revision of the detailed networks will be continued during FY 1985 to support program decision making and to provide a basis for the preparation of the final FY 1985 and FY 1986 technical project plans.

#### 2.1.2 Systems Engineering, WBS Element 1.3.1.2

Overall Description. The development and documentation of functional and performance requirements assure that all project participants have a uniform, consistent reference for the integrated disposal system. System-level analyses support the development and assessment of these requirements for the system as a whole. Analyses may include the study of technical issues, transportation considerations, and system costs.

As a starting point, the salt waste disposal system requirements are predominantly based on generic disposal system requirements (common to all 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 and Mine Safety and Health Administration. The Office of Geologic Repositories program has baselined the generic requirements, e.g., the Generic Requirements for a Mined Geologic Disposal System (DOE, 1984c). As a next step, the program will expand those requirements to reflect salt-specific needs or constraints and, ultimately, the requirements for a selected salt site.

Included in this activity is the establishment and maintenance of an SRP baseline management system which systematically identifies and controls the salt waste isolation system configuration and related technical baseline.

Current Status. During FY 1984, the generic requirements document as drafted by the DOE-HQ was received. The preparation of the salt system requirements specification (SRS) has been rescheduled from FY 1984 to FY 1985 to ensure its compatibility with the generic requirements document published in September 1984.

The SRP technical baseline, established in FY 1983, was expanded in FY 1984 and several improvements were made to the baseline control procedures. Also, the need to broaden the baseline management concept to encompass design

control of the exploratory shaft configuration and to establish an overall field office prime contractor baseline management system was addressed by issuing a preliminary SRP baseline management manual which is now under review.

Planned Activities. Systems engineering activities in FY 1985 will concentrate on preparation and baselining of the salt SRS. The salt SRS will be based on the generic requirements document and applicable government standards. It will provide an integrated, central source of requirements for a repository in salt. Incompatibilities among the generic requirements document and lower level requirements documents will be identified and resolved via the salt 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 1985, a second issue of the salt 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 salt SRS will be produced in early FY 1986. As more site characterization data and repository and waste package design details become available, the salt SRS will be periodically updated throughout the course of the project.

A system design description will be initiated in FY 1985 to provide a uniform description of the salt-specific mined geologic disposal system (MGDS). This document will be updated as necessary to capture additional design details as they are formalized in studies and design reviews.

Based on guidelines from the DOE-HQ expected in FY 1985, a systems engineering management plan will be prepared to describe the SRP technical management process.

Also during FY 1985, special studies will examine the allocation of regulatory requirements of the engineered barrier system to specific components of the MGDS and evaluate transportation system and repository receiving facilities concepts.

Beyond the current year plan, system analyses will be directed more toward site-specific design issues and the preparation of information needed to support and defend decisions during the licensing process.

A preclosure repository simulation model will be developed for the waste-handling operations. The initial development of the salt handling module will

be started. The simulation model will reflect the conceptual design being prepared during FY 1985.

The engineering data release system will be further developed and placed into operation to support the SRP integrated data/information concept. The SRP baseline procedures manual will be finalized and issued and the SRP baseline will be established, placed under the Change Control Board, and expanded as the project evolves.

### 2.1.3 Technical Data Base Management, WBS Element 1.3.1.3

Overall Description. The approach of the technical data base management activity is to develop, place into operation, and maintain an integrated technical data/information management system for the SRP and provide access to the data/information by outside agencies.

Current Status. At the end of FY 1983, the general concept of an SRP-integrated technical data management system was developed. In FY 1984, the scope was expanded considerably and now consists of several mutually supportive computerized data bases plus management activities necessary to assure effective control and use of the data base contents. In addition, the technical data management system encompasses several libraries and manual file systems for housing the hard copy and microform/microfilm documents referred to in the data bases. The SRP technical data base contains data categories covering material properties, site descriptions, waste package/repository/-exploratory shaft designs, and environmental impacts. The technical data management system has been discussed with and demonstrated to the NRC and salt States. Entry of EA-related data into the technical data base was initiated, remote terminal access to the system was made available, and a system description document has been drafted.

Planned Activities. All data bases will be maintained and expanded to be responsive to project needs and to reflect key data extracted from technical source documents as they evolve. Entry of EA-related data will be completed in FY 1985 in conjunction with the release of those documents and will provide a reference base for SCP preparation. Additional data modules will focus on

SCP-related data, performance assessment data, repository nonsite-specific conceptual design information, and data from geophysical and environmental studies.

#### 2.1.4 Total System Performance Assessment, WBS Element 1.3.1.4

Overall Description. Under the new WBS, all total system performance assessment and associated integrating activities are included in WBS element 1.3.1.4; subsystem analyses are covered within their respective elements. Previously, all performance assessment was in WBS element 1.0, including: (1) the development, verification, and validation of all computer codes and models required for performance assessment activities in the operational (preclosure) and postclosure phases; (2) the application of those models to the analyses of site, waste package, and repository subsystems and components; and (3) the identification of data requirements directed at improving overall system performance prediction.

This year, the new WBS provided to Salt Repository Project Office by the DOE-HQ separates performance assessment into four segments--the total system, waste package, repository, and site--and assigns each segment to the appropriate WBS element. Therefore, only the total system performance assessment and those performance assessment activities which apply to more than one subsystem are discussed here. Individual subsystem performance assessment tasks are discussed in their respective WBS element descriptions.

Based on a functional understanding of the overall repository system and the phenomena affecting the performance of the system, calculational tools are being developed, verified, and validated to allow comprehensive assessments of performance. Where possible, existing codes and models are being developed. An important part of performance assessment is the use of sensitivity and uncertainty analysis techniques to determine which system components and data most strongly influence system performance prediction and thus enhance the level of confidence in the performance predictions.

Current Status. Draft documentation meeting NRC standards (NUREG-0856) for many of the codes required for performance assessment of a salt repository has been completed. The plans to complete these activities are discussed in

the performance assessment plan. Although further refinements of the codes will occur as verification and validation activities progress and the needs for refinements are identified, the code capabilities at the end of FY 1984 provide an initial foundation to support performance assessment evaluations for SCPs and EAs.

A wide range of preclosure radiological analyses was completed in FY 1984 in conjunction with the preparation of the seven salt site EAs. As a result of this experience, some situations have been identified where the rigor of analysis is limited by the capabilities of the methods and codes used, although many more have been identified where the limiting factor is available data. Where indicated, improved methods and data needs are being identified and documented. Benchmarking, verification, and validation activities are beginning. Important variables in these analyses are being studied in the context of sensitivity and uncertainty techniques.

Planned Activities. Performance assessment planning will focus on the FY 1985 update to the performance assessment plan. The performance assessment plan will focus on mission plan issues and include plans for the verification of codes.

The postclosure performance assessment modeling for FY 1985 will include the development of detailed scenarios, system-level modeling, documentation of the waste package performance assessment (WAPPA) computer code, and the development of adjoint codes for sensitivity analysis. The BORHOL computer code will be upgraded to SYSNET to better analyze the impact of boreholes near or through a repository. The requirements for a system-level model will be defined. The CFEST code will be benchmarked against other hydrology codes.

The postclosure performance assessment analysis will include the further development of an approach to uncertainty and sensitivity analyses for several sites. This will permit data needs and design parameters to be identified.

The only preclosure safety analysis planned at the system level for FY 1985 is the development of radiological criteria and procedures.

WBS ELEMENT SCHEDULE												FY 85	
ACTIVITY	O	N	D	J	F	M	A	M	J	J	A	S	
1.3.1 SYSTEMS				a			b						
										c	d	e, f, g	

△ Major Milestone  
▽ Intermediate Milestone

FIGURE 2-1. SYSTEMS ACTIVITIES MILESTONE SCHEDULE

TABLE 2-1. SYSTEMS ACTIVITIES MILESTONE LOG

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- a. ONWI starts Total Systems Performance Assessment Model Development
  - b. ONWI starts Preclosure Safety Analysis
  - c. SRPO sends to DOE-HQ Salt Generic System Requirements Specifications for review
  - d. SRPO sends to DOE-HQ the Transportation Reference Receiving Scenario Analysis report for review
  - e. SRPO sends to DOE-HQ draft Systems Engineering Management Plan for review
  - f. SRPO sends to DOE-HQ annual Performance Assessment Scientific Support (PASS) program interaction letter report
  - g. SRPO sends to DOE-HQ Performance Assessment Plan update including validation strategy for review
- 
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Table 2-2. FY 1985 Budget Outlay for Systems Activities (WBS 1.3.1)

WBS Element	Subtask	BO, \$ Millions
1.3.1.1	Management and Integration	1.3
1.3.1.2	Systems Engineering	1.2
1.3.1.3	Technical Data Base Management	0.7
1.3.1.4	Total System Performance Assessment	<u>2.5</u>
	TOTAL	5.7

## 2.2 WASTE PACKAGE, WBS Element 1.3.2

The Waste Package task has as its objective the design, development, fabrication, assembly, and performance assessment of the waste package and its component parts for candidate geologic repositories. The major subtasks are as follows:

- o Management and Integration
- o Waste Package Environment
- o Waste Form and Materials Testing
- o Design, Fabrication, and Prototype Testing
- o Waste Package Performance Assessment.

The WBS element milestone schedule for waste package environment activities is presented in Figure 2-2; the milestone log and the FY 1985 BO for waste package environment activities are presented in Tables 2-3 and 2-4, respectively.

### 2.2.1 Management and Integration, WBS Element 1.3.2.1

Overall Description. This activity provides for the overall management and integration of activities involving the waste package. Included in this activity is the interfacing with other repository projects and offices and the DOE-HQ elements, as well as the management and integration of prime and other contractor activities.

Current Status. During FY 1984, Waste Package support was provided to the DOE-HQ in the preparation of the mission plan (DOE, 1984a) and the waste system generic requirements document (DOE, 1984c). Input and review were provided on waste package-related items in EA draft chapters. Interfaces and integration activities were conducted with the Materials Characterization Center, with the waste form producer contractors of the Savannah River Laboratory and the Pacific Northwest Laboratory and with NRC and EPA staff.

Planned Activities. During FY 1985, major thrusts will be the preparation of a waste package program plan, conveying input to the appropriate SCP preparation activities, and interfacing with other repository projects. Support, input, and review will also be provided to the Salt Repository Project Office and the DOE-HQ on waste packages and related issues and studies, including waste form specifications, spent fuel and disposal container materials characterizations, and alternative waste package system studies.

#### 2.2.2 Waste Package Environment, WBS Element 1.3.2.2

Overall Description. This activity provides for the characterization of the repository near-field environment in which the waste package would reside and which affects the waste package's ability to meet performance requirements. Definition of the near-field environment includes the assessing of brine quantities and compositions and repository host rock properties as they are affected by the waste package in terms of temperature, radiation, and waste package degradation products.

Current Status. During FY 1984, the effects of radiation on salt and brine properties were studied. Also the formulation and specification of site-specific brine compositions were completed for the Permian Basin for both expected conditions (brine migration) and intrusion brines. Near-field environment conditions were formulated for use in the performance assessment of conceptual waste package designs for input to the EAs.

Planned Activities. During FY 1985, studies will continue in defining expected near-field conditions for the waste package. Input will be developed for the preparation of a waste package program plan. This input will also be utilized to support selected sections of the SCP.

Topical reports will be issued on brine radiolysis, salt radiation effects, and brine actinide solubility effects. Test plans will be issued for definition of near-field salt-specific host rock conditions.

### 2.2.3 Waste Form and Materials Testing, WBS Element 1.3.2.3

Overall Description. This activity provides for the testing and evaluation of waste package materials including the waste form (spent fuel, commercial high-level waste, defense high-level waste, and commercial transuranic waste) and waste-package component materials including, as appropriate, the canister, disposal container, and packing.

The testing and evaluation procedures include material screening, material degradation modes reviewing, and performance assessments during pre-closure and postclosure (during both the containment and release periods). Both long-term testing and accelerated testing will be done. This information would be utilized in waste package design activities, as input to the SCP and other licensing actions, and to provide a data base for performance assessment activities.

Current Status. During FY 1984, major emphasis was placed on corrosion testing of low-carbon steel as a candidate reference material for waste-package disposal containers. Testing was performed in radiation and nonradiation environments in both expected and intrusion brines. Tests were initiated in a moist salt environment, which is suggested to be more representative of the expected package near-field conditions.

Waste form testing in FY 1984 emphasized spent fuel with the formulation of experiments and test plans, the setup of experimental apparatus, and the initiation of spent fuel leaching and solubility tests.

Planned Activities. During FY 1985, corrosion testing of low-carbon steel under expected near-field environmental conditions will continue, utilizing expected salt and brine compositions and focusing on the salt type at the candidate site in the latter part of the fiscal year. Both the radiation environment and moist salt environment tests will be the focus of effort. Topical reports documenting FY 1984 activities will be issued.

Waste form testing will continue during FY 1985, utilizing expected environment conditions with regard to site-specific salt and brines. Testing emphasis will be on spent fuel and defense high-level waste, with preparations initiated for the testing of the West Valley waste form (borosilicate glass)

when available. These preparations for spent fuel, defense high-level waste, and West Valley glass include the development of test plans and procedures, the procurement of waste forms, and test initiation. Topical reports of FY 1984 activities on waste form testing will be completed.

Input on materials testing will be prepared to support the preparation of an overall waste package program plan. This activity will also support SCP and licensing tasks.

#### 2.2.4 Design, Fabrication, and Prototype Testing, WBS Element 1.3.2.4

Overall Description. This activity provides for the design, development, fabrication, and testing of waste packages for a salt repository. These designs will be based on overall DOE program objectives and regulatory performance requirements, and subsequent design criteria and specifications. The activities cover development, analysis, and testing (including, as necessary, the use of full-scale prototype packages) to validate the performance of the waste package against the relevant specifications, criteria, and regulatory requirements.

Current Status. Conceptual designs of waste packages have been completed, including design and peer reviews. As a result of these reviews, developmental actions were identified that affected other waste package WBS elements which have been incorporated into FY 1985 planned activities. Package fabrication studies and closure weld development and examination technique studies were identified as activities requiring resolution before further significant design steps are undertaken.

Planned Activities. The initiation of a waste package advanced conceptual design will take place following the recommendation of a salt site. Package fabrication and welding studies will be initiated in FY 1985. These studies will be made consistent with the DOE-HQ guidance on common waste package approaches. Activities related to the preparation of an advanced conceptual design specification will be initiated in FY 1985 and will include results of a better definition of waste package environment, waste form acceptance specifications, DOE waste management system requirements, the waste

package/repository integration/interface studies, and other specifications including codes, standards, and regulatory requirements developed under this WBS element. Advanced conceptual design will be initiated following the issuance, review, and approval of this specification.

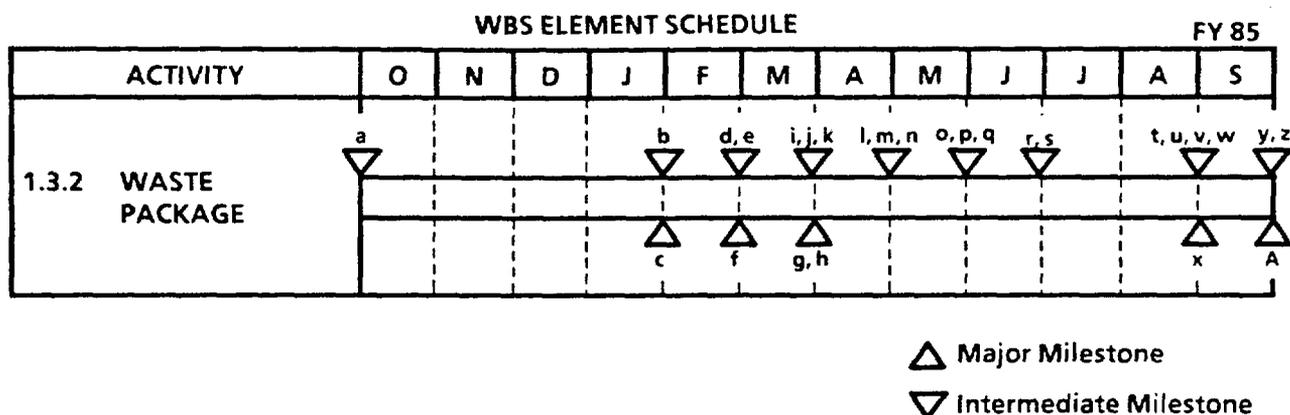
2.2.5 Waste Package Performance Assessment,  
Element WBS 1.3.2.5

Overall Description. This activity provides for the development and validation of models for assessing the performance of the waste package and the utilization of these models in determining waste package performance.

Current Status. Waste package assessments have been performed. The model has been used to provide performance assessments of waste packages for input to the candidate salt site EAs and to be included in the waste package conceptual design review. As a result of such assessments, needs for submodel improvements and additional data needs were identified.

Planned Activities. FY 1985 work will include the development and incorporation into the package performance model several refined submodels; both a brine migration submodel/data base and a low-carbon steel corrosion submodel will be incorporated. Work will be started on the development of improved submodels for borosilicate glass leaching and spent fuel. Work will be completed to verify and validate many of the submodels to meet NRC quality assurance specifications and requirements.

The model will be reviewed to assure that all identified potential package degradation and release modes are incorporated, that correct waste-package input parameters are utilized, and that the submodels or subroutines represent current physical models resulting from waste package testing and environment definition activities. Input will be prepared for the waste package program plan.



**FIGURE 2-2. WASTE PACKAGE ACTIVITIES MILESTONE SCHEDULE**

**TABLE 2-3. WASTE PACKAGE ACTIVITIES MILESTONE LOG**

- 
- a. ONWI Starts Waste Package Program Plan
  - b. ONWI starts Waste Package Advanced Conceptual Design Specifications
  - c. ONWI issues to SRPO Waste Package Reference Conceptual Designs Report
  - d. ONWI sends to SRPO FY 84 PNL Near-Field Environment Work Report
  - e. ONWI sends to SRPO the Activity Plan for Advanced Conceptual Design Specification
  - f. SRPO sends to DOE-HQ for review the draft Waste Package Conceptual Design Report
  - g. President issues decision on Defense High-Level Waste Colocation
  - h. DOE-HQ sends letter to SRPO on common waste package
  - i. ONWI sends to SRPO FY 84 Waste Form Testing Report
  - j. ONWI sends to SRPO FY 84 Metal Barrier Testing Report
  - k. ONWI sends to SRPO Alternative Materials Contingency Plan
-

Table 2-3. (Continued)

- 
- l. ONWI sends to winning contractor notification of selection for waste package development
  - m. ONWI sends to SRPO FY 84 PNL performance assessment report on corrosion and leaching models
  - n. ONWI sends to SRPO brine migration model comparison report
  - o. ONWI sends to SRPO waste package size study report
  - p. ONWI sends to SRPO brine migration laboratory test plan
  - q. SRPO sends to the public the waste package conceptual design report
  - r. ONWI sends to SRPO expected near-field conditions report
  - s. ONWI sends to SRPO radiation dose for WAPPA model report
  - t. ONWI sends to contractor notice to proceed with waste package development
  - u. ONWI sends to SRPO waste form product/acceptance requirements
  - v. ONWI sends to SRPO test methodology for long-term waste package performance assurance report
  - w. ONWI sends to SRPO the spent fuel test plan
  - x. SRPO sends to DOE-HQ for information the draft metal barriers test plan
  - y. ONWI sends to SRPO brine migration model comparison report
  - z. ONWI sends to SRPO draft WAPPA validation test plan
  - A. ONWI submits to SRPO waste package program plan
- 
-

Table 2-4. FY 1985 Budget Outlay for Waste Package Activities (WBS 1.3.2)

WBS Element	Subtask	BO, \$ Millions
1.3.2.1	Management and Integration	0.6
1.3.2.2	Waste Package Environment	1.1
1.3.2.3	Waste Form and Materials Testing	2.6
1.3.2.4	Design, Fabrication, and Prototype Testing	0.7
1.3.2.5	Waste Package Performance Assessment	<u>0.6</u>
	TOTAL	5.6

## 2.3 SITE, WBS ELEMENT 1.3.3

The objective of the Site task is to plan, schedule, budget, perform, control, coordinate, and report site characterization and evaluation work. This includes activities to determine the geologic, hydrologic, geochemical, geoengineering, environmental, and socioeconomic characteristics of the site. This element also includes activities to decommission and restore sites in basins where further work is not required. Also included are some ongoing activities that must be completed to (1) collect site-specific data; (2) develop the conceptual models of the geologic system upon which the numerical modeling is based; (3) revise the seven draft EAs following public hearings, distribute the final documents, and begin site characterization activities; (4) guide development of a SCP for the recommended salt sites; and (5) complete topical reports for use as references in the EAs.

The WBS element milestone schedule for site activities is presented in Figure 2-3. The milestone log and the FY 1985 BO are presented in Tables 2-5 and 2-6, respectively.

### 2.3.1 Generic Site Activity, WBS Element 1.3.3.1

Overall Description. This subtask includes all site-related work performed to obtain data and provide interpretations of site characteristics to satisfy requirements, and integrated planning and review activities for each of the three nominated salt sites. This element includes all site activities for the recommended candidate site and closeout and decommissioning of deferred sites.

Current Status. Studies and reports of previous site investigations have been or are being completed. They are being incorporated into the EAs for the seven salt sites and provide the background for planning site-specific aspects of surface-based plans. Ongoing monitoring programs contribute to the long-term records of seismic activity and ground water conditions.

Planned Activities - Management and Integration, WBS 1.3.3.1.1. Management of subcontractors performing ongoing studies to provide generic data or

to complete topical reports to be referenced in the EAs will be carried out. A study is being performed to determine the optimal conditions for handling, storing, and preserving rock core resulting from the site characterization activities. A key task to be performed in FY 1985 will be the development of a surface-based test plan (SBTP). The SPTP is the plan which organizes all surface-based site work to be conducted at the salt site selected for characterization. The SBTP translates data needs from program requirement documents and presents plans to satisfy the data needs. The SBTP does not include plans for construction of the ESF or plans for in situ testing. The SPTP is subsidiary to the SCP and describes in detail the process by which surface-based study plans are defined, developed, and controlled. The SBTP hierarchy extends downward through subordinate site study plans, which describe in detail discrete elements of field work to be done, to detailed procedures which document the exact methodologies to be employed in the conduct of field activities.

Planned Activities - Geology, WBS Element 1.3.3.1.2. Major procurements will be carried out for ESF-related drilling services, for obtaining data for ESF design related to surface site characterization, and for sample management facilities. Detailed procedures for field activities will be prepared to assure proper data collection. The microseismic network will be upgraded and maintained.

Planned Activities - Hydrology, Element WBS 1.3.3.1.3. Design of the hydrology data acquisition system and planning of the data collection, integration, and analysis will be carried out. Procurements will include drilling services for shaft-monitoring holes.

Planned Activities - Geochemistry, Element WBS 1.3.3.1.4. Ongoing geochemical investigations of a generic nature include the isotope hydrology of the Richton Dome caprock and fluid inclusions in Palo Duro Basin salt, calculation of the chemical equilibrium of brines, and the second phase of chemical seal ring leaching studies. Brine chemistry will be studied to determine the history and evolution of the brine and its relation to various ground water sources. Fluid inclusions will be age-dated to interpret the hydrologic isolation of the salt formations.

Planned Activities - Drilling, WBS Element 1.3.3.1.5. In FY 1985, a core storage and laboratory facility will be designed for construction in FY 1987. A near-term facility will be leased until a short-term facility is emplaced on the site. Drilling specifications for holes to be drilled in the surface site characterization program will be prepared and a drilling procurement will be carried out. Independent cost estimates for drilling-related items and the core storage and laboratory facility will be prepared. Drilling permit applications will be completed as required.

Planned Activities - Environment, WBS Element 1.3.3.1.6. In FY 1985, site study plans and procedures will be prepared as support documents to the SBTP for activities that will commence following the approval of the site by the President and land access. These activities will include meteorological air quality monitoring, surface water monitoring, sound level monitoring, generating an inventory of the flora and fauna, performing an archaeological and cultural resource survey of the entire ESF site including access route and utility corridors, and performing a site-specific soils survey. Also, plans to procure meteorological tower instrumentation will be carried out.

Planned Activities - Socioeconomics, WBS Element 1.3.3.1.7. For FY 1985, the socioeconomic program will include the development of a socioeconomic activity plan, a social impact assessment model, and refinement of the Socioeconomic Assessment for Repository Siting model for forecasting economic and demographic changes. A grant-in-lieu-of-taxes analysis will be performed.

Planned Activities - Site Performance Assessment, WBS Element 1.3.3.1.8. Performance assessment activities include: (1) selection of appropriate numerical models to assign to various components of the site geologic setting; (2) development of calculation procedures to predict future performance of the geologic system under a wide range of conditions; and (3) identification of the potential range of conditions important to waste isolation and the uncertainty with which those conditions are presently known. Performance assessment studies will draw heavily on conceptual models of the geologic setting developed by the geologic field contractors, and will provide guidance as to the types of data that will be required to verify and validate the numerical

models. Methodologies and computer codes needed for evaluating atmospheric transport of radionuclides from the site will be tested during this period.

Planned Activities - Deferred Site Closeout, WBS Element 1.3.3.1.9. In FY 1985, activities will be initiated to decommission and close out deferred sites and return them to a satisfactory condition. Study programs of deferred sites will be phased out and all records will be turned over to the Office of Nuclear Waste Isolation.

### 2.3.2 Permian Basin, WBS Element 1.3.3.2

Overall Description. This activity provides for location-specific geology, hydrology, geochemistry, drilling, environmental and socioeconomic studies, and topical reports for the Permian Basin. Data from field, laboratory, analytical, and data compilation studies support the Permian site's EAs and pre-site selection planning efforts. The data also provide for the preparation of the SBTP and site study plans and procedures for site characterization activities at a Permian Basin site, should one be selected for characterization.

Current Status. During FY 1984, draft EAs were prepared for comparative analyses of the two Permian Basin sites. Following review of public, State, and agency comments, these EAs will be finalized. Studies of the stratigraphy and structure of the Palo Duro Basin (located within the Permian Basin), hydrogeology and geochemistry of deep aquifers, dissolution studies, geochemistry of salt and brines, and geomechanics were conducted. Field efforts consisted of pump testing and downhole geophysical testing at existing wells.

Planned Activities - Management and Integration, WBS Element 1.3.3.2.1. Management of contractors performing ongoing studies related to the Permian Basin will continue. Site study plans delineating the approach to surface

site characterization at a Permian Basin site, should one be selected, will be prepared. The plans will be accompanied by procedures as support documents to the SBTP.

Planned Activities - Geology, WBS Element 1.3.3.2.2. The existing micro-seismic network will be upgraded and maintained. An analysis of salt dissolution within the Palo Duro Basin will be completed, and a topical report will be prepared.

Laboratory testing of core from the J. Friemel, Holtzclaw, and Harman wells will be completed. The shaft seal location study report will be revised to incorporate review comments. Geotechnical logs for basin wells will be completed. Geologic, geoengineering, and geophysical site characterization plans and procedures will be prepared.

Planned Activities - Hydrology, WBS Element 1.3.3.2.3. Hydrologic analyses and interpretation of data recently acquired in the Permian Basin will be completed and will include preparation of hydrostratigraphic columns and sections, and an assessment of the geothermal gradient. Existing Permian Basin models will be updated to incorporate these data, particularly with information regarding fracture flow, hydrologic interconnections between rock units, and improved estimates of ground-water flow velocity profiles. A resource map of the Ogallala and Dockum aquifers will be prepared. Hydrologic site study plans and procedures will be prepared.

Planned Activities - Geochemistry, WBS Element 1.3.3.2.4. Current ground-water isotopic and age-dating studies will continue. Final summaries of the salt petrology will be completed.

Planned Activities - Drilling, WBS Element 1.3.3.2.5. No further drilling is planned in the Permian Basin unless it is approved for site characterization. Existing rock core will continue to be stored in Austin, Texas.

Surface site study plans and procedures will be prepared for the drilling of the EDBHs, stratigraphic boreholes, monitoring wells, deep and shallow hydrology clusters, and foundation borings.

Planned Activities - Environment, WBS 1.3.3.2.6. Pre-site characterization environmental planning for field studies will be a major activity in FY 1985 to be incorporated in the SBTP as site study plans and procedures. Environmental planning falls into three general categories: (1) plans and activities required to establish baseline conditions before other site characterization field work can proceed, (2) plans and activities required to resolve SCP issues, and (3) plans and activities required to meet repository EIS requirements. Data needs and issues will continue to be identified and plans developed to satisfy these needs and resolve environmentally oriented issues.

Planned Activities - Socioeconomics, WBS Element 1.3.3.2.7. Basin-specific input to the environmental evaluation plan will be performed and a literature review of social assessment analyses will be accomplished.

Planned Activities - Site Performance Assessment, WBS Element 1.3.3.2.8. Sensitivity studies will be performed to identify types of tests and test locations which can be expected to best narrow the uncertainty of parameters measured during site characterization.

### 2.3.3 Paradox Basin, WBS Element 1.3.3.3

Overall Description. This activity provides for location-specific geology, hydrology, geochemistry, drilling, environmental and socioeconomic studies, and topical reports for the Paradox Basin. Data from field, laboratory, analytical, and data compilation studies support the Paradox sites' EAs and pre-site selection planning efforts. The data also provide for the preparation of site study plans and procedures for site characterization activities at a Paradox Basin site, should one be selected for characterization.

Current Status. Draft topical reports on Quaternary geology, rock index properties, hydrology, geochemistry, and stratigraphy are being reviewed and finalized. A microseismic network is being operated, and data collection from the Potash and Book Cliff microseismic monitoring locations has been completed.

Planned Activities - Management and Integration, WBS Element 1.3.3.3.1.

Management of contractors performing ongoing studies related to the Paradox Basin will be carried out. Site study plans and procedures delineating the approach to surface site characterization at a Paradox Basin site, should one be selected, will be prepared.

Planned Activities - Geology, WBS Element 1.3.3.3.2. The existing micro-seismic network will be maintained. Extended analysis of two sets of temporary seismic monitoring data is to be carried out. These data, from the Potash and Book Cliffs locations, are expected to provide the only source of design information regarding the variation of seismic motion with depth. Topical reports on stratigraphy and the geotechnical testing of borehole GD-1 rock core will be finalized. A geomechanical study of deformation processes in bedded salt will be performed. Existing information will be compiled in a topical report on the status of land ownership, mineral leases, and mining claims at the potential sites. A Late Cenozoic tectonic map of the Gibson Dome area within the Paradox Basin will be compiled. Geologic, geoengineering, and geophysical site characterization site study plans and procedures will be prepared.

Planned Activities - Hydrology, WBS Element 1.3.3.3.3. Additional tests and analysis of GD-1 core are planned to better define the expected range of porosity and permeability at the Paradox Basin sites. Existing data are to be examined with the goal of further refining the identification of the hydrologic relations between stratigraphic units, and to evaluate the potential for fracture flow in the study area. Wells and springs are to be catalogued and sampled. Hydrostratigraphic sections will be prepared to determine recharge-discharge relationships, and the geothermal gradient will be studied for better definition. Hydrologic site study plans and procedures will be prepared.

Planned Activities - Geochemistry, WBS Element 1.3.3.3.4. Current geochemical analysis of GD-1 core and samples and related reporting will continue.

Planned Activities - Drilling, WBS Element 1.3.3.3.5. No further drilling is planned in the Paradox Basin unless it is selected for site characterization. Existing rock core will continue to be stored in Denver, Colorado.

Site study plans and procedures will be prepared for the drilling of the EDBHs, stratigraphic boreholes, monitoring wells, deep and shallow hydrology clusters, and foundation borings.

Planned Activities - Environment, WBS Element 1.3.3.3.6. Preparation of environmental site study plans and procedures for field studies will be a major activity in FY 1985. Environmental planning falls into three general categories: (1) plans and activities required to establish baseline conditions before other site characterization field work can proceed, (2) plans and activities required to resolve SCP issues, and (3) plans and activities required to meet repository EIS requirements. Data needs and issues will continue to be identified and plans developed to satisfy these needs and resolve environmentally oriented issues.

Planned Activities - Socioeconomics, WBS Element 1.3.3.3.7. Basin-specific input to the environmental evaluation plan will be performed and a literature review of social assessment analyses will be accomplished.

Planned Activities - Site Performance Assessment, WBS Element 1.3.3.3.8. Sensitivity studies will be performed to identify types of tests and test locations which can be expected to best narrow the uncertainty of parameters measured during site characterization.

#### 2.3.4 Gulf Coast Salt Domes, WBS Element 1.3.3.4

Overall Description. This activity provides for location-specific geology, hydrology, geochemistry, drilling, environmental and socioeconomic studies, and topical reports for the Gulf Coast Basin. Data from field, laboratory, analytical, and data compilation studies support the Gulf Coast Basin sites' EAs and pre-site selection planning efforts. It also provides for the preparation of site study plans and procedures for site

characterization activities at a Gulf Coast Basin site, should one be selected for characterization.

Current Status. Major activities in FY 1984 included the preparation of EA report sections for the three Gulf Coast Basin sites, and preparation of site data sheets for comparative analyses of the sites. Topical studies initiated in FY 1984 include analyses of the stratigraphy and structure of the Mississippi Salt Basin within Gulf Coast Basin, caprock studies at Richton Dome, rock mass conditions in domal salt, ground-water flow modeling around Richton Dome, gravity modeling of Richton Dome, acquisition of equipment for a Mississippi seismic monitoring network, and preparation of activity plans for surface water and ground-water sampling and baseline geochemistry studies.

Planned Activities - Management and Integration, WBS Element 1.3.3.4.1. Management of contractors performing ongoing studies related to the Gulf Coast Basin will continue. Site study plans and procedures delineating the approach to surface site characterization at a Gulf Coast Basin site, should one be selected, will be prepared.

Planned Activities - Geology, WBS Element 1.3.3.4.2. Regional geodetic data will be compared with geologic evidence for dome stability to determine whether current estimates of regional uplift should be revised. Oil and gas well logs obtained in FY 1984 will be interpreted to refine the Tertiary and Cretaceous stratigraphy of the Mississippi Salt Basin. Seismic data purchased in FY 1984 will be examined to define the near-dome and over-dome structure of sediments pierced by Richton Dome. Evidence of deformation and mineralization events from caprock core have been evaluated to further understand dome growth history of Richton Dome. Continued modeling of the domal salt stress conditions will provide an improved estimate of in situ stress conditions. Topical reports for each major study will be prepared in draft and reviewed prior to being finalized. Geologic, geoengineering, and geophysical site study plans and procedures will be prepared.

Planned Activities - Hydrology, WBS Element 1.3.3.4.3. Ground-water flow models will be improved by analyzing regional oil and gas well data, with a

focus on fracture flow, hydrologic interconnections between units, and the flow velocity profile. A list of over-dome and near-dome wells is to be compiled as a precharacterization environmental baseline measure, and the hydrologic interrelationships and geothermal gradients are to be better defined. Hydrologic site study plans and procedures will be prepared.

Planned Activities - Geochemistry, WBS Element 1.3.3.4.4. Geochemistry site study plans and procedures will be prepared. Caprock equilibrium studies at Richton Dome will be completed.

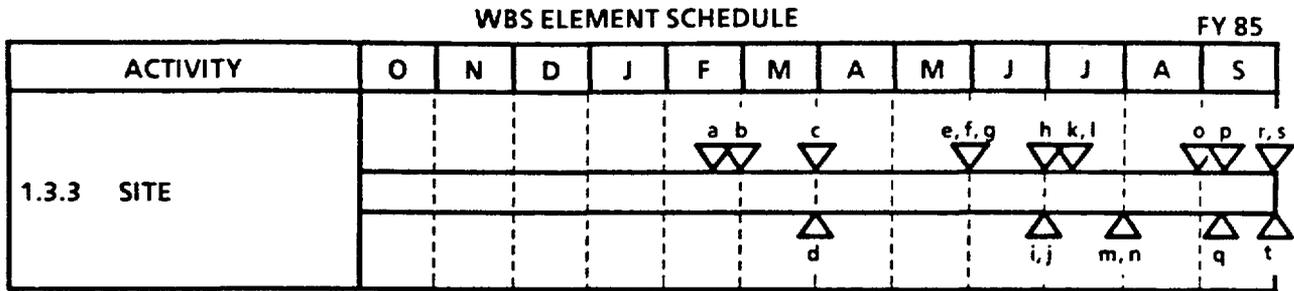
Planned Activities - Drilling, WBS Element 1.3.3.4.5. No further drilling is planned in the Gulf Coast Basin unless a Gulf Coast dome becomes a candidate site for characterization. Existing rock core will continue to be stored at Baton Rouge, Louisiana, and Columbus, Ohio.

Surface characterization site study plans and procedures will be prepared for the drilling of the EDBHs, stratigraphic boreholes, monitoring wells, deep and shallow hydrology clusters, and foundation borings.

Planned Activities - Environment, WBS Element 1.3.3.4.6. Preparation of environmental site study plans and procedures for field studies will be a major activity in FY 1985. The environmental planning falls into three general categories: (1) plans and activities required to establish baseline conditions before other site characterization field work can proceed, (2) plans and activities required to resolve SCP issues, and (3) plans and activities required to meet repository EIS requirements. Data needs and issues will continue to be identified and plans developed to satisfy these needs and resolve environmentally oriented issues.

Planned Activities - Socioeconomics, WBS Element 1.3.3.4.7. Basin-specific input to the environmental evaluation plan will be performed, and a literature review of social assessment analyses will be accomplished.

Planned Activities - Site Performance Assessment, WBS Element 1.3.3.4.8. Sensitivity studies will be performed to identify types of tests and test locations which can be expected to best narrow the uncertainty of parameters measured during site characterization.



▲ Major Milestone  
 ▼ Intermediate Milestone

**FIGURE 2-3. SITE ACTIVITIES MILESTONE SCHEDULE**

TABLE 2-5. SITE ACTIVITIES MILESTONE LOG

- 
- 
- a. GPM selects topo contractor
  - b. ONWI notifies SRPO of finalization of specifications for EDBH, topo maps, and ESF
  - c. ONWI submits to SRPO site study plans and procedures for surface-based characterization
  - d. ONWI submits to SRPO draft surface-based test plan
  - e. SRPO approves site study plans and procedures for surface-based characterization
  - f. SRPO transmits surface-based test plan to DOE-HQ for information
  - g. SRPO approves surface-based test plans for surface-based characterization
  - h. ONWI submits to SRPO socioeconomic activity plan (methods, data needs, procedures for collecting socioeconomic field data; plan will be sent to HQ and States as well)
  - i. SRPO notifies ONWI of approval of surface-based test plans
  - j. SRPO submits environmental activity plans to DOE-HQ for information
  - k. GPM selects contractors for EDBH and ESF borings
  - l. GPM is sent notice to proceed with permit application for surface-based characterization
  - m. Agencies send to SRPO comments on environmental activity plans
  - n. SRPO submits socioeconomic activity plan to DOE-HQ for information
  - o. ONWI notifies SRPO of finalization of specifications for contractor selection
  - p. EDBH environmental data collection complete
  - q. SRPO issues to ONWI letter authorizing site characterization activities
  - r. GPM files permit data for surface-based characterization activities
  - s. EDBH data complete
  - t. ONWI completes geology, hydrology, and geochemistry characterization plans
- 
-

Table 2-6. FY 85 Budget Outlay for Site Activities (WBS 1.3.3)

WBS Element	Subtask	BO, \$ Millions
1.3.3.1	Generic Site Activity	10.8
1.3.3.2	Permian Basin	8.1
1.3.3.3	Paradox Basin	3.8
1.3.3.4	Gulf Coast Salt Domes	<u>4.8</u>
	TOTAL	27.5

## 2.4 REPOSITORY, WBS ELEMENT 1.3.4

The overall objective of the Repository task is to progress from generic conceptual waste isolation repository designs for bedded and domal salt to feasibility studies of specific sites, and to site-specific conceptual Title I and Title II waste isolation system designs. Supporting these activities is a research and development program to provide the technology required for design, performance assessment, and repository licensing (including EAs, SCP, LA, and EIS). Design activities are phased to be consistent with current project schedules and to support the requirements of the NWPA.

The specific objectives of this task in FY 1985 will be to support the preparation of the salt SCP and the salt site characterization program (including the integration of the exploratory shafts into the repository) and continued development of repository performance assessment modeling techniques and sealing and rock mechanics technology.

This task is organized under the following major subtasks:

- o Management and Integration
- o Development and Testing
- o Facilities
- o Operations/Maintenance
- o Decommissioning
- o Repository Performance Assessment.

The WBS element milestone schedule for repository activities is presented in Figure 2-4; the milestone log and the FY 1985 BO are presented in Tables 2-7 and 2-8, respectively.

### 2.4.1 Management and Integration, WBS Element 1.3.4.1

Overall Description. This activity provides for the overall management and integration of repository activities, including design, technology development, modeling, analysis, and testing in support of the SRP. Activities also include the development of integrated repository design requirements and conducting of technical and engineering studies that involve multiple repository WBS elements or studies that cannot be identified with a specific WBS element.

Current Status. During FY 1984, the repository architect-engineer (A/E), Fluor Engineers, Inc., began work on the salt repository conceptual design. Project management activities included development of management and quality assurance plans and manuals, project procedures, logic networks, milestone logs, and WBS. Technical integration activities included the establishment of design criteria, regulations, and codes for input to the repository basis for design. In addition, several nonsite-specific design studies were initiated, including generic waste process flow diagrams, nuclear material safeguards regulations, and repository/waste package evaluation. A feasibility study of a two-phase repository was completed. Portions of program documents applicable to repository design were reviewed, e.g., EAs, generic requirements document, siting guidelines, the DOE mission plan, and the salt site characterization planning documents.

Engineering efforts critical to the design and performance assessment activities (e.g., site-specific host-rock physical properties) were performed and integrated into the overall program. Several repository coordination meetings were held with the DOE-HQ and other repository project staff.

Planned Activities. During FY 1985, the Repository A/E's design work (and other tasks) will be reviewed (e.g., shaft siting decision report) and integrated into the overall salt program. Planning and review of the design and inputs from the performance assessment tasks will be integrated into the SRP. Repository functional design criteria will be established.

In addition to project management, the Repository A/E's plans include completion of an interim basis for design document, the exploratory shaft impact study, a repository design to be used in the SCP, and several generic studies related to high-level waste issues (e.g., waste package impact). Also, some of the site-specific studies will be initiated, upon site selection, along with further development of the waste process flow diagrams. The A/E will provide additional engineering and licensing support as required.

#### 2.4.2 Development and Testing, WBS Element 1.3.4.2

Overall Descriptions. The objective of this subtask is to provide for engineering tests and performance assessment modeling in support of the

repository design activities. The engineering tests include (1) laboratory determination of the physical properties of site-specific rock samples, (2) development of the equipment and instrumentation required for in situ rock property measurements, and (3) laboratory evaluation of seal materials and their properties to support repository seal designs. Also included is model code development required for performance assessment calculations in support of repository design efforts.

Current Status. Laboratory testing and thermomechanical analyses have been continued with salt site-specific host rocks in FY 1984 to measure and model their physical properties as input to the seven salt EAs. Large- and small-scale laboratory tests in support of borehole sealing have been completed. The FY 1984 small-scale testing concentrated on interface testing with rocks from Permian Basin sites and both salt- and nonsalt-bearing grouts. The schematic designs were completed for penetration seals for a repository in the Permian and Paradox Basins and Richton Dome.

Repository A/E activities in FY 19 included completion of a review of schematic seal designs and analysis of recommended seal materials. Also, a preliminary description of the waste package area generic sealing system was developed.

Planned Activities. FY 1985 tasks include final documentation of FY 1984 laboratory testing of seal materials properties and interface testing. Work has begun on the development of in situ salt physical property instrumentation as well as operating manuals. The rock mechanics test plan will be completed and work will continue on site-specific physical properties testing and thermomechanical analysis of host rock in support of repository design.

In support of the salt SCP repository design and the exploratory shaft designs, the Repository A/E's activities will include completion of the nonsite-specific conceptual design of the repository sealing system.

#### 2.4.3 Facilities, WBS Element 1.3.4.3

Overall Description. The objective of this subtask is to provide for the design of repository facilities, including surface facilities, shafts and

ramps, subsurface excavations, underground service systems, and site preparation activities. Surface facilities include the waste packaging/handling facility and the balance of plant facilities to support repository operations. Site preparation activities include preparation of surface layouts, identification of construction requirements, and design of offsite utility and transportation corridors. Subsurface excavations include development and backfill activities.

Current Status. The Repository A/E's activities for FY 1984 included the following five items:

1. Site Preparation - A draft surface feature characterization test plan was completed. Work was initiated on the site preparation conceptual design and site arrangement selection criteria.
2. Surface Facilities - Several generic design studies were initiated, including evaluation of spent fuel disassembly options, repository control philosophy, waste handling facility process definition, handicapped persons study, and backup power design criteria development.
3. Shafts and Ramps - Studies initiated include evaluation of subsurface quality assurance practices, shaft siting and selection criteria, waste hoist technology, exploratory shaft impact evaluation, and aquifer treatment criteria development.
4. Subsurface Excavations - Accomplishments include evaluation of the impact of gassy mine regulations. Work was initiated on activities including evaluation of emplacement modes and development of subsurface arrangement criteria.
5. Underground Service Systems - Accomplishments include the initiation of ventilation modeling studies.

Planned Activities. In support of the salt SCP repository design and exploratory shaft designs, FY 1985 activities will include the following five items:

1. Site Preparation - Completion of the surface feature characterization test plan and site arrangement conceptual design, development of salt excavation storage strategy, identification of offsite

utility and transportation access corridors, and site construction requirements.

2. Surface Facilities - Completion of waste handling/processing facility conceptual design and certain special studies (e.g., process definition; design basis accidents and events; reliability, availability, and maintainability analysis; repository simulation model), and development of balance of plant facilities design.
  3. Shafts and Ramps - Completion of repository shaft quality assurance practices and construction/operation requirements; exploratory shaft impact evaluation; development of shaft siting criteria; hoisting, liner, and seal designs; and aquifer treatment techniques.
  4. Subsurface Excavations - Completion of repository subsurface arrangement selection criteria and designs, rock mechanics model evaluation, excavation process definition, equipment conceptual design, disposal operations definition, stability and retrievability studies, and quality assurance practices.
  5. Underground Service Systems - Completion of the ventilation study and conceptual design of the material/personnel handling systems, communications, monitoring, instrumentation, control, and utilities.
- Site-specific conceptual design activities will be initiated in FY 1985.

#### 2.4.4 Operations and Maintenance, WBS Element 1.3.4.4

Overall Description. The objective of this subtask is to develop repository operating concepts and perform tradeoffs, optimization studies, and assessments. Activities will include providing input to the design and safety analyses of the repository through definition of (1) modes of operation of all systems and equipment; (2) procedures for assembly, emplacement, monitoring, and withdrawal of waste package; and (3) maintenance requirements of the operational facility.

Current Status. Repository A/E activities during FY 1984 included the initiation of work on the repository operating concepts, development of plans for nuclear material safeguards and site security, and identification of NRC nuclear material regulations that may be applicable to a repository.

Planned Activities. In support of the salt SCP repository design and exploratory shaft designs, FY 1985 activities will include completion of the repository operating concepts study, nuclear material control and safeguard plans, site security study, and conceptual maintenance and shielding requirements.

#### 2.4.5 Decommissioning, WBS Element 1.3.4.5

Overall Description. The objective of this subtask is to analyze repository decommissioning concepts and requirements, and to provide input to repository design and safety analyses as required.

Current Status. Repository A/E activities during FY 1984 included completion of a study on the impact of past mistakes and corrective actions taken at commercial nuclear facilities on repository decommissioning design features.

Planned Activities. In FY 1985, the Repository A/E will establish repository decommissioning requirements in support of the salt SCP design.

#### 2.4.6 Repository Performance Assessment, WBS Element 1.3.4.6

Overall Description. The objective of this subtask is to perform the necessary model calculations required to support the repository design activity.

Current Status. Work done under this task for FY 1984 supported the repository model calculations required for the seven site-specific EAs.

Planned Activities. FY 1985 work in support of repository design will include initiation of a preliminary performance assessment transport model for repository systems and components.

WBS ELEMENT SCHEDULE												FY 85	
ACTIVITY	O	N	D	J	F	M	A	M	J	J	A	S	
1.3.4 REPOSITORY													
						b, c ▽	e, f, ▽	i, j, k ▽			o ▽		
					a △	d △		g, h △			l, m, n △		

△ Major Milestone  
▽ Intermediate Milestone

FIGURE 2-4. REPOSITORY ACTIVITIES MILESTONE SCHEDULE

TABLE 2-7. REPOSITORY ACTIVITIES MILESTONE LOG

- 
- a. Fluor submits to SRPO Interim Basis for Design Report
  - b. Fluor sends to SRPO for review Preliminary Repository Operations Report
  - c. Fluor sends to SRPO for review Evaluation of ESF Impacts on Repository Report
  - d. SRPO sends DOE-HQ Draft Repository Functional Design Criteria (FDC) for review
  - e. Fluor sends to SRPO for review Rock Mechanics Model Evaluation Report
  - f. Fluor sends to SRPO for review Waste Process and Mine Emplacement Study
  - g. SRPO sends DOE-HQ Draft Repository Management Integration Plan for information
  - h. SRPO approves Functional Design Criteria
  - i. SRPO issues to DOE-HQ ESF Impact Evaluation Report
  - j. Fluor sends to SRPO for review Waste Hoist Technology Report
-

TABLE 2-7. REPOSITORY ACTIVITIES MILESTONE LOG

- 
- k. Fluor sends to SRPO for review waste package retrievability report
  - l. SRPO sends to DOE-HQ the waste process and mine emplacement study report for information
  - m. ONWI submits to SRPO draft rock mechanics test plan for DOE-HQ information
  - n. SRPO issues letter to Fluor authorizing site-specific conceptual design
  - o. Fluor sends to SRPO for review the waste package impact evaluation report
- 

Table 2-8. FY 85 Budget Outlay for Repository Activities (WBS 1.3.4)

WBS Element	Subtask	BO, \$ Millions
1.3.4.1	Management and Integration	5.9
1.3.4.2	Development and Testing	4.6
1.3.4.3	Facilities	2.9
1.3.4.4	Operations and Maintenance	0.1
1.3.4.5	Decommissioning	--
1.3.4.6	Repository Performance Assessment	<u>0.6</u>
	TOTAL	14.1

## 2.5 REGULATORY AND INSTITUTIONAL, WBS ELEMENT 1.3.5

The objective of the Regulatory and Institutional task is to assure that salt project siting, design, and construction activities meet the applicable Federal, State, and local statutes and regulations in a process that provides communication and interaction with other institutions and the public. Sub-tasks designed to meet this objective are:

- o Management and Integration
- o Licensing
- o Environmental Compliance
- o Communications and Liaison
- o Financial/Technical Assistance.

The WBS element milestone schedule for Regulatory and Institutional activities is presented in Figure 2-5; the milestone log and the FY 85 BO are presented in Tables 2-9 and 2-10, respectively.

### 2.5.1 Management and Integration, WBS Element 1.3.5.1

Overall Description. This activity provides for the overall management of the Regulatory and Institutional activities involving licensing; environmental compliances; communications and liaison with affected States, Indian tribes, and the public; and the administration of grants provided to these entities in accordance with NWPA provisions.

The direction of SRP activities to meet Regulatory and Institutional needs is based on knowledge gained through continual analysis of Federal, State, and local statutes and regulations, and evaluations of public opinion and attitudes. This approach assures that problems are identified early so that plans for resolution and criteria for closure can be established in a timely manner. As plans are implemented, information and data needs are met and the resolution of issues is tracked. The original plans and the progress reports are provided to the regulatory agencies, affected States, and the general public for review and comment in such key documents as the SCP, the EIS, and the LA.

Current Status. During FY 1984, activities in the management and integration area were focused on providing the planning and management of draft EA preparation as well as the establishment of site information offices.

Planned Activities. The goal in FY 1985 is to improve the planning, implementation, monitoring, and timely completion of Regulatory and Institutional activities in a manner which is technically defensible, compliant with regulations, and legally sufficient through the use of a matrix management approach. Increased integration in the SRP will be fostered through the use of the SCP and issue-related environmental evaluation plans including the environmental, socioeconomic, transportation, and preclosure safety areas to direct project planning and activities.

#### 2.5.2 Licensing, WBS Element 1.3.5.2

Overall Description. The licensing subtask is established to review, analyze, interpret, and implement regulatory requirements so that licensing concerns are reflected in the planning of all aspects of the project; to define the information/data needs required for resolution of licensing issues; to recommend licensing strategies; and to prepare licensing documents, including the SCP, EIS, and the LA.

Based on a comprehensive knowledge and continuing review of NRC and EPA regulations, standards, and guidelines, licensing issues are identified. Areas suitable for the formulation of the DOE positions to be addressed with the NRC are developed, and areas where additional effort or reassessment of approach is needed to reach resolution with the NRC are highlighted. Plans are formulated based on the findings from regulatory review and interactions, supported by a continuing evaluation and integration of the status of issues resolution resulting in the maintenance of a coherent licensing strategy.

Licensing documents are developed to demonstrate the safety and environmental acceptability of a repository, and repository compliance with NRC and EPA regulations. Also, topical reports and position papers are developed to formalize the DOE positions on potential licensing issues in a form suitable for regulatory review. Contributions from other WBS areas are assimilated to provide appropriate technical content in licensing documents. Guidance on

regulatory requirements is provided to all WBS elements to assure consistent approaches.

Current Status. Workshops between SRP and the NRC were held to review hydrology and rock mechanics data. A presentation of the geochemistry program and the technical data management system was made to NRC. The NRC now has direct access to the <sup>on-line</sup> system. In late 1984, the procedural agreement for interactions between the agencies was <sup>signed</sup>. This agreement establishes the framework for discussions regarding licensing issues so that an early indication of NRC <sup>views</sup> on the DOE plans can be obtained.

During FY 1984, reviews of NRC informal positions, regulatory guides, and NUREG reports continued. A modification of 10 CFR Part 60 was proposed to bring it into conformance with the NHPA. Draft No. 4 of the EPA rule (40 CFR Part 191) was <sup>reviewed by DOE</sup>. A proposed revision of the NRC regulatory guide 4.17 (NRC, 1982), the guide for standard format and content of the site characterization reports, was distributed by the **NRC** as a draft working paper. Informal and formal comments on these documents were transmitted in meetings with NRC and EPA or through DOE-HQ communication with these agencies.

Planning during FY 1984 resulted in an activity plan for preparation of the SCP. Preliminary preparation specifications for the contents of SCP chapters were prepared. These specifications incorporated regulatory requirements identified by review of pertinent reference sources such as NRC regulatory guide 4.17; the Basalt Waste Isolation Project Site Characterization Analysis; and the relevant NRC, EPA, and DOE regulations, including the DOE siting guidelines. With the <sup>NRC</sup> issuance of a revised <sup>and preparation of a DOE annotated outline</sup> draft of regulatory guide 4.17, the preliminary specifications are being revised to address the most current NRC position on the format and contents of the SCP. A preliminary list of site characterization issues derived from the regulatory performance objectives for a repository has been identified.

A wide range of preclosure radiological analyses were completed in FY 1984 in conjunction with the preparation of statutory EAs for the seven salt sites. As a result, instances have been identified where the rigor of an analysis is limited by the capabilities of the methods and/or codes used and by the available data. Current emphasis is on identifying a comprehensive list of information/data needs.

Planned Activities. Activities planned for FY 1985 in the regulatory interactions and program evaluations area stress the furtherance of three primary goals: (1) continued support of SRP interactions with NRC, (2) review of regulatory documents and SRP documents and programs to understand NRC positions and to assure regulatory compliance, and (3) development of documented regulatory guidance to the project on the methodology and approach to satisfy specific regulatory criteria and guidance.

Support of SRP/NRC interactions will escalate beyond the level established in FY 1984. Preparation for meetings to review data and programs will include agenda development, coordination of presentations, and administrative support.

Increased emphasis will be placed on the establishment of SRP positions on various regulatory and project issues. This emphasis will entail continued review of technical and regulatory documents from NRC and EPA. A program plan for establishing SRP licensing positions will be prepared and a report on the implementation of the regulatory baseline program will be available in the third quarter. The safety and design evaluation methodology will be issued in late FY 1985. Presentations to the staff will be made as appropriate. The regulatory library will continue to accumulate regulatory documents and licensing guidance for easy reference, and a comprehensive catalog of documents will be prepared.

A revised activity plan for SCP preparation will be provided early in FY 1985 to reflect the development of one salt SCP. Preparation specifications for the SCP will be prepared, reviewed, and approved by the scheduled site recommendation date. These specifications will include annotated chapter outlines, the key technical issues to be addressed, approaches to issue resolution, and identification of the quantity and the quality of information/data needed to resolve the issues based on postclosure performance assessment and repository design needs. In conjunction with this effort, a report on planned

postclosure issue resolution approaches and the use of sensitivity and uncertainty analyses will be provided in mid-year.

Based on the current schedule, the SCP will be assembled and reviewed within the SRP in the first half of FY 1986. The SCP will be available for broader DOE review in April of 1986. This schedule will allow the SCP to be docketed with the NRC and sent to affected States in October 1986. Following the receipt of NRC and public comments, the SCP will be updated on a semi-annual basis through the remainder of site characterization to reflect progress toward issue resolution and to keep NRC and other interested parties informed as required by the NWPA and 10 CFR Part 60.

A preclosure safety analysis plan will be issued in late FY 1985. Identification of information/data needs through the development of strategies for resolving issues, definition of criteria for issue closure, and analyses of key assumptions and uncertainties will be undertaken as a precursor to this with a report of preclosure radiological assessment data needs issued early in the fiscal year and a preclosure safety issues analysis provided in mid FY 1985. Detailed plans for the emergency occupational radiation, occupational safety, and offsite radiation areas will be completed in FY 1986 to ensure that the appropriate field activities are undertaken during site characterization to provide the required information/data.

### 2.5.3 Environmental Compliance, WBS Element 1.3.5.3

Overall Description. The environmental compliance subtask is directed at meeting all of the environmental and socioeconomic requirements of the National Environmental Policy Act of 1969 (NEPA) and the NWPA. A major activity is the preparation of the EAs required by NWPA for the selection of sites for detailed characterization, including supporting environmental and socioeconomic analyses and evaluations, as well as the development of site comparison and decision approaches.

This task also includes identifying the Federal, State, and local environmental statutes and regulations governing the construction and operation of

the ESF and the repository. It includes assuring that steps are taken to comply with these statutes and regulations and operating a monitoring system so that compliance activities can be tracked and documented.

While detailed field activity and study planning is in WBS element 1.3.3, the overall structure of the environmental and socioeconomic planning for the SRP is in WBS element 1.3.5. This approach assures that the requirements of NEPA and NWPA are met and integrates the environmental/socioeconomic activities with the issues hierarchy developed to direct the salt site characterization program and SRP planning.

Current Status. During FY 1984, statutory EAs for seven salt sites were prepared. The sixth draft of these documents is being completed with the anticipation of a DOE-HQ release of drafts for public comment in FY 1985. A number of documents relating to or supporting the EAs, such as the Canyonlands National Park study, were also drafted in FY 1984. An intrabasin site comparative evaluation methodology and supporting data and reference were also developed.

In addition, Federal environmental statutes were identified and the current compliance status documented.

In the socioeconomic area, methods are being developed to project the social and economic impacts of a nuclear waste repository on a particular locale. Measures are being devised to avoid or mitigate and monitor socioeconomic impacts. Study plans are in preparation to implement the methods developed from this analysis.

Planned Activities. In support of the finalization of the statutory EAs, an intrabasin comparative evaluation report and the final Canyonlands National Park environmental and socioeconomic considerations report will be issued in FY 1985. An EA comment index will be prepared by DOE-HQ upon receipt of all comments. Final EA working papers and the draft comment response document will be issued after the close of the comment period. Should a Paradox Basin site be selected for detailed site characterization, support will be provided to the Bureau of Land Management in preparation of an EA for site access and an EIS for land withdrawal.

Statutory compliance will be emphasized in FY 1985. The major efforts planned are the identification of all applicable State and local environmental statutes and regulations, and communication of their requirements/needs. A statutory compliance plan will be available to the States in the <sup>fourth</sup> quarter of FY 1985.

An environmental-socioeconomic evaluation plan, dealing with environmental, socioeconomic, transportation, and preclosure radiological safety issues will be prepared in FY 1986. The document will be issued to the Salt Repository Project Office in April 1986, and will be available to the public in October 1986. The specifications for this document, including information/data needs and preliminary environmental requirements, will be prepared in mid FY 1985 to provide guidance in the development of detailed environmental field and test plans under WBS element 1.3.3. These detailed plans will, in turn, be summarized in the issue-oriented environmental-socioeconomic evaluation plan.

#### 2.5.4 Communication and Liaison, WBS Element 1.3.5.4

Overall Description. Within the communication and liaison element, information related to the development of a nuclear waste repository in salt is presented in a timely manner to aid understanding and to facilitate participation in decision making by States, Indian tribes, local communities, and members of the public. Relevant information is collected, exchanged, and disseminated through information meetings, public presentations, development of printed publications and reports, and production of exhibits and audio-visual materials. Activities are coordinated with officials and public groups in the salt States. Workshops are held to enhance consultation and cooperation with affected States and provide information to government leaders, the communications media, and the public. Background analyses of State interactions are made, and a peer review of the institutional and programmatic issues is conducted.

Current Status. Information offices in Minden, Louisiana, and Richton, Mississippi, were opened in FY 1984 and added to offices operated throughout the year in Moab and Monticello, Utah. The offices, staffed half-time, provide local residents with the most recent available information on the

nuclear waste project. Offices are stocked with DOE and other publications and have short audiovisual presentations, as well as small exhibits providing maps, explanations of engineering concepts, and updates on the status of activities. Advisors provide information on local concerns. Information exchange sessions, featuring technical speakers, small exhibits, and one-on-one personal contacts, are provided in the four salt States, and technical meetings with salt State officials are held every 2 months for discussion of issues of local concern. A concept of supplying both unanalyzed and interpreted technical data and information from the SRP was implemented during FY 1984. Unanalyzed data reports are made available to key State agencies soon after collection and to libraries and other interested parties shortly thereafter. Interpretations of data are distributed widely through regular technical reports. Facilities are obtained for hearings conducted to obtain feedback on program documents (site recommendations, EAs, etc.). Film, slide, and videotape documentation of activities pertaining to repository siting, to technical research and development, and to the presentation of technical information at meetings is produced. Speakers provide information to community groups. Graphic materials and small-scale exhibits are made available for presentations and special events. Salt State background information reports are prepared.

Planned Activities. Information offices in the Texas Panhandle are planned for FY 1985. Environmental assessment hearings will be conducted near the seven salt sites during early FY 1985 after EAs have been released for public review. Hearings are planned in communities near the potential sites and in the State capitals, in consultation with State officials. Hearing transcripts will be published, and issues raised at the hearings will be summarized and responded to. Peer review and dissemination of technical information activities will continue, as will slide, film, and videotape documentation of field activities. Newly developed small-scale exhibits will be made available for the information offices and for a limited number of conferences and meetings. Information meetings in the vicinity of the designated salt site will be held when the Presidential decision is announced approving the three national sites to be characterized. An information office at the designated salt site will be developed. Interactive programs on public

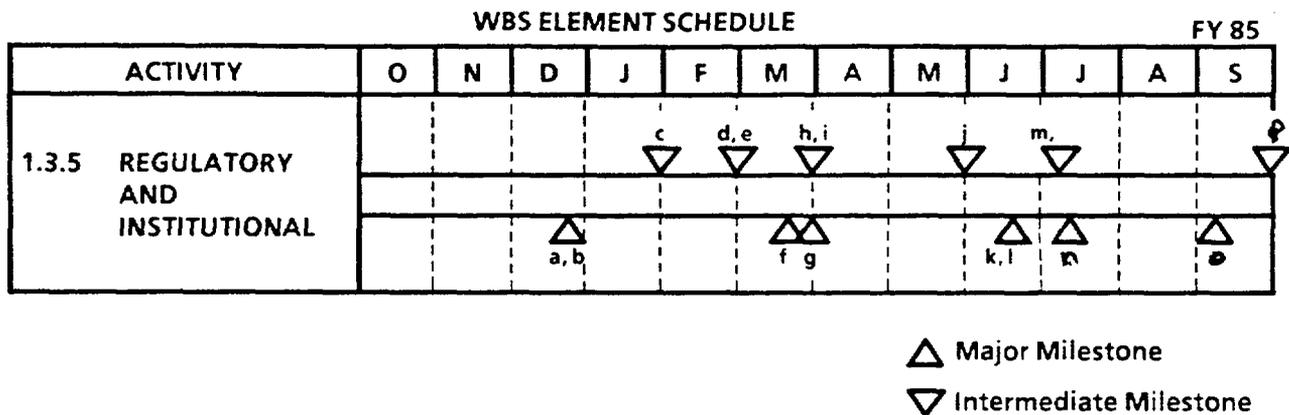
consultation and cooperation in repository site characterization are expected to involve local government officials and other leaders. Information offices and State consultants will continue to be supported during FY 1985, with the phaseout of States not recommended for characterization expected by the end of the year.

#### 2.5.5 Financial/Technical Assistance, WBS Element 1.3.5.5

Overall Description. Financial and technical assistance to States and Indian tribes is made available, as specified in Sections 116, 117, and 118 of the NWPA, to assist them in participation in repository siting decisions, including the development of consultation and cooperation agreements. Grants are provided for reviewing and monitoring technical aspects of the program and technical reports as well as for information transfer and commenting on pertinent policy documents. Financial and technical assistance is also provided through grants-in-lieu-of-taxes in States where there are impacts because of site characterization or repository development.

Current Status. The states of Louisiana, Mississippi, Texas, and Utah have been notified under Section 116(a) of the NWPA that they have "potentially acceptable" sites for a repository. Activities being funded in these States enable them to share and review information pertaining to their involvement in the overall repository development program. While no written consultation and cooperation agreements between the DOE and these States are in effect, funding is available for the development and negotiation of such agreements. Funds are being provided for review and comments on plans, reports, and proposed rules relevant to repository development. Funds also are made available for attendance at DOE-sponsored and other program-related meetings and workshops, such as the bimonthly information exchange meetings of salt State representatives. Contractor support for monitoring, analyses, and studies of the DOE program covers review of program plans, technical document review, onsite field monitoring, participation in the development of technical work plans, and maintenance of a technical data base.

Planned Activities. During most of FY 1985 the states of Louisiana, Mississippi, Texas, and Utah will remain as the locations of potentially acceptable sites for a repository. Financial and technical assistance within the four States during this period will continue as discussed above. When the Presidential decision approving the three national sites to be characterized is announced, the State with a designated site will become eligible for assistance under Phase III of the DOE's guidelines for implementing financial assistance programs. This assistance will be broadened to include development of the capability for independent monitoring of the DOE activities and understanding of the technical aspects of the program. Assistance will be provided so that the State can enter into negotiations with the DOE toward a consultation and cooperation agreement within 60 days of the approval of a site for characterization, as required by the NWPA. Grants-in-lieu-of-taxes will be made available to units of State and local government to cover specific impacts of site characterization activities. In addition, funds will be made available for developing an impact mitigation request in anticipation of the development of a repository at the salt site.



**FIGURE 2-5. REGULATORY AND INSTITUTIONAL ACTIVITIES MILESTONE SCHEDULE**

**TABLE 2-9. REGULATORY AND INSTITUTIONAL ACTIVITIES MILESTONE LOG**

- 
- 
- a. DOE-HQ issues to public Final Siting Guidelines
  - b. DOE-HQ issues Draft EAs for comment to public
  - c. ONWI submits to SRPO Preclosure Radiological Assessment Data Needs
  - d. ONWI starts SCP Preparation Specifications
  - e. ONWI sends to SRPO Environmental Requirements document
  - f. Interested parties submit to DOE-HQ final comments on EAs
  - g. DOE-HQ sends to SRPO Guidelines on SCP Annotated Outline
  - h. ONWI submits to SRPO Preliminary Postclosure and Design Issues Hierarchy and Data Needs
  - i. ONWI submits to SRPO Preclosure Safety Issues Analysis
  - j. SRPO issues to DOE-HQ Environmental Statutory Compliance Plan
  - k. SRPO submits to DOE-HQ complete SCP Preparation Specifications
-

TABLE 2-9. (Continued)

- 
- l. DOE-HQ nominates at least five sites for characterization. Public notice issued in Federal Register
  - m. SRPO sends to ONWI letter approval for SCP Preparation Specifications
  - ~~.....~~
  - n. DOE-HQ recommends to the President three of the Nominated sites for characterization as Candidate Sites
  - o. President approves Candidate Sites
  - p. ONWI sends to SRPO SCP Issues Hierarchy and Data Needs
- 

TABLE 2-10. FY 85 BUDGET FOR REGULATORY AND INSTITUTIONAL ACTIVITIES (WBS 1.3.5)

Activity	BO \$ Millions
1.3.5.1 Management and Integration	0.7
1.3.5.2 Licensing	6.6
1.3.5.3 Environmental Compliance	10.5
1.3.5.4 Communication and Liaison	3.9
1.3.5.5 Financial/Technical Assistance	<u>4.6</u>
TOTAL	26.3

Table 2-9. (Continued)

- 
- 
- n. ONWI starts preparation of draft SCP
  - o. DOE-HQ recommends to the President three of the nominated sites for characterization as candidate sites
  - p. President approves candidate sites
  - q. ONWI sends to SRPO SCP issues hierarchy and data needs
- 
- 

Table 2-10. FY 85 Budget Outlay for Regulatory and Institutional Activities (WBS 1.3.5)

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WBS Element	Subtask	BO, \$ Millions
1.3.5.1	Management and Integration	0.7
1.3.5.2	Licensing	6.6
1.3.5.3	Environmental Compliance	10.5
1.3.5.4	Communication and Liaison	3.9
1.3.5.5	Financial/Technical Assistance	<u>4.6</u>
	TOTAL	26.3

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## 2.6 EXPLORATORY SHAFT, WBS ELEMENT 1.3.6

The objective of the Exploratory Shaft task is to schedule, budget, perform, control, coordinate, and report all exploratory shaft work including the development, design, construction, operation, maintenance, and decommissioning of the exploratory shafts required for detailed site characterization. This activity also includes the planning and implementation of the in situ testing program. The WBS element milestone schedule for Exploratory Shaft activities is presented in Figure 2-6; the milestone log and the FY 85 BO are presented in Tables 2-11 and 2-12, respectively.

### 2.6.1 Management and Integration, WBS Element 1.3.6.1

Overall Description. This activity provides for the overall management of activities to design, construct, operate, and decommission the exploratory shafts, and to conduct the in situ test program. It includes project management and support activities performed by the A/E and the construction manager.

Current Status. The integration effort between the ESF A/E and the Repository A/E is in the initial stages. Meetings are being scheduled as necessary.

Planned Activities. The key integrating task for FY 1985 will be the continuation of the coordination of overall activities of the ESF A/E, the construction manager, and the repository A/E. The main elements of the FY 1985 effort consist of the ESF design and permitting necessary to begin site work. The permitting work will require interfacing with various Federal, State, and local agencies.

Permit activities in early FY 1985 by the ESF A/E will be concentrated on defining the available permit data base and analyzing it for applicability to specific permit requirements. Specific permit preparation will be limited to the critical permits in each State.

After Presidential approval, the ESF A/E will be authorized to prepare all the necessary site-specific permit applications. Activities relating to collection of site-specific data to meet the permitting requirements will also be initiated by the SRP.

Functional design criteria for the ESF will be completed in FY 1985.

#### 2.6.2 Site Preparation, WBS Element 1.3.6.2

Overall Description. This activity provides for surveys and mapping, demolition and removal of structures, and other works including general civil improvements and the construction of roads, railroads, power systems, water supplies, communications services, and sewage treatment facilities for the site.

Current Status. Existing layouts for the seven sites are preliminary and do not reflect the latest integrating concepts between the ESF and the repository. These refinements will be required for the permitting process.

Planned Activities. The major FY 1985 effort will begin after the final three sites are defined. ~~Site preparation is scheduled to start in October 1986.~~  
Site preparation is scheduled to start in October 1986.

#### 2.6.3 Surface Facilities, WBS Element 1.3.6.3

Overall Description. This activity provides for the engineering and construction of storage facilities, shops, offices, and a security building at the site.

Current Status. At present, the site features are only in the conceptual stage.

Planned Activities. The design and development will be expanded to support the permitting phase, as necessary. Title II design will begin in July 1985, with construction to begin in November 1986, after the initial site preparation.

2.6.4 and 2.6.5 First and Second Shafts, WBS Element 1.3.6.4 and 1.3.6.5

Overall Description. These activities provide for the design and construction of the two ESF shafts including lining, seals, and shaft service systems.

Current Status. The ESF concept now requires construction of two shafts. The second shaft will be incorporated to provide for additional safety features. Present plans require two 12-foot-diameter shafts constructed using conventional drill and blast methods.

Planned Activities. The preliminary designs for the top three candidate sites will be completed by July 1985. Title II design activities will begin immediately. The shaft construction contract will be awarded in October 1986, with routine shaft excavation to begin in March 1987. The construction period to support the start of in situ testing is estimated to be 27 months.

2.6.6 and 2.6.7 Subsurface Excavations and Underground Service Systems, WBS Elements 1.3.6.6 and 1.3.6.7

Overall Description. These activities provide the design and construction of the subsurface working areas. Roof control, hoisting, ventilation, and underground utilities are included.

Current Status. At present, the existing ESF underground layout is in the conceptual stage.

Planned Activities. Revision to the underground layout design may be required as the in situ test plan is developed. This work will begin in October 1984 and will be developmental until the Title II design begins in July 1985. Construction will begin in early 1988.

2.6.8 Operations, WBS Element 1.3.6.8

Overall Description. This activity consists of the final systems checkout and continues into the coordination and management of all onsite

activities. Also included are security, health and safety, environmental protection, and other related activities.

Planned Activities. There will be no operations effort in 1985. Planning activities should start in 1987, with a facility takeover after the construction phase is completed in early 1989.

#### 2.6.9 Testing, WBS Element 1.3.6.9

Overall Description. This activity consists of preparing the in situ test plans, designing and executing tests, collecting data, and reducing the test data according to supporting test program requirements. The data collected will be used in supporting waste package and repository performance assessment, in model validation, and in characterizing the site.

Current Status. A draft in situ test plan is undergoing ONWI review. Integration of the in situ testing activities with other program elements is undertaken to keep the program focused.

Planned Activities. The preliminary in situ test plan will be completed in early 1985, and will be used to support the SCP. The final design of the ESF, starting in July 1985, will incorporate the needs of this program. The in situ testing will begin in mid-1988. The specification for the data acquisition system will be prepared.

#### 2.6.10 Decommissioning, WBS Element 1.3.6.10

Overall Description. This activity consists of the planning and execution of the effort necessary to decommission and seal the exploratory shafts after it has been determined that the facility is no longer needed.

Planned Activities. There are no near-term activities scheduled.

WBS ELEMENT SCHEDULE												FY 85	
ACTIVITY	O	N	D	J	F	M	A	M	J	J	A	S	
1.3.6 EXPLORATORY SHAFT									d	f,g		h i	
					a	b,c			e				

 Major Milestone  
 Intermediate Milestone

FIGURE 2-6. EXPLORATORY SHAFT ACTIVITIES MILESTONE SCHEDULE

TABLE 2-11. EXPLORATORY SHAFT ACTIVITIES MILESTONE LOG

- 
- 
- a. SRPO issues revised Functional Design Criteria for ESF for DOE-HQ review
  - b. SRPO issues to DOE-HQ draft In Situ Test Plan
  - c. Submit Design Information, including Cost Estimate to satisfy Budget Validation Process
  - d. ONWI submits a plan to specify the Data Acquisition System Specification
  - e. ESF A/E submits to ONWI Preliminary ESF Design
  - f. ONWI sends to ESF A/E notice to proceed with ESF Title II design
  - g. ONWI sends to contractor authorization to initiate permit preparation for ESF
  - h. ONWI issues to SRPO Data Acquisition System Specification
  - i. ESF boundary survey complete
- 
-

Table 2-12. FY 85 Budget Outlay for Exploratory Shaft Activities  
(WBS 1.3.6)

WBS Element	Subtask	BO, \$ Millions
1.3.6.1	Management and Integration	5.0
1.3.6.2	Site Preparation	0.5
1.3.6.3	Surface Facilities	0.2
1.3.6.4	First Shaft	4.6
1.3.6.5	Second Shaft	0.8
1.3.6.6	Subsurface Excavations	0.1
1.3.6.7	Underground Service Systems	0.3
1.3.6.8	Operations	--
1.3.6.9	Testing	1.6
1.3.6.10	Decommissioning	--
	TOTAL	13.1

## 2.7 TEST FACILITIES, WBS ELEMENT 1.3.7

The Test Facilities task includes the acquisition, development, operation, maintenance, and decommissioning of test facilities. The purpose of this activity is to establish a technical data base of actual field tests which can be used to resolve issues related to the development of a repository, and to plan large-scale test facilities which may be employed to evaluate various aspects of repository design. Test facilities are sited at locations that would not be suitable for a commercial high-level waste repository. The WBS element milestone schedule for Test Facilities activities is presented in Figure 2-7; the milestone log and the FY 85 BO are presented in Tables 2-13 and 2-14, respectively.

### 2.7.1 Management and Integration, WBS Element 1.3.7.1

Overall Description. This subtask provides the overall management of test programs including planning, scheduling, budgeting, and reporting. Included are analyses of existing facilities and potential new facilities to identify an optimum arrangement of support facilities.

Current Status. At present, the one facility available to the project is at Avery Island Mine, New Iberia, Louisiana. In addition, the SRP has participated in tests with the Federal Republic of Germany (FRG) under the DOE/FRG bilateral agreement. This testing was performed at the Asse Mine, Asse, FRG.

Planned Activities. Testing at Avery Island has ceased and there are no activities planned for FY 1985. Tests at the Asse Mine will continue until December 1985. When the tests are terminated, posttest evaluation will begin. Interactions are planned with the Waste Isolation Pilot Plant in Carlsbad, New Mexico, to gain from their experience in characterizing the salt site.

### 2.7.2 Testing, WBS Element 1.3.7.2

Overall Description. This subtask implements the test activities at the test facilities. Included are reduction of test data for use in performance assessment activities, as well as assessing the operating and decommissioning costs of the facilities that are the responsibility of the program.

Current Status. Testing at Avery Island was reactivated in FY 1983. Additional data obtained from corejack tests were used to refine the numerical codes used in performance assessment. A report on this activity is now in preparation. Since testing at this facility is over, the equipment has been removed and is being stored.

Brine migration tests at the Asse Mine are being conducted on schedule and data are being received regularly. The data, consisting of computer-generated tapes and logbooks, are prepared in graphical and tabular form for evaluation purposes. Quarterly and annual reports presenting the reduced data have been released.

Planned Activities. No activities are planned for Avery Island for FY 1985.

After the completion of testing at the Asse Mine in December 1985, the posttest plan to be developed in FY 1985 is expected to include the evaluation of the instrumentation used, corrosion of the coupons, changes in the physical, chemical, and mechanical conditions of the salt mass, and the effects of radiation on the salt. The FRG is planning to initiate high-level waste tests consisting of the placement of strontium/cesium glass logs and heaters. The SRP is reviewing these plans and is considering participation in a limited area.

### 2.7.3 New Facility Acquisition, WBS Element 1.3.7.3

Overall Description. In providing for the acquisition of new field test facilities, this subtask includes the costs for lease, acquisition, design, and construction of such facilities.

Current Status. The need for test facilities to obtain data to evaluate computer codes, geologic theories, and the in situ thermomechanical response of salt, and to resolve other issues which may appear during licensing continues to exist. The Avery Island Mine, located at 550 feet below the surface, is not adequately representative of the candidate repository site to completely meet all needs.

Planned Activities. Discussions with the FRG on the possibilities of using the Asse Mine will continue. The Waste Isolation Pilot Plant project data base will be examined to determine whether it can be effectively used for the commercial waste program. A decision on utilization of facilities in the United States will not be made until late in FY 1985.

WBS ELEMENT SCHEDULE												FY 85	
ACTIVITY	O	N	D	J	F	M	A	M	J	J	A	S	
1.3.7 TEST FACILITIES										a		b,c	
												d	

△ Major Milestone  
▽ Intermediate Milestone

FIGURE 2-7. TEST FACILITIES ACTIVITIES MILESTONE SCHEDULE

TABLE 2-13. TEST FACILITIES ACTIVITIES MILESTONE LOG

- 
- 
- a. ONWI sends to SRPO U.S./FRG Joint Annual Report on the Asse Mine Brine Migration Test
  - b. ONWI submits to SRPO final Draft Asse Mine Post-Test Plan
  - c. ONWI submits to SRPO Draft Asse Mine Test Report
  - d. SRPO sends to DOE-HQ for information the draft report on the Asse Mine Brine Migration Tests
- 
- 

TABLE 2-14. FY 85 BUDGET FOR TEST FACILITIES ACTIVITIES (WBS 1.3.7)

Activity		BO \$ Millions
1.3.7.1	Management and Integration	0.3
1.3.7.2	Testing	0.3
1.3.7.3	New Facility Acquisition	--
TOTAL		0.6

## 2.8 LAND ACQUISITION, WBS ELEMENT 1.3.8

The objective of the Land Acquisition task 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 principal boreholes, exploratory shafts, geologic and environmental studies, and a repository. Activities include obtaining title information for the exploratory shaft site, access for pre-site characterization activities, access for EDBH, fee-simple ownership of the exploratory shaft site, fee-simple ownership of the repository site, and land protection at early stages for potential sites. The WBS element milestone schedule for Land Acquisition activities is presented in Figure 2-8; the milestone log and the FY 85 BO are presented in Tables 2-15 and 2-16, respectively.

### 2.8.1 Management and Integration, WBS Element 1.3.8.1

Overall Description. This subtask provides for overall management of land acquisition activities including planning, scheduling, budgeting, and reporting. It includes work accomplished through agreements with organizations such as the U.S. Army Corps of Engineers.

Current Status. A land protection and access plan was submitted to the DOE. The DOE is currently negotiating an interagency agreement with the Corps of Engineers for preparation of preliminary real estate planning reports and conduct of exploratory shaft land acquisition activities.

Planned Activities. In FY 1985, the SRP will develop a site characterization land acquisition plan. Logic diagrams will be prepared in FY 1985 for use in satisfying statutory compliance actions. After approvals by the DOE, these diagrams will be used in the monitoring of activities by SRP participants.

### 2.8.2 Exploratory Shaft, WBS Element 1.3.8.2

Overall Description. This subtask provides for licenses, leases, fee-simple titles, withdrawal agreements, and any other agreements necessary to obtain access to land required for the construction of exploratory shafts.

Current Status. Statutory compliance planning for the exploratory shaft has been initiated. Negotiation of the interagency agreement with the Corps of Engineers is under way. This will result in preparation of real estate planning reports which will serve as the basis for subsequent acquisition actions.

Planned Activities. Exploratory shaft land access and protection activities will be devoted to obtaining title information, negotiation of access agreements on privately held land, and holding negotiations with the U.S. Bureau of Land Management to obtain a cooperative agreement for the ESF and an administrative withdrawal for land protection on public lands. Actual land acquisition will be initiated immediately after sites are recommended.

Statutory compliance activities will proceed in parallel with permitting work, with the emphasis on critical long lead-time items.

### 2.8.3 Repository, WBS Element 1.3.8.3

Overall Description. This subtask provides for the conducting of all land acquisition activities required to obtain ownership and control of land as required by 10 CFR 60.121.

Current Status. This activity is not yet under way. Work in this area will be initiated in FY 1985.

Planned Activities. Activities for the repository in FY 1985 related to statutory compliance will be limited to those activities which must be accomplished prior to disturbing the site. Actual field data collection will be planned such that collection is completed prior to the start of site work.

WBS ELEMENT SCHEDULE												FY 85
ACTIVITY	O	N	D	J	F	M	A	M	J	J	A	S
1.3.8 LAND ACQUISITION										bd	e,f	
							a			c		

△ Major Milestone

▽ Intermediate Milestone

FIGURE 2-8. LAND ACQUISITION ACTIVITIES MILESTONE SCHEDULE

TABLE 2-15. LAND ACQUISITION ACTIVITIES MILESTONE LOG

- 
- 
- a. DOE sends to land agent a signed Memorandum of Understanding
  - b. SRPO approves/submits to DOE-HQ Land Acquisition Plan
  - c. DOE-HQ issues to SRPO approval letter of Land Acquisition Plan
  - d. SRPO sends to land agent Letter of Authorization for Land Acquisition
  - e. Land agent provides SRPO land access for ESF foundation borings
  - f. Land agent provides to SRPO land access for Environmental Data Collection
- 
-

Table 2-16. FY 85 Budget Outlay for Land Acquisition Activities (WBS 1.3.8)

WBS Element	Subtask	BO, \$ Millions
1.3.8.1	Management and Integration	0.1
1.3.8.2	Exploratory Shaft	0.2
1.3.8.3	Repository	--
	TOTAL	0.3

## 2.9 PROJECT MANAGEMENT, WBS ELEMENT 1.3.9

The Project Management task schedules, budgets, performs, controls, coordinates, and reports project management and integration, project control, and quality assurance work. This includes identifying and defining interfaces among all project elements and integrating the elements with each other. The WBS element milestone schedule for Project Management activities is presented in Figure 2-9; the milestone log and the FY 1985 BO are presented in Tables 2-17 and 2-18, respectively.

### 2.9.1 Management and Integration, WBS Element 1.3.9.1

Overall Description. The objective of the management and integration subtask is to provide overall management of the project including strategic planning and analysis, budgeting and financial analysis, funds/obligations status and control, budget (Work Package Authorization System) submission, computer support services, progress reporting, procurement and contract administration, legal services, and administrative services. This task includes the conduct of overall project peer reviews and the integration of all project elements. Some of these tasks are performed jointly by project management and other task elements.

Current Status. During FY 1984, a complete review of the technical project plan for FY 1985 has been accomplished to fully correlate prime contractor activities with the Salt Repository Project Office master schedule. A catalog of forthcoming unanalyzed data reports and regular salt repository reports is updated frequently. A bibliography of project reports is updated and published twice a year.

Planned Activities. The management and integration subtask in FY 1985, in addition to preparation of the SRP project management plan, the FY 1986 technical project plan, and the FY 1987 budget submission, will include continued management analyses of alternatives as program issues arise and the strategic project planning necessary to accomplish established milestones, reviews, and reports.

### 2.9.2 Project Control, WBS Element 1.3.9.2

Overall Description. Project control activities include cost/schedule planning and control activities performed in accordance with the validated cost/schedule control system; the development, implementation, and maintenance of management procedures, practices, and management information systems; and the coordination of all schedule submissions including coordination with contractors, integrated laboratories, and SRP prime contractors.

Other activities include the coordination of the submittals of various plan and status documents such as the project status reports, milestone schedule status reports, cost plans/status, and manpower plans/status.

Those activities involved in the coordination of the monthly management reviews and identification/tracking of resulting action items are also performed within this subtask.

Current Status. The cost/schedule control system has been validated by DOE-HQ and has been fully implemented in this program. An "at completion performance measurement baseline" has been established and is being reported monthly.

Planned Activities. Planned improvements and enhancements for the next year include automated manpower reporting, full implementation of the mechanized Contract Data Management System, improved scheduling by the use of PERT computer programs, and computer programs and hardware to assist in "what if" budget exercises and Project Management Systems simplification. In addition, all regular periodic reports as listed above will be prepared and issued.

### 2.9.3 Quality Assurance, WBS Element 1.3.9.3

Overall Description. An overall quality assurance (QA) program, including a quality assurance plan and detailed implementing procedures, is provided. Qualification of personnel to perform quality assurance functions and assessment of the QA plan and implementing procedures for compliance, completeness, and adequacy are performed.

Independent verification and assessment of the QA program effectiveness is accomplished through audits, management reviews, and similar activities. Corrective action is requested for identified problems, as necessary, and corrective action follow-up and evaluation assure that problems are resolved.

Planning and procurement documentation for appropriate and consistent QA program requirements is reviewed. Designated QA records are prepared and maintained.

Current Status. The SCP QA plan was transmitted to DOE-HQ for review and approval. Project personnel have received training and indoctrination to qualify them to perform QA functions. Independent verification and assessment of the SCP QA plan and implementing procedures were performed.

Planning and procurement documents have been reviewed for inclusion of appropriate and consistent QA program requirements. A full-time Quality Assurance Manager has been added to the SRPO staff.

The identification and the collection of all geotechnical procedures for review and concurrence were initiated in compliance with the SCP QA plan requirements.

Planned Activities. The SCP QA plan will be reviewed and revised 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. The assessment of the SCP QA plan and its implementing procedures for compliance, completeness, and adequacy will continue.

A list of items and activities important to safety and waste isolation will be developed. Preparation of QA procedures as necessary to complete the QA manual will continue.

WBS ELEMENT SCHEDULE												FY 85	
ACTIVITY	O	N	D	J	F	M	A	M	J	J	A	S	
1.3.9 PROJECT MANAGEMENT							e ▽						
				a, b, c △		d △	f △		g △				

△ Major Milestone  
▽ Intermediate Milestone

FIGURE 2-9. PROJECT MANAGEMENT ACTIVITIES MILESTONE SCHEDULE

TABLE 2-17. PROJECT MANAGEMENT ACTIVITIES MILESTONE LOG

- 
- 
- a. Issue FY 85 Cost Plan for HQ information
  - b. Issue Master Project Schedule and Schedules for WBS Elements for HQ information
  - c. Issue list of Project Office-Controlled Milestones for FY 85 for HQ information
  - d. Issue Project Management Plan for HQ review
  - e. ONWI submits SCP Quality Assurance Plan to SRPO for approval
  - f. Issue FY 1987 WPAS Proposal for HQ review
  - g. SRPO submits SCP Quality Assurance Plan to DOE-HQ
- 
-

Table 2-18. FY 85 Budget Outlay for Project Management Activities (WBS 1.3.9)

WBS Element	Subtask	BO, \$ Millions
1.3.9.1	Management and Integration	6.7
1.3.9.2	Project Control	2.0
1.3.9.3	Quality Assurance	<u>1.8</u>
	TOTAL	10.5

## 3 REFERENCES

DOE, see U.S. Department of Energy.

EPA, see U.S. Environmental Protection Agency.

NRC, see U.S. Nuclear Regulatory Commission

U.S. Department of Energy, 1984a. Mission Plan for the Civilian Radioactive Waste Management Program (Draft), DOE/RW-0005, Office of Civilian Radioactive Waste Management, Washington, DC, April.

U.S. Department of Energy, 1984b. "General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories" (10 CFR Part 960), Washington, DC, December 6, pp. 49 FR 44714-47770.

U.S. Department of Energy, 1984c. Generic Requirements for a Mined Geologic Disposal System, DOE/NE/44301-1, prepared by Roy F. Weston Inc. for Office of Civilian Radioactive Waste Management, Washington, DC.

U.S. Environmental Protection Agency, 1984. "Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes", Final Rule 40 CFR Part 191, Washington, DC.

U.S. Nuclear Regulatory Commission 1982. Standard Format and Content of Site Characterization Reports for High-Waste Geologic Repositories, Regulatory Guide 4.17, Washington, DC.

U.S. Nuclear Regulatory Commission, 1983. "Disposal of High-Level Radioactive Wastes in Geologic Repositories Technical Criteria", Final Rule 10 CFR Part 60, Code of Federal Regulations, Washington, DC, June.

DRAFT DATA REVIEW AGENDA - Agenda Proposed by NRC on 6/18/85  
- 1 -

DRAFT AGENDA FOR TBEG DATA REVIEW.

Date: August 5-9, 1985

Place: Austin [REDACTED]

5 Aug AM                      Travel DC-Austin

5 Aug PM                      Orientation  
Introductions NRC, TBEG, DOE

Objectives of data review/workshop: [NRC] Review and examine the geologic data base of TBEG relevant to proposed high level waste storage facility in Deaf Smith and Swisher Counties. Data to be reviewed includes core and logs from DOE drilled wells, geophysical surveys, borehole testing, hydrological testing ( surface and subsurface ), maps and cross sections, remote sensing information and the results of laboratory investigations.

Purpose of data review/workshop: [NRC] Familiarize the NRC staff with the data and data interpretations available to TBEG to support their presentation of the geologic, hydrologic and geochemical conditions in the area of the proposed high level waste sites.

General overview of TBEG program [TBEG] Brief overview of program areas to focus on types of information available, status of the information ( raw data, interpretive data, draft reports, final reports), significant findings and QA program as implemented by TBEG.

6 Aug                              Stratigraphy of Site Area

Topics for review:

Examination of cores-DOE wells  
Depositional system, Permian sequence-Palo Duro Basin  
**Continuity and distribution of units**  
**Facies relationships**  
Diagenetic History  
Clay mineralogy  
Properties of host rock

Data: Cores from J. Friemel, Zeeck, Mansfield, Well logs  
Mineralogical analysis of clays in host rock;  
identification of alterations of clays and halite;  
chemistry of brine inclusions, including isotopic data

Relevant TBEG WBS#: 332FG, 332GM IV, 332GP II, 332GP IV,  
332GP V

Example Reports: Fisher, R.S. Geochemical and textural  
evidence of primary and altered halite; Texas Bureau of  
Economic Geology 1983 Annual Report

BMI/SRP-5017, 1984, Summary Well Report DOE-Gruy Federal  
No. 1 Grabbe: Unanalyzed Data; Texas Bureau of Economic  
Geology

Hovorka, S.D., 1983, Carbonate-Anhydrite-Halite Cycles San  
Andres Formation (Permian) Palo Duro Basin, Texas, Texas  
Bureau of Economic Geology

7 Aug AM

Geology/Hydrology of near surface units

Topics for Review:

Stratigraphy of Dockum/Ogallala/Quaternary deposits  
Depositional/erosional history of Dockum/Ogallala  
Lacustrine and eolian deposits: history, age,  
distribution.  
Paleoclimate  
Material properties  
Playas  
Hydrology of near surface units  
Relationship of Dockum to Ogallala and deeper Aquifers

Data: Data base to evaluate Plio-pliestocene lake basins,  
Tule formation, such as along Tierra Blanca Creek, Tule  
Creek.

Water Quality Data  
Isopach and lithofacies maps  
Structure contour maps of pre-Ogallala Surface  
Maps of Ogallala Distributional channels

Relevant TBEG WBS#: 332GN I, 332GN III, 332GM I, 332GM II,  
332GM IX, 332GM III, 332GM VI,

[SCR 3.1.2.(BEG 3.4.2.1.), SCR 3.1.3.(BEG 3.4.2.2.), SCR 3.2.1.(BEG 3.5.7.) CSR 332FH(BEG 3.1)]

Example Reports: Seni, S.J.. 1980, Sand Body Geometry and Depositional Systems, Ogallala Formation, Texas: Texas Bureau of Economic Geology Report of Investigations no. 105

Gustavson, T.C. and R.T. Budnik, 1984, Salt Dissolution: Examples From Beneath the Southern High Plains; Texas Bureau of Economic Geology Report OF-WTWI-1984-3

Gustavson, T.C. and R.J. Finley, 1984, Late Cenozoic Geomorphic Evolution of the Texas Panhandle and Northeastern New Mexico: Case Studies of the Structural Controls of the Regional Drainage Development: Texas Bureau of Economic Geology Report OF-WTWI-1984-39

7 Aug PM

Dissolution

Topics for review:

- Location of known/suspected active dissolution
- Location of known/suspected paleodissolution features
- Controlling mechanism
- Geomorphic-structural-stratigraphic indicators
- Rates

Data: Structure contour maps and cross sections in areas of known and suspected dissolution; hydrochemistry of surface and ground water; petrographic-mineralogic-geochemical data from cores; geomorphic and paleogeomorphic evidence of dissolution

Relevant TBEG WBS#: 332GM V, 332GN IV, 332GM III,

Example Reports: Goldstein, A.G. and E.A. Collins, 1984, Deformation of the Permian Strata Overlying a Zone of Salt Dissolution and Collapse in the Texas Panhandle: Geology, Vol 12, pp 314-317

Gustavson, T.C., R.J. Finley and K.A. McGillis, 1980, Regional Dissolution of the Permian Salt in the Anadarka, Dalhart, and Palo Duro Basins of the Texas Panhandle; Texas Bureau of Economic Geology Report of Investigations no. 106

OF-WTWI-1984-3

(Work in progress) Petrographic, Stratigraphic and Structural Evidence for Dissolution of Upper Permian Bedded Halite, Palo Duro Basin, Texas, Texas Bureau of Economic Geology

Gustavson, T.C., and R.T. Budnik, (work in progress), Structural Influences on Geomorphic Processes and Physiographic Features, Texas Panhandle; Technical Issues in the Siting of a Nuclear Waste Repository, Texas Bureau of Economic Geology

Dutton, A.R., Water Sampling and Hydrologic testing in the Salt Dissolution Zone of the Texas Panhandle; Texas Bureau of Economic Geology 1983 Annual Report

8 Aug session A: Regional Geology

Topics for review:

Structure and Tectonics of Palo Duro Basin  
Amarilo-Wichita-Ouachita Uplift  
Matador Uplift  
Seismotectonics  
Regional Stress field  
Meers Fault zone

Data: Cross sections and maps along with supporting borehole, geophysical, remote sensing and surface mapping information; in situ stress measurements.

Relevant TBEG WBS#: 332GM VII, 332GM VIII, 332GM X  
[CSR 332FH(C.1)(BEG 3.3.1), CSR 332FH(E.2)(BEG 3.3.2), CSR 332FH(BEG 3.5)]

Example Reports: McGooky, Gustavson and Hoadley, 1984, Regional Structural Cross Sections, Mid-Permian to Quaternary Strata, Texas Bureau of Economic Geology  
Portfolio of Cross-Sections, 20 pages, 12 Plates.

8 Aug session B: Hydrology

Topics for Review

Groundwater flow modeling

Mechanism of flow thru San Andres  
Evidence/effect of fracture flow  
Leakage Through Evaporite Aquitard  
Recharge/disharge  
Hydrogeologic parameter values for Basin units

Data: Isotopic, Hyrdochemical, Fracture data(core),  
permiability data

Relevant TBEG WBS#: 332GN II, 332GN V  
[CSR 332FI]

Example Reports: Kreitler, C.W., Hydrologic  
Characterization of an Evaporite Aquitard

Smith, P.G., G.W. Page, and J.K. Downing, Regional  
Lithopermeability Determinations for the Permian Basin Area  
of Texas and New Mexico

Picking, L.W. and D.E. Wilton, Testing the Hydraulic  
Characteristics of Low Permiability Carbonates, Palo Duro  
Basin, Texas

Richter, B. and C.W. Kreitler, Geochemical and Hydrological  
Characteristics of Salt Springs and Shallow Subsurface  
Brines in the Rolling Olains of North-Central Texas and  
Southwest Oklahoma: Texas Bureau of Economic Geology Report  
of Investigations

Dutton, A.R. Hyrogeology of the San Andres Formation, Texas  
Bureau of Economic Geology Report of Investigation

Fisher, R.S. and C.W. Kreitler, Isotopic and Geochemical  
Composition of Deep Basin Brines, Palo Duro Basin, Texas,  
Geological Society of America, Abstracts with Program

Variations of Porosity in the Wolfcamp Aquifer

8 Aug session C

Geochemistry

Topics for review:

Detailed geochemistry/petrology/minerology  
Brine Geochmistry

Data: Petrographic and Mineralogic Analysis for host rock (Halite and Clays) and surrounding strata, Chemistry of groundwaters and brine inclusions, including isotopic data; volume of brines in inclusions; sorptive capabilities of minerals; brine migration data ( if applicable)

Relevant TBEG WBS#: 332GP ALL  
[CSR 332 FJ(BEG 6.1)]

Example Reports: Fisher R. S., Water Content of Bedded Salt, Texas Bureau of Economic Geology 1983 Annual Report

Fisher, R. S. Clay Mineral Assemblages in evaporite Host Rocks; Texas Bureau of Economic Geology 1983 Annual Report

9 Aug

Continuation of sessions as needed:

Wrap-up and preparation of meeting notes

Travel Austin-DC

NOTE: LISTING OF TBEG WBS# IS GIVEN AS AN AID TO TYPES OF INFORMATION WHICH IS EXPECTED TO BE DISCUSSED IN EACH SESSION. IT IS NOT TO BE AN ALL INCLUSIVE LISTING. DUPLICATE LISTINGS ARE TO IMPLY THAT THE SUBJECT WILL BE DISCUSSED IN GENERAL IN EARLY SESSIONS, BUT IN MUCH MORE DETAIL IN LATER SESSIONS.

SALT WASTE PACKAGE WORKSHOP - Agenda Proposed by NRC on 6/18/95  
- 1 -

Salt Waste Package Workshop

I. Objectives

A. To determine **SAPOL's** current thinking and approach to waste package design and licensing, including (1) the current choice of reference/conceptual design components and the rationale for that choice, (2) the relationship of specific design features to Part 60 requirements ( e.g., retrievability), (3) the interaction between the waste package and the very near-field environment, (4) waste form considerations (test programs for both spent fuel and glass, potential degradation mechanisms, interactions with potential container and packing materials and/or their alteration products), (5) container failure mechanisms, data needs, test programs, and fabrication considerations, (6) radionuclide release and transport (from the waste form), and (7) performance assessment (models, expected versus unexpected conditions, WAPPA predictions, and uncertainties).

B. To determine, based on the information received on the above, whether or not DOE/ONWI is headed in the right direction in the area of salt waste package design and performance assessment, especially with regard to the generation of quality-assured data and models needed for licensing.

II. Specific Areas of Concern

A. Waste Package Reference/Conceptual Design

1. What is the current waste package reference/conceptual design, and why is it the current reference (rather than other alternatives)?

2. What alternative designs are under consideration at the present time and what work is being performed or planned to explore the viability of these alternatives?

B. Relationship of Design Features to Part 60/Part 20 Requirements

1. What waste package design features will be provided to facilitate retrievability and how will they accomplish it?

2. What is the intended contribution of waste package shielding to satisfying Part 20 limits for radiation exposure?

3. What and how will specific waste package components contribute to necessary safety functions?

4. What waste package design features will accommodate monitoring, and how will they accomplish that?

#### C. Near-field Conditions

1. How will inhomogeneities (e.g., layered minerals, brine pockets, "impurities") in the host salt affect the corrosion of the overpack?

2. How might salt decrepitation and the presence of potentially unstable minerals (e.g., sodium colloid formation, dehydration of clays) affect the corrosion of the overpack?

3. How does brine chemistry (e.g., pH, redox conditions, concentration, composition of aqueous species and gases) affect the waste package?

4. By what process might anhydrite scale form on the waste container, and how would it affect the waste package?

5. What will be the magnitude of the lithostatic/hydrostatic loads on the container and the stresses (including the thermal stresses) developed within the container as a function of time?

6. How will repository construction effects (e.g., introduction of atmospheric  $O_2$ , inclusion formation, fracturing) influence near-field conditions?

7. How will the waste form affect near-field conditions (i.e., elevated temperatures, irradiation)?

8. What scenarios for accumulation of brine around the waste package are being considered? How does the waste package design allow for the possibility of relatively large volumes of intrusive or in-situ high-Mg brine contacting the waste package?

#### D. Waste Form

1. What test programs are in place on spent fuel and glass waste forms for waste packages in salt (as apart from generic waste form programs)? What generic programs and data are believed to be applicable to salt waste package waste forms?

2. Does the salt project expect to use any glass leaching/dissolution data developed by the Defense Waste or West Valley programs? If so, describe the type of information under consideration and how it is to be utilized.

3. What is the current status of data development on borosilicate glass waste forms (i.e., what is the current reference composition, what does the current data base on this composition consist of, what tests are being conducted or are planned and on what schedule)?

4. How are glass waste form properties and characteristics expected to change with exposure in a salt repository? Are any of these changes expected to be site specific (in the sense of brine composition effects, for example); what waste form properties or characteristics are especially sensitive to package component design? What data exist in support of these expectations?

5. What is the current reference/conceptual design for spent fuel waste packages in salt repositories?

6. What is the expected spent fuel population to consist of (BWR vs. PWR, burnups, failed vs. intact rods, etc.)? Is failed fuel to be segregated or separated from intact fuel? Discuss the implications for the various options with regard to potential effects on waste package performance.

7. What are the potential fuel rod cladding failure mechanisms in salt waste packages, what are the predicted rates of failure, and what are the potential effects on waste package container life and subsequent radionuclide release? What data or test programs apply to this subject?

8. What are the potential effects of packing and container materials and/or their alteration products on the interaction with the waste form and release of radionuclides? Describe the test data and programs that relate to this issue.

#### D. Containers

1. What are the rationale and supporting data for the current container selection and design approach?

2. What is currently known about the physical and chemical properties of the reference container materials? What is known about the effects of radiation, temperature, and chemical degradation on these materials as these environmental effects will be present in salt repositories under conceivable conditions ("expected" and "unexpected")? What data exist in support of these opinions, and what data need to be yet obtained? How good are the data?

3. What are the possible failure modes for the container, and how does the design address those failure modes to assure that the package will provide substantially complete containment for 300-1000 years? Specifically, what information exists concerning the resistance of the low-carbon steel overpack to pitting corrosion, stress/corrosion cracking, H-embrittlement or H-damage, etc. in addition to the uniform corrosion-assisted mechanical failure mode that received the attention in the draft salt EAs?

4. What will be the effect of radiation and how will the potential generation of hydrogen, oxygen, and other species affect the corrosion of the overpack?

#### E. Radionuclide Release and Transport From the Waste Package

1. What are the mechanisms and rates of release of radionuclides from the waste forms, and what are the applicable data?

2. How will Eh, pH, and brine composition affect the release of radionuclides from the waste forms?

3. What will be the effect of brine flow rate, formation and transport of colloids, and liquid boundary layer effects?

4. What will be the chemical species of the radionuclides released from the waste forms?

5. How will packing, container materials (including overpacks, canisters, and any special corrosion-resistant alloys or spent fuel rod cladding, if applicable) and/or their alteration products interact with the waste form to cause its alteration and/or affect the release of radionuclides? What data exist or are being developed to address this matter?

6. How and at what rate will radionuclides migrate through failed waste package containers?

#### F. Performance Assessment/Uncertainty Analysis

1. What are the current waste package thermal models, how do they relate to each other, and what input assumptions are used? What are the associated uncertainties? Considering the uncertainties, what are the effects on the state-of-the-art of waste package performance assessment? What versions of the thermal models are currently available, and how do they compare with those currently in use at DNWI? What provisions are there for providing working

versions of the thermal models (and other models important to waste package performance assessment) to NRC for independent assessment?

2. What procedures are used in the analyses of radiation field, and what are the principal sources of error and uncertainty? What are the potential effects of radiation on waste package container corrosion and waste form leaching? How is sodium colloid formation accounted for? What are the currently available data related to the area of radiation effects on the near-field salt and container corrosion?

3. Regarding "expected" versus "unexpected" repository conditions, how will the waste package design accommodate either variability in those conditions or the fact that "unexpected" conditions (e.g., large amounts of high-magnesium brine) may prevail?

4. What are the current WAPPA subsystem models, and when will they be made available to the NRC? Describe the QA procedures used in the development of these models, including their validation and verification.

5. Describe the reliability/uncertainty approaches in use for predicting waste package performance. In general, how are short-term/accelerated test results applied to the prediction of waste package performance? Discuss some examples.

### III. Remarks

Though the above agenda items touch upon some aspects of modeling, performance assessment, and DOE's current philosophy toward waste package design and licensing, the primary focus of this workshop is intended to be on data and the procedures (i.e., test conditions) utilized in the acquisition of the data used to support DOE/ONWI positions and programmatic approach. Naturally, the interpretation and analysis of the data is of interest as well as the data itself and the methods of acquisition of the data, because the ultimate concern of all is that there be adequate data for licensing. Thus, referring to the objectives of the workshop, the ultimate objective is to ensure that DOE is on the right track in developing the necessary data (and models). It is anticipated that through such an exchange, NRC will be able to provide DOE with feedback concerning NRC staff perception of the appropriateness of the DOE approach and adequacy of their data base/modeling acquisition program. In discussing the workshop agenda with DOE/ONWI, they should be directed to the waste package ISTP issues and encouraged to approach the workshop from the standpoint of telling us what data and models they have (or are planning to acquire) to address the issues listed therein.



Department of Energy  
Chicago Operations Office  
Salt Repository Project Office  
505 King Avenue  
Columbus, Ohio 43201-2693  
Commercial (614) 424-5916  
F.T.S. 976-5916

May 16, 1985

J. Reese, SRPO  
L. Casey, SRPO  
R. Wu, SRPO  
K. Robinette, SRPO  
S. Webster, SRPO  
T. Baillieul, SRPO  
L. Page, SRPO  
W. Sidle, SRPO  
W. White, SRPO

SUBJECT: BACKGROUND INFORMATION FOR POINTS OF CONTACT WITH NRC

Reference: April 24, 1985 letter to J. Linehan from J. Neff, Points of Contact Between the Salt Repository Project Office and the NRC

In your assignment as SRPO point of contact for the NRC in your technical area, it is important that you implement the agreements signed between DOE and NRC. These agreements are enclosed for your use and are:

- June 1983, Procedural Agreement Between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy Identifying Guiding Principles for Interface During Site Investigation and Site Characterization, Federal Register Notice, Volume 48, No. 166, Thursday, August 25, 1983
- September 1984, Agreement Between the Department of Energy's Office of Geologic Repositories Projects (BWIP, NNWSI, SRP, CRP) and the Nuclear Regulatory Commission's Division of Waste Management During the Site Investigation and Characterization Programs and Prior to the **Submission of an Application for Authorization to Construct a Repository**

The first agreement is written at the HQ level and is commonly referred to as "The Procedural Agreement". The second agreement is written at the project level and is commonly referred to as "the project-specific" or "site-specific" procedural agreement. A proposed Appendix 7 to the project specific agreement is also attached for your information. These agreements deal largely with the conduct of meetings, the transfer of information, and information and work requests.

It is important that you be familiar with these agreements as well as the role of the NRC on-site representative since your contacts with the NRC will usually involve documentation according to these agreements. That documentation should take the form of:

- record of telephone conversations (send copies routinely to L. Casey (SRPO), D. Dawson (ONWI), appropriate SRPO and contractor technical counterparts, and appropriate SRPO line management)
- meeting minutes signed by DOE and NRC
- letters between DOE and NRC (can be initiated by any level but only signed by J. Neff of SRPO and J. Linehan of NRC; SRPO chiefs do not have authority to sign letters to NRC; L. Casey of SRPO should be sent copies of and be on concurrence for all letters to NRC by SRPO staff)

An excellent example of a telecon by T. Baillieul is enclosed to show the level of detail that is appropriate to document in your phone contacts with NRC.

All our meetings with NRC must be coordinated with C. Head of HQ and you should do this by working with L. Casey of SRPO. Also, Sarah Starr works closely with Donna Mattson of NRC to facilitate information exchanges so please send her copies of telecons, meeting minutes or letters which you anticipate contain requests she can help you fulfill.



R. C. Wunderlich  
Deputy Project Manager  
Salt Repository Project Office

SRPO:LAC:max:7127B

Enclosures:

- 1) Procedural Agreement
- 2) ~~Project-Specific Procedural Agreement~~
- 3) ~~Proposed Appendix 7 to Project-Specific Procedural Agreement~~
- 4) 05/08/85 telecon by T. Baillieul, Availability of Reports and Performance Assessment

cc: J. Neff, SRPO, w/encl.  
G. Appel, SRPO, w/encl.  
S. Buchanan, SRPO, w/encl.  
B. Darrough, SRPO, w/encl.  
M. Ferrigan, SRPO, w/encl.  
A. Handwerker, SRPO, w/encl.  
J. Jones, SRPO, w/encl.  
R. Lahoti, SRPO, w/encl.  
A. LaSala, USGS, w/encl.  
L. McClain, SRPO, w/encl.  
T. Rea, SRPO, w/encl.  
J. Sherwin, SRPO, w/encl.  
S. Starr, SRPO, w/encl.  
T. Taylor, SRPO, w/encl.  
P. Van Loan, SRPO, w/encl.  
R. Waters, SRPO, w/encl.  
J. Williams, SRPO, w/encl.  
R. Wu, SRPO, w/encl.  
R. Wunderlich, SRPO, w/encl.  
D. Dawson, ONWI, w/encl.  
T. Verma, NRC-Columbus, w/encl.

*J. Nieto, CER*  
*B. Lauzan, CER*  
*S. Foels, SHS*

ST# 414-85

then sent to the IAEA Senior Advisory Group which reviews and modifies as necessary the drafts of all codes and guides prior to their being forwarded to the IAEA Secretariat and thence to the IAEA Member States for comments. Taking into account the comments received from the Member States, the Senior Advisory Group then modifies the draft as necessary to reach agreement before forwarding it to the IAEA Director General with a recommendation that it be accepted.

As part of this program, Safety Guide SG-011, "Operational Management of Radioactive Effluents and Wastes Arising in Nuclear Power Plants," has been developed. The working group consisting of Mr. E. Hladky from Czechoslovakia; Mr. A. Higashi from Japan; Mr. A. B. Fleishman from the United Kingdom; and Mr. L. C. Oyen (Sargent and Lundy Engineers) from the U.S.A., developed the initial draft of this guide from an IAEA collation. This draft was subsequently modified by the IAEA Technical Review Committee for Operation, and we are now soliciting public comment on a modified draft (Rev. 2, dated June 24, 1983). Comments received by the Director, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, by October 10, 1983, will be particularly useful to the U.S. representatives to the Technical Review Committee and the Senior Advisory Group in developing their positions on its adequacy prior to their next IAEA meetings.

Single copies of this draft Safety Guide may be obtained by a written request to the Director, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(5 U.S.C. 522(a))

Dated at Washington, D.C. this 19th day of August 1983.

For the Nuclear Regulatory Commission,  
Robert B. Minogue,  
Director, Office of Nuclear Regulatory Research.

[FR Doc. 83-21375 Filed 8-24-83; 8:45 am]

BILLING CODE 7590-01-M

for interface during site investigation and site characterization of sites for a geologic repository under the Nuclear Waste Policy Act of 1982. The text of this agreement is published below.

**FOR FURTHER INFORMATION CONTACT:**  
Mr. Robert E. Browning, Acting Director, Division of Waste Management, Nuclear Regulatory Commission, Mail Stop 623-SS, Washington, DC 20555; (301) 427-4200.

Dated at Silver Spring, Maryland, this 16th day of August 1983.

For the Nuclear Regulatory Commission,  
Joseph O. Bunting,  
Chief, Licensing Process and Integration Branch, Division of Waste Management.

**Procedural Agreement Between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy Identifying Guiding Principles for Interface During Site Investigation and Site Characterization**

This Procedural Agreement outlines procedures for consultation and exchange of information which the Commission (NRC) and the Department (DOE) will observe in connection with the characterization of sites for a geologic repository under the Nuclear Waste Policy Act of 1982. The purpose of these procedures is to assure that an information flow is maintained between the two agencies which will facilitate the accomplishment by each agency of its responsibilities relative to site investigation and characterization under the National Waste Policy Act (NWPA). The agreement is to assure that NRC receives adequate information on a timely basis to enable NRC to review, evaluate, and comment on those DOE activities of regulatory interest in accordance with DOE's project decision schedule and thereby facilitate early identification of potential licensing issues for timely staff resolution. The agreement is to assure that DOE has prompt access to NRC for discussions and explanations relative to the intent, meaning and purpose of NRC comments and evaluations on DOE activities and so that DOE can be aware, on a current basis, of the status of NRC actions relative to DOE activities.

This Procedural Agreement shall be subject to the provisions of any project decision schedule that may hereafter be established by DOE, and any regulations that may hereafter be adopted by NRC, pursuant to law. In particular, nothing herein shall be construed to limit the authority of the Commission to require the submission of information as part of a general plan for site characterization activities to be

conducted at a candidate site or the submission of reports on the nature and extent of site characterization activities at a candidate site and the information developed from such activities.

**1. NRC On-Site Representatives**

As early as practicable, following area phase field work, NRC on-site representatives will be stationed at each site undergoing investigation principally to serve as a point of prompt informational exchange and consultation and to preliminarily identify concerns about such investigations relating to potential licensing issues.

**2. Meetings**

From the time this agreement is entered into, and for so long as site characterization activities are being planned or are in progress, DOE and NRC will schedule and hold meetings periodically as provided in this section. A written report agreed to by both DOE and NRC will be prepared for each meeting including agreements reached.

a. Technical meetings will be held between DOE and NRC technical staff to: review and consult on interpretations of data; identify potential licensing issues; agree upon the sufficiency of available information and data; and agree upon methods and approaches for the acquisition of additional information and data as needed to facilitate NRC reviews and evaluations and for staff resolution of such potential licensing issues.

b. Periodic management meetings will be held at the site-specific project level whenever necessary, but at least quarterly, to review the summary results of the technical meetings; to review the status of outstanding concerns and issues; discuss plans for resolution of outstanding items and issues; to update the schedule of technical meetings and other actions needed for staff resolution of open items regarding site characterization programs; and to consult on what generic guidance is advisable and necessary for NRC to prepare. Unresolved management issues will be promptly elevated to upper management for resolution.

c. Early technical meetings will be scheduled to discuss written NRC comments on DOE documents such as Site Characterization Plans, DOE's semi-annual progress reports, and technical reports to foster a mutual understanding of comments and the information or activities needed for staff resolution of the comments.

d. In formulating plans for activities

**NRC/DOE Procedural Agreement**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Notice of NRC/DOE Procedural Agreement.

**SUMMARY:** The Nuclear Regulatory Commission and the Department of Energy have signed a Procedural Agreement identifying guiding principles

which DOE will undertake to develop information needed for staff resolution of potential licensing issues, DOE will meet with NRC to provide an overview of the plans so that NRC can comment on their sufficiency. These discussions will be held sufficiently early so that any changes that NRC comments may entail can be duly considered by DOE in a manner not to delay DOE activities.

e. Schedules of activities pertaining to technical meetings will be made publicly available. Potential host States and affected Indian tribes will be notified and invited to attend technical meetings covered in this section (Section 2, Meetings). The notification will be given on a timely basis by the DOE. These technical meetings will be open meetings with members of the public being permitted to attend as observers.

### 3. Timely Release of Information

a. Data collected during site investigations will be made available to NRC on a current, continuing basis after the DOE (or DOE contractor) quality assurance checks that are inherent in determining that the data has been obtained and documented properly.

b. DOE's analyses and evaluations of data will be made available to NRC in a timely manner.

### 4. Site Specific Samples

Consistent with mutually agreed on procedures, DOE will provide NRC with site specific samples to be used by NRC for independent analysis and evaluation.

### 5. Agency Use of Information

It is understood that information made available to either Agency under this agreement may be used at that Agency's option in carrying out its responsibilities.

### 6. Project Specific Agreements

Project specific agreements to implement the above principles will be negotiated within 120 days of the time this agreement is entered into. These project specific agreements will be tailored to the specific projects to reflect the differences in sites and project organizations.

7. Nothing in this agreement shall be construed as limiting forms of informal consultation not mentioned in this agreement (for example, telephone conversation or exchanges of reports). These other consultations will be documented in a timely manner.

Dated: June 27, 1983.

Robert L. Morgan,  
Project Director, Nuclear Waste Policy Act  
Project Office, U.S. Department of Energy.

Dated: June 17, 1983.

John G. Davis,  
Director, Office of Nuclear Material Safety  
and Safeguards, U.S. Nuclear Regulatory  
Commission.

[FR Doc. 83-23376 Filed 8-24-83; 8:45 am]

BILLING CODE 7590-01-M

[Docket No. 50-309; CLI-83-21]

### Maine Yankee Atomic Power Co. (Maine Yankee Atomic Power Station); Memorandum and Order

The Commission has considered and affirms the Director's Decision, DD-83-3, issued February 14, 1983 under 10 CFR 2.206. The Decision denied the October 20, 1982 petition of Safe Power for Maine. Emil G. Garrett, John B. Green and John Jerabek (collectively "Safe Power") for action pursuant to 10 CFR 2.206. Safe Power sought an order to show cause why Maine Yankee Atomic Power Company ("Maine Yankee" or "licensee") should not be ordered to discontinue operation of its nuclear power plant at Wiscasset, Maine, in light of Safe Power's allegations of Maine Yankee's financial incapability to operate the Wiscasset facility safely and dispose of spent fuel now stored there and to be generated during the remainder of the licensing period. The Commission has concluded that denial of this petition lay within the Director's discretion but notes that subsequent developments provide additional justification for the Director's decision. Accordingly, rather than simply declining to review the Director's decision the Commission is issuing the memorandum and order to enlarge the discussion of the issues raised by the petition.

In its petition for a show cause order Safe Power alleged a number of circumstances indicating "poor financial condition of Maine Yankee".<sup>1</sup> Safe

<sup>1</sup> By successive orders of the Secretary pursuant to 10 CFR 2.772, the time in which the Commission may take review of the Director's Decision was extended to July 29, 1983.

<sup>2</sup> These asserted circumstances include: (1) Use of funds obtained through pledge of the company's stock of nuclear fuel for purposes other than purchase, remanufacturing and handling of nuclear fuel; (2) need to ask for early payment from Central Maine Power Company to meet Maine Yankee's daily cash requirement because its unsecured borrowing limit has been reached; (3) exhaustion of all of Maine Yankee's established sources of capital with the exception of infusion of additional common equity contributions by its sponsors; and (4) need for "sponsor guarantees" to continue the fuel financing.

Power requested that the Commission halt operation of Maine Yankee until the license "has demonstrated that it has adequate financial backing and adequate financial support . . . to raise capital requirement to continue operation, to make and changes or capital investments required by the NRC, and to provide for the funding of its shutdown and disposal of spent fuel at the end of its licensed term." Safe Power also asked that the Commission determine what amounts Maine Yankee should collect to provide for decommissioning and disposal of spent fuel and order the creation of a trust fund in which these monies would accumulate until needed.

In denying Safe Power's petition the Director correctly observed that the Commissions' concern with financial problems of a licensee is limited to the relation which those problems may have to the protection of public health and safety.<sup>3</sup> Allegations about financial difficulties at an operating facility are not by themselves a sufficient basis for action to restrict operations. In the Commission rulemaking, cited by the Director, which eliminated the financial qualification review for electric utilities, 47 F.R. 13750, the Commission noted the absence of evidence that financial problems are inevitably linked with corner-cutting on safety.<sup>4</sup> Thus, even had the Commission retained its financial qualifications review requirements, a showing the Maine Yankee was undergoing financial difficulties would not by itself require that the Commission halt operations at that plant.<sup>5</sup> On the other hand,

<sup>3</sup> Recently in an opinion issued subsequent to the Director's decision the Supreme Court took note of this limitation on the Commission's concern with economics:

The Nuclear Regulatory Commission (NRC) . . . does not purport to exercise its authority based on economic considerations, 10 CFR 84, and has recently repealed its regulations concerning the financial qualifications and capabilities of a utility proposing to construct and operate a nuclear power plant. 47 F.R. 13751. In its notice of rule repeal, the NRC stated that utility financial qualifications are only of concern to the NRC if related to the public health and safety.

*Pacific Gas & Electric Co. v. State Energy Resources Conservation and Development Commission*, U.S. —, 75 L.Ed.2d 752, 767 (1983).

<sup>4</sup> The Commission's rule is currently under review in the D.C. Circuit in *New England Coalition on Nuclear Pollution v. NRC*, No. 82-1581.

<sup>5</sup> Under Section 186 of the Atomic Energy Act the Commission may revoke a license when a condition exists that would have permitted the Commission to deny the license in the first instance, but it is not required to do so, especially where means short of license suspension are available to provide continued assurance of public health and safety.

# memorandum

DATE: September 18, 1984

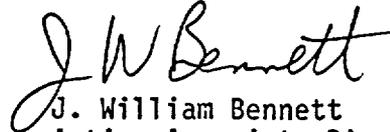
REPLY TO:  
ATTN OF: RW-23

SUBJECT: DOE/NRC Site-Specific Procedural Agreement for Geologic  
Repository Site Investigation and Characterization Program

TO:

R. Stein, RW-23	C. Vieth, NNWSI
C. Head, RW-23	C. Baker, CRPO
S. Mann, CRPO	L. Casey, SRPO
J. Neff, SRPO	J. Mecca, BWIP
L. Olson, BWIP	J. Szymanski, NNWSI

After a long and arduous negotiation and signing process, the DOE/NRC Site-Specific Procedural Agreement has been completed and is hereby issued for use. Appendix 7 is, of course, still under development and will be issued later. Thank you all for your help in completing this agreement.



J. William Bennett  
Acting Associate Director  
Office of Geologic Repositories

Attachment:  
Signed copy of DOE/NRC  
Site-Specific Procedural Agreement

cc:  
R.E. Browning, NRC (w/o attach.)  
R. Purple, RW-43 (w/attach.)  
J. Fiore, RW-22 (w/attach.)  
R. Balney, RW-22 (w/attach.)  
M. Frei, RW-23 (w/attach.)  
A. Jelasic, RW-24 (w/attach.)  
C. Cooley, RW-24 (w/attach.)  
E. Burton, RW-25 (w/attach.)  
B. Gale, RW-25 (w/attach.)  
G. Parker, RW-25 (w/attach.)

AGREEMENT BETWEEN THE DEPARTMENT OF ENERGY'S OFFICE OF GEOLOGIC REPOSITORIES  
PROJECTS (BWIP, NNWSI, SRP, CRP) AND THE NUCLEAR REGULATORY COMMISSION'S  
DIVISION OF WASTE MANAGEMENT DURING THE SITE INVESTIGATION AND  
CHARACTERIZATION PROGRAMS AND PRIOR TO THE SUBMITTAL OF AN APPLICATION  
FOR AUTHORIZATION TO CONSTRUCT A REPOSITORY

This agreement implements, on a project-specific basis, the Procedural Agreement\* made between the Commission (NRC) and the Department (DOE) and supersedes all previous project-specific agreement(s) between NRC (Division of Waste Management) and DOE (Office of Geologic Repositories) regarding information exchange and consultation for potential repository sites. This agreement implements Section 6 of the DOE/NRC Procedural Agreement which requires that project-specific agreements, tailored to the specific project and reflecting differences in sites and project organizations, be negotiated to implement the principles established in the Procedural Agreement. Because this project level agreement is drawn to implement the principles set forth in the Procedural Agreement, appendices detailing project-specific items as necessary are attached. These appendices will be updated, added to, or changed as required. Nothing in this agreement shall be construed either to modify the Procedural Agreement in any way or to confer rights on any party other than the parties to these agreements.

1. NRC On-Site Representatives (ORs)

At such time as the NRC ORs are stationed at each site, they are to be provided with office space that can be readily visited by members of the public and is near the DOE Project Offices and site activities (where Project Office and site activities are not convenient to one another, two separate offices will be provided). Where such office space can be provided in DOE facilities, DOE is to provide such space. Otherwise, the DOE is to provide space in its facilities near the Project Offices and site activities and the NRC is to provide space that can be visited by the public.

The NRC OR shall be afforded access to personnel, project records and facilities at the respective site, geologic repository operations area and adjacent areas, research facilities and other contractor and subcontractor areas. Access will be subject to applicable requirements for proper identification and compliance with applicable access control measures for security, radiological protection and personnel safety. Records as used above shall include all records that would be generally relevant to a potential licensing decision by the Commission. Included in this category are records kept by DOE and DOE contractors and subcontractors accessible to DOE.

Project-specific conditions are discussed in the appendices.

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\*"Procedural Agreement Between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy Identifying Guiding Principles for Interface During Site Investigation and Site Characterization" herein referred to as the Procedural Agreement (FR 48:38701).

## 2. Meetings

### A. Technical Meetings

Schedules agreed on, pursuant to Section 2.e of the Procedural Agreement, for future meetings covering approximately a three month period will be updated at least weekly and posted prominently in the local and headquarters public document rooms (PDRs) of both the NRC and the DOE. In addition, a toll-free telephone service will be operated by DOE headquarters to announce the meeting schedules. A description of this process for making the schedule of upcoming meetings publicly available will be provided by a DOE annual Federal Register Notice. Affected State/tribal representatives will be given the opportunity to participate at the technical meetings.

Dates for major technical meetings will be agreed to as far in advance as is practicable with a goal of four months in advance. Final agreement as to agenda and participants normally will both be reached a minimum of 10 working days prior to the scheduled date for the meeting and be posted in the PDRs. Deviations from the agreed to agenda are permitted upon agreement of NRC and the cognizant DOE Project Office. Although both agencies will use their best efforts to provide the indicated lead times, nothing in this section shall be construed as preventing the scheduling of technical meetings with shorter lead times by mutual agreement. The host agency has the responsibility for organizing and conducting technical meetings.

### B. Management Meetings

As part of the discussion during management meetings held under Section 2.b of the Procedural Agreement, issues related to policy, budget, program scope, commitment of resources and program schedules may be included as appropriate. The host agency has the responsibility for organizing and conducting management meetings. The procedures established in Section 2.A above regarding dissemination of schedules and agendas for the technical meetings will also be used to disseminate schedules and agendas for the management meetings.

### C. Meeting Reports

A meeting report containing a summary of important observations and issues discussed at meetings will be jointly prepared by DOE and NRC for the Technical and Management meetings discussed above, and signed or initialed by representatives of both agencies at the conclusion of each meeting. An opportunity will be provided for State/affected tribal representatives to add their comments and observations to and initial the meeting summary. A standard format, shown in Appendix 6, will be used in the preparation of meeting reports. The DOE will issue meeting reports within two weeks after the meeting. The DOE will also provide the meeting reports to the affected States and Indian Tribes and its PDRs. The NRC will distribute meeting reports to its PDRs.

### 3. Timely Release of Information

#### A. Report Inventory

Each agency will develop as soon as practicable and thereafter maintain and exchange an inventory of reports, plans, procedures, and technical positions (products) both completed and in process. This inventory will include descriptions of product scope and purpose as well as the scheduled dates for completion of draft and final products. The inventories will be updated and exchanged at least quarterly. This will allow each agency to request products from the other and thereby influence priorities for release.

#### B. Points of Contact

Respective points of contact for the individual DOE projects and the NRC are defined in the appendices. Either agency may change their points of contact unilaterally with prior notification to the other party. Other organizations within the NRC will work through these designated points of contact within the NRC's Division of Waste Management for interactions with the DOE's Office of Geologic Repositories Projects. Details of the information exchange will be determined by the individual project's requirements and defined in the appendices as appropriate.

Technical communications are intended solely for the exchange of information and ideas by NRC and DOE personnel involved in the various technical areas relating to site information programs for potential repository sites. Individuals participating in such communications have no authority to present official NRC or DOE positions or to make official policy statements on behalf of either NRC or DOE.

#### C. Site Investigation and Site Characterization Data for Potential Repository Sites

To keep the NRC on-site representative informed regarding what data will be forthcoming and when, DOE will notify the representative of the schedule of planned field and laboratory testing covering as long a period as practicable. The representative will also be notified of changes to the test schedule. The schedule and any notification of changes to the schedule will also be provided to the cognizant NRC Repository Projects Branch Section Leader (see Appendices 1-4).

The DOE will develop as soon as practicable and thereafter maintain a catalog of data. This catalog will include descriptions of the data, the time, place, and method of acquisition, and where it may be examined. This catalog will be updated and provided to NRC at least quarterly. Upon NRC request and at a location chosen by the DOE, the DOE will make data available to the NRC for examination. After the quality assurance checks specified in Section 3.a of the Procedural Agreement have been completed which will normally be within 45 days from data acquisition either in the laboratory or in the field, data will be provided to NRC in a hard-copy format upon request. Because

of the preliminary nature of these data, all such data placed in the PDR will carry the following caveat: "QA checks on data contained here have only been performed to determine that the data has been obtained and documented properly. The DOE cautions that any information is preliminary and subject to change as further analyses are performed or as an enlarged and perhaps more representative data base is accumulated. These data and interpretations should be used accordingly."

The NRC will also notify the DOE of its schedule (and those of its contractors) of planned field and laboratory testing conducted at or with samples from potential repository sites and will establish, maintain, update, and provide to the DOE an inventory of data as described in the preceding paragraph.

4. Site Specific Samples

Consistent with the procedures specified in Appendix 5, the DOE will provide the NRC with site-specific samples.

5. Terms of Agreement

The terms of this agreement will be reviewed annually and may be amended at any time by mutual consent, in writing.

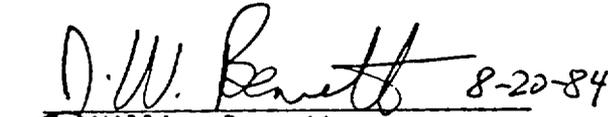
6. Effective Date

This agreement shall enter into force on the latter date of signature by the parties.

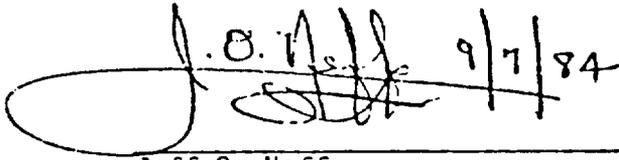
Signature Blocks

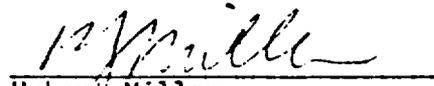
DOE

NRC

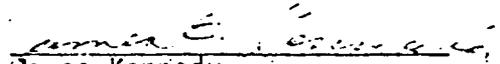
  
William Bennett  
Acting Associate Director  
Office of Geologic Repositories

  
Robert Browning  
Director  
Division of Waste Management  
(NMSS/NRC)

  
Jeff O. Neff  
SRPO Manager  
DOE-CH

  
Hubert Miller  
Chief  
Repository Projects Branch  
(NMSS/NRC)

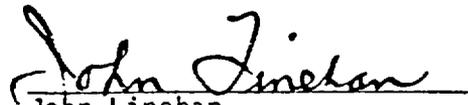
  
O. Lee Olson  
BWIP Manager  
DOE-RL

  
James Kennedy  
BWIP Section Leader

  
Donald L. Vieth  
NNWSI Manager  
DOE-NV

  
Seth Coplan  
NNWSI Section Leader

  
Sally A. Mann  
CPO Manager  
DOE-CH

  
John Linehan  
Salt Project Section Leader

Appendix 1 - BWIP

1. Points of contact between NRC and DOE projects

a. Formal Communications

BWIP Project Manager to and from NRC BWIP Project Section Leader

<u>DOE</u>	<u>NRC</u>
Project Office Manager U.S. Department of Energy Richland Operations Office BWI Project Office P.O. Box 550 Richland, WA 99352	Section Leader BWIP Project Section Division of Waste Management U.S. Nuclear Regulatory Commission 7915 Eastern Avenue Silver Spring, MD 20910

b. Technical Communications

<u>Area</u>	<u>NRC</u>	<u>BWIP Staff/ Contractors</u>
Performance Assessment	Salt Project Section Leader or designee	R. T. Wilde
Repository Design	Mining, Geoengineering Facility Design Section Leader or designee	R. J. Gimera
Quality Assurance	BWIP Project Section Leader or designee	M. S. Karol
Geology	Geology/Geophysics Section Leader or designee	S. M. Price
Geochemistry	Geochemistry Section Leader or designee	P. F. Salter
Hydrogeology	Hydrology Section Leader or designee	G. S. Hunt
Waste Package	Materials Engineering Section Leader or designee	M. J. Smith
General	BWIP Project Section Leader or designee	J. Mecca

Appendix 2 - SRPO

1. Points of contact between NRC and DOE projects

a. Formal Communications

Salt Repository Project Office (SRPO) Manager to and from NRC Salt Project Section Leader

<u>DOE</u>	<u>NRC</u>
Manager Salt Repository Project Office U.S. Department of Energy 505 King Avenue Columbus, OH 43201	Section Leader Salt Project Section Division of Waste Management U.S. Nuclear Regulatory Commission 7915 Eastern Avenue Silver Spring, MD 20910

b. Technical Communications

<u>Area</u>	<u>NRC</u>	<u>SRPO Staff/ Contractors</u>
Quality Assurance	BWIP Project Section Leader or designee	TBD
Performance Assessment	Salt Project Section Leader or designee	TBD
Waste Package	Materials Engineering Section Leader or designee	TBD
Repository	Mining, Geoengineering Facility Design Section Leader or designee	TBD
Exploratory Shaft	Mining, Geoengineering Facility Design Section Leader or designee	TBD
Geology	Geology/Geophysics Section Leader or designee	TBD
Hydrology	Hydrology Section Leader or designee	TBD
Geochemistry	Geochemistry Section Leader or designee	TBD

Appendix 3 - NNWSI

1. Points of contact between NRC and DOE projects

a. Formal Communications

NNWSI Project Manager to and from NRC NTS Project Section Leader

<u>DOE</u>	<u>NRC</u>
Director, Waste Management Project Office DOE Nevada Operations Office P.O. Box 14100 Las Vegas, NV 89114	Section Leader NTS Project Section Division of Waste Management U.S. Nuclear Regulatory Commission 7915 Eastern Avenue Silver Spring, MD 20910

b. Technical Communications

<u>Area</u>	<u>NRC</u>	<u>NNWSI Staff/ Contractors</u>
Quality Assurance	BWIP Project Section Leader or designee	Michael Spaeth, SAI
Performance Assessment	Salt Project Section Leader or designee	Thomas Hunter, SNL
Waste Package	Materials Engineering Section Leader or designee	Larry Ramspott, LLNL
Repository	Mining, Geoengineering Facility Design Section Leader or designee	Thomas Hunter, SNL
Exploratory Shaft	Mining, Geoengineering Facility Design Section Leader or designee	Donald Oakley, LANL
Geology	Geology/Geophysics Section Leader or designee	William Dudley, USGS
Hydrology	Hydrology Section Leader or designee	William Dudley, USGS
Geochemistry	Geochemistry Section Leader or designee	Donald Oakley, LANL

Appendix 4 - CPO

1. Points of contact between NRC and DOE projects

a. Formal Communications

DOE  
Manager  
Crystalline Repository  
Project Office  
DOE Chicago Operations Office  
9800 South Cass Avenue  
Argonne, IL 60439

NRC  
Chief, Repository Projects Branch  
Division of Waste Management  
U.S. Nuclear Regulatory Commission  
7915 Eastern Avenue  
Silver Spring, MD 20910

b. Technical Communications

TBD

2. Other Project-Specific Features

Consistent with the provisions of Section 1 of the Procedural Agreement, the NRC Onsite Representatives (OR) for the CPO will be stationed following area-phase field work. Thus, the provisions of this project specific agreement related to ORs are not applicable until the OR is on-site. It may be in both agencies' interests to arrange for an OR and hold technical meetings prior to completion of area-phase field work; this will be evaluated periodically.

Pending completion of the area-phase field work, the CPO will be exempt from the quarterly management meetings required under section 2.b of the Procedural Agreement. Until that time, management meetings will be held only as necessary.

## Appendix 5

### ACQUISITION OF SITE-SPECIFIC SAMPLES DURING SITE INVESTIGATION AND SITE CHARACTERIZATION BY NRC CONTRACTORS

Nuclear Regulatory Commission (NRC) contractors need, in some instances, site-specific samples of rock, minerals, and ground water or brine from sites being studied by the Department of Energy (DOE) as potential geologic repositories for high-level radioactive waste. The NRC contractors need such samples to carry out selected independent site-specific investigations and relevant research supporting the NRC's licensing responsibilities. The DOE will support these projects with site-specific samples to the extent practicable.

In order to facilitate satisfying NRC requests for site-specific samples with a minimum of inconvenience to all parties, the following points are agreed to:

1. Each DOE field project office will identify their designee to the respective NRC Project Section Leader and, where available, the NRC onsite representative (OR), for all communication concerning the procurement of site-specific samples by NRC contractors.
2. Written requests to the DOE for site-specific samples for NRC contractors will originate from the NRC Project Section Leader and will be transmitted by letter to the DOE field project office manager for that site in sufficient time for the DOE to review the request and, if approved, to prepare the sample. A copy will be provided to the OR when one is assigned for the site. The DOE field project office designee shall acknowledge receipt of all requests by letter.
3. The DOE retains the right to decline requests in cases where the requested samples are needed by the DOE to fulfill its site characterization responsibilities, when the requested samples are scarce or prohibitively expensive to collect, or when the request seriously impairs the DOE's schedule or program for site characterization. See also points 10 and 11 concerning management resolution of any problems on this point.
4. In order to assure that appropriate samples will be available prior to transmitting a written request, the NRC Project Section Leader, or designee, should consult with the DOE field project office designee for the particular site as to sample availability. Inquiries on sample availability can be answered on the basis of current site inventory records. If samples are not available, the DOE will arrange for their acquisition providing such requests are within the DOE plans for site investigation and site characterization. See point 6 below.
5. All written requests for samples shall include pertinent information such as the name of the laboratory, the designated laboratory contact, the timeframes within which samples are needed and testing will be performed and the date that any uncontaminated core samples that have not been destroyed by planned testing will be returned. An

example of a sample request form is attached. To the extent practicable, the request should be accompanied by documents that explain the purpose of the tests such as the NRC statement of work for the project, a written description or specification for the testing procedure to be used, any special sample collection, preservation, handling, or transportation requirements, and expected methods for interpretation of results. This will help ensure that the samples provided by the DOE are appropriate for the tests planned by the NRC contractor. The NRC-approved quality assurance program for the laboratory performing the investigation shall accompany all initial NRC requests for samples for that laboratory.

6. All requests for samples not already available, e.g., core from new boreholes, must sufficiently precede the NRC contractor's need so that samples can be collected within the DOE's site characterization program and at a reasonable convenience to DOE field project offices. The DOE will provide as much flexibility in scheduling sample collection and responding to requests as possible within current program schedules. Accordingly, for samples not already available or planned for under the DOE's plans, adequate advance notice will be needed to incorporate the request for new samples into the site investigation and characterization program. This advance notice must also allow for preparation and submittal to the State for an application for authorization, where required, to remove the sample from the State and for securing the necessary approval.
7. The DOE field project office designee will provide a sample description document with the sample(s) to assist the NRC contractor in ascertaining the compatibility of the sample with the specific test. The sample description document shall provide pertinent information on the sample, such as sample designation, data collected, date collected, description of sample, person collecting sample, depth collected, stratigraphic unit sampled, sampling techniques and conditions, initial measurements of properties at the time of sample collection, results of any subsequent tests or measurements, any methods of preservation or special handling, and proposed method of shipment to the NRC contractor. The NRC should identify any special methods and conditions for shipping samples.
8. ~~The NRC contractor will normally return to the DOE facility that~~ furnished the sample, through the NRC Project Section Leader, a reciprocal sample description document with pertinent information such as sample designation, a description of the sample as received, preparation or treatment of the sample prior to testing, initial readings prior to testing, any modifications to testing procedure or apparatus, testing results, quality control checks, significant observations during testing, interpretation of test results, and disposition of sample(s) after testing. Uncontaminated core samples that have not been destroyed by planned tests will be returned to the DOE as soon as practicable after use.

9. In implementing each of the above provisions, there should be a free exchange of information. Telephone communications to coordinate activities and discuss sampling schedules and testing are encouraged between the NRC or NRC contractors and designated DOE representatives. Requests for actions requiring significant expenditure of DOE or DOE contractor man-hours must be made in writing by the NRC Project Section Leader.
10. The DOE will pay reasonable costs associated with sample collection, preservation, handling, and transportation. The DOE field project office designee will identify any extraordinary costs which may require resolution on a case-by-case basis under point 11.
11. The DOE field project office designee will identify any requests which cannot be met, including the basis for such conclusions, to the DOE field project office and NRC Project Section Leader for resolution on a case-by-case basis at the next management meeting as specified under Section 2b of the Procedural Agreement.

SAMPLE REQUEST FORM

Please type or print

Date of Request \_\_\_\_\_

Requester: Name \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

Is Requestor a DOE Project Subcontractor? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes: Contract Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

If no: Funding Source \_\_\_\_\_

Contract Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

Samples Requested

Core Sample(s)

Well ID \_\_\_\_\_

Depth Interval Requested \_\_\_\_\_

Soil Sample(s) Full Core \_\_\_\_\_ Half Core \_\_\_\_\_ Quarter Core \_\_\_\_\_ Other \_\_\_\_\_

Well ID \_\_\_\_\_

Sample Type: Shelby Tube \_\_\_\_\_ Drive \_\_\_\_\_ Pitcher \_\_\_\_\_ Bulk \_\_\_\_\_ Other \_\_\_\_\_

Depth Interval Requested \_\_\_\_\_

Quantity \_\_\_\_\_

Water Sample(s)

Well ID \_\_\_\_\_

Depth Interval Requested \_\_\_\_\_

Quantity \_\_\_\_\_

SAMPLE REQUEST FORM (CONTINUED)

Time Frame

Date Samples Needed \_\_\_\_\_

Time Required to Complete Testing/Analysis \_\_\_\_\_

Time Required to Publish Results \_\_\_\_\_

Format of Results \_\_\_\_\_

Objectives of Tests to be Performed \_\_\_\_\_

\_\_\_\_\_

Test Method \_\_\_\_\_

\_\_\_\_\_

Use/Need for Test Data/Information in Geologic Repository Program \_\_\_\_\_

\_\_\_\_\_

Preparation, Packaging, Transportation Requested

Preparation Procedure \_\_\_\_\_

Packaging Procedure \_\_\_\_\_

Transportation Procedure \_\_\_\_\_

\_\_\_\_\_

Sample to be Shipped to:

Name \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

Comments: Also, please attach any additional materials, such as test plans.

Appendix 6

STANDARD FORMAT  
FOR MEETING REPORTS

DATE/LOCATION OF MEETING

ATTENDEES/ORGANIZATIONAL AFFILIATION

BACKGROUND/FACTS

1. What information was reviewed, exchanged, and discussed (Summary listing fashion)
2. What agenda of discussion was

OBSERVATIONS

1. NRC questions, suggestions, or comments on scope and direction of the DOE technical program. (Best attempt made to identify all important matters)
2. DOE observations
3. State/Tribal observations (an opportunity will be given to States/Tribes to made observations on the DOE technical program)

AGREEMENTS

OPEN ITEMS

1. Technical questions for further discussion
2. Specific responsibilities for information exchange and commitment on other business matters.

Appendix 7

AGREEMENT CONCERNING THE NRC ON-SITE REPRESENTATIVE (OR)  
FOR THE REPOSITORY PROJECTS  
IN THE SITE SUITABILITY AND PLANNING PHASE

- T B D -

ROUTE SHEET AND OFFICE MEMO

(Do Not Detach From Official Correspondence; Write/Print Legibly Or Type)

ORIGINATOR	C.R. HEAD	ROOM	TELE. EXT.	DATE
			292-5625	10 APR '85

TO	RELEASED		SUBJECT: APP. 7 TO THE DOE/NRC PROJECT SPECIFIC AGREEMENT
	DATE	INITIALS	
J. NEFF SRPO			<p>DATE AND SIGN COMMENTS WITH NAME, CODE AND TELEPHONE EXT. DEADLINE DATE (*fill-in when Required)</p> <p>COMMENTS:</p> <p>ON 5 MARCH '85, WE SENT YOU COPIES OF NRC'S LATEST PROPOSAL FOR APPENDIX 7 OF THE PROJ. SPECIFIC AGMT. EACH PROJECT OFFICE SUBMITTED COMMENTS. BASED ON YOUR COMMENTS AND MY REVIEW, I PREPARED THE ATTACHED OGR PROPOSED APP. 7 BY LINING THROUGH PARTS OF THE NRC PROPOSAL WE WISH TO DELETE AND INSERTING WORDS IN SQUARE BRACKETS. I BELIEVE THAT I HAVE RESPONDED TO ALL OF YOUR COMMENTS. HOWEVER, I WOULD APPRECIATE IT IF YOU COULD LOOK OVER THE ATTACHMENT AND LET ME KNOW BY 15 APRIL '85 IF YOU HAVE ANY UNRESOLVED PROBLEMS. AFTER THAT DATE, I PLAN TO</p>
L. OLSON BWIP			
D. VIETH NNWSI			
(Last)			
FILE NO.			

(Use Reverse Side If More Comment Space Is Required)

PROCEED WITH FINALIZATION OF APP 7

OGR PROPOSED APPENDIX 7

AGREEMENT CONCERNING THE NRC ON-SITE REPRESENTATIVE (OR)  
FOR THE REPOSITORY PROJECTS  
DURING SITE INVESTIGATION AND CHARACTERIZATION

The purpose and objective of the on-site representative (OR), as identified in item 1. of the Procedural Agreement\*, is to serve as a point of prompt informational exchange and consultation and to preliminarily identify concerns about investigations relating to potential licensing issues.

This appendix is intended to supplement the base agreement and to detail the guidelines which will govern interaction between the NRC OR, including any NRC personnel assigned to the OR, and DOE contractor personnel (prime and sub) involved in the project. Any interactions between the OR and DOE, its contractors, or subcontractors identified in this appendix will not constitute "meetings" within the intent of item 2. of the Procedural Agreement and therefore will not require the preparation of written reports and will not be subject to State/Tribal and public notification and participation or schedular requirements of item 2. of the Procedural Agreement. The interactions of the OR with DOE and its contractors and subcontractors are not intended to interfere with or replace other channels of NRC/DOE communications and procedures for information release identified in sections 2., 3.A, and 3.B. of the base agreement and sections 2., 3. and 7. of the Procedural Agreement.

The following points are agreed to:

1. The OR can attend any meetings on-site or off-site dealing with technical questions or issues related to work required as part of site characterization and site investigation (e.g., any items to be covered in Site Characterization Plans under the Nuclear Waste Policy Act) following notification of the cognizant DOE project representative responsible for the meeting [as discussed below]. Such notification shall be by memorandum, telephone or personal contact and will be given at least 24 hours in advance where DOE has provided adequate prior notification to the OR. The meetings may involve solely DOE or solely DOE's contractors (prime and sub) or any combination of DOE with their contractors. The OR may be precluded from attending only those meetings or portions of meetings

\*"Procedural Agreement between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy Identifying Guiding Principles for Interface During Site Investigation and Site Characterization" (48 FR 38701, 8/25/83) herein referred to as the Procedural Agreement.

which concern budgets, personnel actions or contract performance not dealing with technical/peer reviews and QA audits of contractor's work. [If objections to the OR attendance are voiced for any reason, the reason should be specified. If the OR does not agree with the objection to his attendance, it will be raised to a higher management level for resolution. If resolution cannot be achieved, the OR will not attend the meeting in question.]

- [2. In order to facilitate orderly and useful conduct of the various DOE/NRC information exchanges, the OR contacts with the DOE program shall be made with the DOE and DOE contractor personnel identified in Appendices 1, 2 and 3 of the base agreement whenever practical.]
- 2-[3.] The OR may communicate orally (in person or by phone) with the project participants (persons) employed by DOE, DOE's prime contractors or the prime's subcontractors, on-site or off-site [providing that the following procedures are followed. The OR shall arrange for all individual sessions with on-site prime contractor staff and off-site subcontractor staff by contacting the proper prime contractor section or department manager or proper DOE Team Leader]. The OR will avoid discussions with personnel when it would appear to disrupt their normal duties and will schedule a discussion period at a mutually convenient time. The OR will keep DOE or cognizant DOE prime contractor supervisory personnel informed of near term (approximately 1 week) areas for intended review and the project participants who may be contacted. It is the option of DOE or the person contacted by the OR as to whether or not the presence of a supervisor or third party is to be present. [No record of these discussions is required, however questions that are raised or other issues that] Concerns arise as a result of the above interactions and which may affect NRC's ability to license the DOE to receive and possess source, special nuclear and by product material at a geologic repository operations area will be reported to the NRC Division of Waste Management and to the cognizant DOE project personnel by the OR as soon as practical.
- 3-[4.] DOE field[project] office(s), DOE prime contractors and their subcontractors will provide the OR access to records which would be generally relevant to a potential licensing decision by the Commission [as follows]. Upon request by the OR, the DOE or the DOE contractor or subcontractor shall provide copies of any records of raw data provided that the quality assurance checks

specified in section 3.a of the Procedural Agreement have been performed. Records which document the analysis, evaluation, or reduction of raw data or contain information deduced by reason will be made available to the OR, by the entity having the responsibility to produce the record, for copying after the quality assurance checks have been taken to assure the quality of the logic and analysis. Records at any stage of completion shall be available for review but not to copy or to receive a copy for retention until quality assurance checks have been made [after the documentation has been peer reviewed by the prime contractor, and cleared and approved by DOE].

- 4-[5.] Drafts of DOE documents required by the Nuclear Waste Policy Act of 1982, such as the EA, and SCP, which have not been approved by DOE, will not be provided by DOE's contractors to the OR without DOE approval. Documents of this type [may] will be made available by DOE, and [but] not the DOE contractor.
- 5-[6.] The OR does not have the authority to direct DOE, their contractors or subcontractors to perform any work. Any formal identification of questions or issues for investigation by DOE that could result in significant contractor or subcontractor work must be formally presented to DOE [Headquarters] through the NRC Division of Waste Management in writing.
- 6-[7.] The OR will attend on-site meetings upon request by the DOE field[project] office or prime contractor on-site whenever possible. The OR will provide any records which would normally be available under 10 CFR Part 2.790 of the Commission's regulations to project participants upon request to copy. If convenient, copies of such records will be provided by the OR.
- 7-[8.] The OR shall be afforded access to the site, research facilities, and other contractor and subcontractor areas to observe testing or other data gathering activities, in progress, as part of site characterization and site investigation [subject to compliance with the applicable requirements for identification, and applicable access control measures for security, radiological protection and personnel safety, provided that such access shall not interfere with the activities being conducted by DOE or its contractors (see point 6 above) and that any discussions conducted during such access shall comply with point 2 above.]

Such access shall be immediate upon display of an appropriate access identification badge, or, if badging is not possible for national security reasons, upon prior notification to DOE or cognizant contractor supervisory personnel (by memorandum, telephone or personal contact). When an access identification badge is available to DOE or DOE's contractors and subcontractors on a routine basis, it shall be made available to the OR upon completion of the required security clearances and appropriate radiological and personnel safety training. DOE will ensure that any training required is provided to the OR.

- 8.[9.] The OR and DOE will make arrangements which allow for at least weekly information exchanges to discuss pending DOE plans and program status, and any problem areas requiring attention of either or both parties.
- 9.[10.] DOE [and NRC] will assure that all of its [employees and] contractors (prime and sub) involved in the repository projects observe applicable provisions of this appendix. This appendix will be distributed by DOE [and NRC] to all project specific prime contractors and subcontractors.

RL 802 (11-731) RECORD OF TELEPHONE DISCUSSION	DATE: 5/8/85 <input checked="" type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING
---	--

WITH JOHN TRAPP	OF NRC	PHONE FTS 427-4545
-----------------	--------	--------------------

COPIES TO	
L. Casey, SRPO	J. Neff, SRPO
J. Sherwin, SRPO	S. Buchanan, SRPO
R. Wunderlich, SRPO	J. Waddell, ONWI

SUBJECT D. Dawson, ONWI AVAILABILITY OF REPORTS & PERFORMANCE ASSESSMENT
---

DETAIL OF CONFERENCE:

John had called earlier in the week to check on an item in a recent ONWI weekly highlights report which referred to deliverables received from SWEC. I checked on the items questioned which turned out to be: ① a report on the Structure of the Northern Palo Duro Basin (Reagan and Murphy, 1984); ② a report on testing in the Black No. 1 Well, Deaf Smith Co.; and ③ geophysical logs from the Taylor well. We will shortly receive a formal request for items 1 & 2 from the NRC; item 3 is available directly through Petroleum Information Services and NRC may or may not use that approach to obtain the logs.

John informed me that he has just been appointed to an NRC working group on Performance Assessment. A first task of this group will be a review of the SRP Perf. Assessment Plan. John was concerned with an apparent statement in that plan which seemed to equate the role of Performance Assessment simply with the running of computer codes. NRC has a much broader definition. We also spent time discussing the (over)

RECORDED BY (SIGNATURE) _____	TELEPHONE NO. _____
-------------------------------	---------------------

steps in developing a modeling capability for performance assessment predictions. We agreed that a numerical model of a geologic system (e.g. a hydrologic model) is only as good as the "conceptual" model upon which it is based. Studies of stratigraphy (sediment distribution), structure, and observed hydrologic parameters must precede development of numerical models. As the conceptual model is revised to incorporate greater detail and integration of geologic parameters, the numerical models should be brought into a closer approximation of observed reality. Conceptual modeling should be the responsibility of the geologic field contractor. At present our conceptual models are very preliminary, especially for the Permian and Paradox sites. The Performance Assessment Plan should address the process of developing both numerical and conceptual modeling capabilities in an ~~iter~~ iterative fashion, leading to eventual model validation.

John will be making all these points to the NRC.