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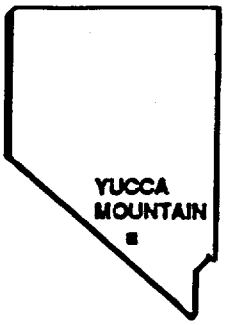
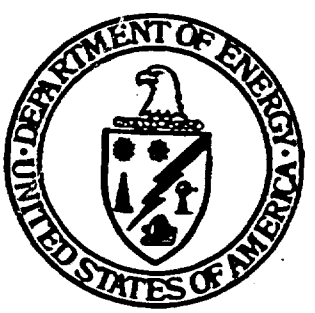


YUCCA MOUNTAIN PROJECT

TEST AND EVALUATION PLAN



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YUCCA MOUNTAIN PROJECT

TEST AND EVALUATION PLAN

August 1990

Prepared for

U.S. Department of Energy
Yucca Mountain Project Office

The Yucca Mountain Project is managed by the Yucca Mountain Project Office of the U.S. Department of Energy (DOE). Yucca Mountain Project work is sponsored by the DOE Office of Civilian Radioactive Waste Management.

FOREWORD

The Test and Evaluation Plan (T&EP) is a description of the test and evaluation process for scientific investigations. It has been developed in response to a U.S. Department of Energy (DOE) Order 4700.1, Project Management System, and adapted to the needs of the Yucca Mountain Project (Project). The T&EP is a subtier document to the Project Systems Engineering Management Plan (SEMP), which is subtiered to the Project Management Plan (PMP).

The T&EP defines management responsibilities and process for testing and evaluating the Yucca Mountain Site in the Exploratory Shaft Facility (ESF) (in situ and construction-phase tests), and from the surface (trenching, drillholes, mapping, and laboratory tests). The T&EP discusses how the tests are defined, designed, conducted, and how data from those tests are evaluated against licensing requirements. Each stage of the process is explained and supported by a detailed process flow diagram. Interfaces with other Project-level documents are defined, as are interfaces among the Project Participants and with the Yucca Mountain Site Office (Site Office).

This version of the T&EP will be updated as necessary to reflect changes in test and evaluation strategy.

APPROVED BY:

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8-20-90
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APPROVAL OF THIS DOCUMENT IS CONTINGENT UPON VERIFICATION UPDATED DOCUMENT REQUIREMENTS ARE INCORPORATED WHEN THEY ARE ISSUED

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1.0 INTRODUCTION AND BACKGROUND

The DOE Office of Civilian Radioactive Waste Management (OCRWM) is responsible for performing the tests and evaluations to (1) determine site suitability and (2) assess compliance with regulatory requirements for licensing a repository.

To meet these responsibilities,

1. Adequate site data must be obtained and appropriate analytical methods and models must be developed to be able to evaluate preclosure and postclosure performance without adversely affecting site integrity.

2. The tests and evaluations must be performed under appropriate quality assurance (QA), management, and technical controls to ensure the validity of the information; to adequately support the license application process; and to provide the basis for designing and engineering the mined geologic disposal system (MGDS), should the site prove suitable.

A number of tests have already been completed and thus are not part of this plan. These tests are summarized in the Environmental Assessment (DOE, 1986). In addition, some on-going tests are summarized in the data chapters (1 through 7) of the Site Characterization Plan (SCP) and form a part of the plans for characterization described in Chapter 8 of the SCP.

1.1 PURPOSE AND SCOPE

The purpose of this plan is to describe the management organization and outline responsibilities for the testing and evaluation program. It also briefly outlines the testing and evaluation program, defines the major interfaces for this program, and describes the cost and schedule objectives of the program. The Test and Evaluation Planning Basis (T&EPB), which supports this plan, provides the technical basis for the test and evaluation program.

This plan directs all site geotechnical investigation activities performed in the ESF, on and from the surface, and in the laboratories of Project Participants and subcontractors, which includes prototype, developmental and feasibility tests, and preliminary plans for performance and confirmation testing required by Subpart F of 10 CFR 60. This plan also addresses those socioeconomic, environmental, or design-input studies or tests that have the potential for impacting waste isolation capabilities of the site or that may interfere with other test activities.

1.1.1 RELATIONSHIP OF T&EP TO DOE REQUIREMENTS

The T&EP is a requirement of DOE Order 4700.1. The general intent of a T&EP, as described in the Order, is to confirm that a facility performs as

designed and constructed. Because the T&EP addresses the suitability of a natural (geologic and hydrologic) system to meet regulatory requirements, the intent of the DOE Order has been modified slightly. One of the goals covered by the scope of this phase of the Project is to ascertain whether the existing natural barriers at the Yucca Mountain Site have the capability to isolate radionuclides from the accessible environment. As such, it is an investigation and evaluation of existing natural features which, by regulatory requirement and practical considerations, cannot be designed and engineered. Knowledge and understanding of these features are necessary to develop a preferred system configuration. With this understanding, the concept of test and evaluation embodied in DOE Order 4700.1 can be legitimately applied to the evaluation of existing natural objects.

1.1.2 T&EP RELATIONSHIP TO PROJECT DOCUMENT HIERARCHY

The Project Document Hierarchy, described in the PMP, defines documents that interact with the T&EP. The relationships are briefly discussed within the following sections.

The plans define organizational roles and responsibilities for implementing the scientific investigations described in the SCP and for the overall management and control of the program. An illustration of where specific parts of the SCP have been reallocated in the document hierarchy is shown in Appendix A. General descriptions of the test and evaluation process will be supported by appropriate baselined documentation and management plans and procedures to ensure that all changes in data needs, test plans, and objectives are managed and controlled.

1.1.2.1 Relation to upper-tier plans

The T&EP is subordinate to the SEMP, which is in turn subordinate to the PMP. The T&EP includes by reference all requirements specified in the PMP and SEMP.

The PMP contains detailed discussions of technical objectives, cost and schedule control, the Project Work Breakdown Structure (PWBS), and overall Project management. In addition, Participant roles in the Project are defined in the PMP. Only test-and-evaluation-specific management organization, cost, schedule, and technical aspects will be presented in the T&EP.

The Project SEMP defines how systems engineering management will be implemented to manage, document, and integrate Project technical activities. The T&EP discusses how the test and evaluation process is conducted within this system.

1.1.2.2 Interfaces with Project planning documents

The T&EP interfaces with a number of Project planning documents on the hierarchy. This relationship is an interactive one, and the test and evaluation process relies on these plans and their procedures for its implementation, conduct, and control.

The Surface-Based Test Facility Plan (SBTFP) and the ESF Plan (ESFP) form the bases for test facility designs on the surface and in the ESF. Requirements for facility design are provided in the Surface-Based Testing Facilities Requirements Document (SBTFRD) and the ESF Requirements Document (ESFRD), described in Section 1.1.2.3. Test design drawings and specifications, which are part of the test instruction and documentation packages prepared for test implementation, are developed using the design basis in these documents.

The Repository Plan (RP) and the Waste Package Plan (WPP) define the process for controlling the design and interfaces of the repository and waste package. These plans interface with the T&EP in that test data from site characterization will be used to support repository and waste package design.

The Environmental Monitoring and Mitigation Plan (EMMP) describes how the DOE will conduct environmental monitoring and implement mitigation, as appropriate, for scientific investigations identified as having the potential for causing significant adverse environmental impacts. The EMMP specifies controls that apply to testing activities.

The Configuration Management Plan (CMP) describes the change control process used on the Project. Change control is applied at certain stages of the test and evaluation process, and this will be indicated in the T&EP where appropriate.

The Field Management Plan (FMP) provides requirements for policies, management organization, and procedures that will control field support and construction activities at the site during site characterization. The test and evaluation process uses the FMP for coordination of the technical program in the field, to ensure that test controls are implemented and to monitor cost and schedule in the field.

The Technical Data Management Plan (TDMP) describes the central elements of technical data management in the Project, the Technical Data Base (TDB), and the Reference Information Base (RIB). Data obtained from the test program will be managed in accordance with the TDMP.

The Performance Assessment Management Plan (PAMP) defines the performance assessment program of the Project. These plans explain the use of performance assessment for issue resolution and ongoing evaluation of the testing program, and provide guidance to investigators on how their studies integrate into the performance assessment of the site.

The Technical Support Documentation Management Plan (TSDMP) describes the Project's approach for coordinating the processing of technical information acquired during site characterization, design, and performance assessment for use in demonstrating compliance with licensing and other

regulatory requirements. The TSDMP follows directly from the Nuclear Regulatory Commission (NRC)-related portion of the Regulatory Compliance Plan (RCP).

1.1.2.3 Relation to requirements documents

Implementation of the process described in the T&EP may ultimately result in changes and additions to requirements initially used to develop the testing strategies and to plan the testing program. These changes and additions will be used to update requirements documents as they are developed. In this sense, the T&EP is interactive with the requirements documents.

The Site Requirements Document (STRD) is a controlled document that contains scientific investigations requirements and performance measures taken from the SCP. As changes in requirements are identified during testing, they will be incorporated into the STRD. The Waste Package Design Requirements (WPDR) and Repository Design Requirements (RDR) documents contain the requirements for waste package design and repository design, and provide input to the WPP and the RP. These Project requirements documents are governed by the Program Level Waste Management System Description (WMSD), the Waste Management System Requirements (WMSR) volume I, and the WMSR volume IV for the MGDS.

The ESFRD and the SBTFRD are compilations of requirements for design and construction of the test facilities for the testing in the ESF and from the surface.

1.1.2.4 Test and Evaluation Planning Basis (T&EPB)

The T&EPB is the baselined planning basis describing scientific investigations and data needs on which the planned tests are based. The T&EPB is a controlled document where the content of the T&EPB was derived initially from Chapter 8 of the Project SCP. Further test description and controls will be added to the T&EPB as they are developed. The T&EPB defines the rationale and strategies for scientific investigation planning, as shown in Table 1-1.

The T&EPB will be controlled at a level commensurate with the intended use of the data. Scientific investigations will not be initiated until they have been evaluated for impacts to the site. In making these evaluations, there may be instances where assumptions that may have effects on the waste isolation potential of the site will have to be made and tracked through the program until qualified data are available to verify that the assumptions were satisfactory.

Table 1-1. Contents of the Test and Evaluation Planning Basis

1.0 PURPOSE AND SCOPE
- 1.1 Purpose
- 1.2 Scope
  - 1.2.1 Content of Document
  - 1.2.2 Changes to the Test and Evaluation Planning Basis

2.0 SITE SPECIFIC INFORMATION NEEDS FOR THE YUCCA MOUNTAIN SITE

3.0 SITE CHARACTERIZATION PROGRAMS
- 3.1 Geohydrology Program
- 3.2 Geochemistry Program
- 3.3 Rock Characteristics Program
- 3.3 Climate Program
- 3.4 Erosion Program
- 3.6 Rock Dissolution Program
- 3.7 Postclosure Tectonics Program
- 3.8 Human Interference Program
- 3.9 Population Density and Distribution Program
- 3.10 Land Ownership and Mineral Rights Program
- 3.11 Meteorology Program
- 3.12 Offsite Installations Program
- 3.13 Surface Characteristics Program
- 3.14 Thermal and Mechanical Rock Properties Program
- 3.15 Preclosure Hydrology Program
- 3.16 Preclosure Tectonics Program

4.0 DESIGN PROGRAMS
- 4.1 Repository Design Program
- 4.2 Seals Design Program
- 4.3 Waste Package Design Program

5.0 PERFORMANCE ISSUES
- 5.1 Preclosure Performance Assessment
- 5.2 Waste Retrieval Performance Assessment
- 5.3 Public Radiation Safety Performance Assessment
- 5.4 Preclosure Worker Safety Performance Assessment
- 5.5 Accidental Radiological Releases Performance Assessment
- 5.6 Preclosure Radiological Safety Higher-Level Findings Performance Assessment
- 5.7 Preclosure Ease and Cost Higher-Level Findings Performance Assessment
- 5.8 Postclosure Performance Assessment
- 5.9 Waste Package Containment Performance Assessment
- 5.10 Postclosure Engineered Barrier System Performance Assessment
- 5.11 Postclosure Seals System Performance Assessment
- 5.12 Pre-waste-Emplacement Ground-Water Travel Time Performance Assessment
- 5.13 Total System Postclosure Performance Assessment
- 5.14 Postclosure Individual Dose Performance Assessment

Table 1-1. Contents of the Test and Evaluation Planning Basis (Continued)

5.15 Protection of Special Sources of Ground-Water Performance Assessment
5.16 Performance Confirmation Program
5.17 Favorable and Potentially Adverse Condition Performance Assessment
5.18 Postclosure Higher-Level Findings Performance Assessment
6.0 CHARACTERIZATION OPERATIONS
7.0 POTENTIAL IMPACTS OF SITE CHARACTERIZATION
8.0 YUCCA MOUNTAIN PROJECT FLUIDS AND MATERIALS DATA BASE

1.1.3 SUMMARY OF TEST AND EVALUATION PROCESS

Figure 1-1 illustrates the simplified process used to plan, manage, and control site characterization activities at the Yucca Mountain Site. This process applies to surface-based tests (field and laboratory), in situ tests in the ESF, and tests performed during construction of the ESF. The testing process consists of three phases: (1) test planning and strategy development; (2) test implementation, management, and data collection; and (3) data use and evaluation. Each of these phases is controlled by an implementing procedure to the T&EP. Additional detail on this process is provided in Sections 4.0, 5.0, and 6.0 of this plan.

1.2 REQUIREMENTS

The T&EP implements requirements that originate in various documents.

1. 10 CFR Part 60, particularly 10 CFR 60.16, requires the DOE to submit a site characterization plan to the NRC for review and comment. Other provisions in 10 CFR 60 describe the requirements for the content of the SCP and the manner in which NRC and DOE will interact during site investigations.

2. 10 CFR Part 60, particularly 10 CFR 60.15, requires scientific investigation activities be performed in a manner that limits any impacts on the ability of the site to isolate waste after a repository facility were constructed.

3. 10 CFR Part 60, Subpart G, Quality Assurance Program, requires that all characterization activities that could have an impact on safety or the waste isolation capability of the site be performed under this program.

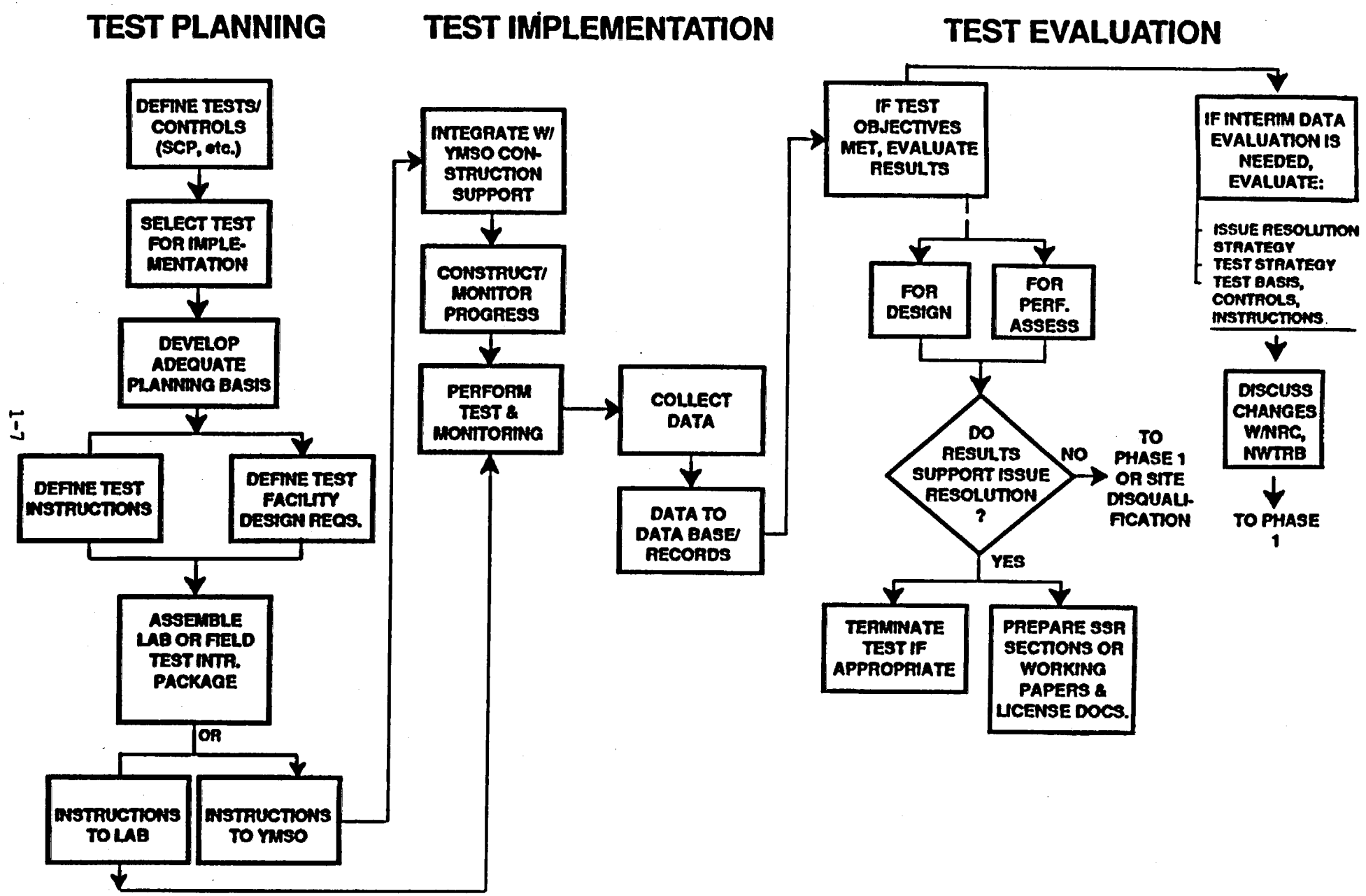

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Figure 1-1. Summary Flow of Test and Planning Process.

4. Section 113(a) of the Nuclear Waste Policy Act (NWPA) requires the DOE to conduct its scientific investigations in a manner that minimizes any significant adverse environmental impacts to the maximum extent practical.

5. A site-specific agreement between the NRC and the DOE, May 7-8, 1986, specifies the level of detail, format, and content of Study Plans.

6. DOE Order 4700.1 requires a T&EP, which is a flowdown from the PMP and the SEMP.

The RCP, an annex to the PMP, describes all the regulatory requirements with which the Project must comply, including requirements imposed by various State and Federal agencies.

2.0 OBJECTIVES OF TEST PLANNING AND EVALUATION

2.1 TEST PLANNING

The objectives of the test and evaluation process is to evaluate the site and determine if it will comply with NRC requirements for licensing a geologic repository. Meeting the objectives requires that an adequate site data base be obtained in a timely manner and appropriate analytical methods and models are developed to perform the evaluations of preclosure and postclosure performance required for the license application to the NRC.

The test and evaluation technical objectives are (1) to determine if the Yucca Mountain Site possesses characteristics adequate to isolate radioactive waste, considering the NRC requirements for public health and safety; and (2) to support activities to develop designs for waste packages and a repository for the MGDS.

2.1.1 DEFINITION OF TESTS

To ensure that all the required information will be available for licensing, the DOE has developed two organizing principles for scientific investigations; the issues hierarchy and a general strategy for issue resolution. The issues hierarchy lays out what must be known before a site can be selected and licensed. For each performance and design issue, a general issue resolution strategy was formulated defining the analyses and data needed to meet the requirements reflected in the issue. Issue resolution strategies for all performance and design issues are provided in the T&EPB.

The step within the issue resolution strategy where a testing program is defined to collect the data needed to evaluate compliance with the requirements is called performance allocation. DOE uses performance allocation to identify the testing required to resolve the issues. The first step in performance allocation is to establish a licensing strategy that defines site features, engineered features, conceptual models, and analyses that the DOE expects to use for resolving the issues. The test and evaluation process investigates these elements to determine whether the MGDS will comply with the applicable regulations.

To guide scientific investigations more explicitly, performance measures were established for the elements defined in the licensing strategy. Each performance measure is assigned a tentative goal and needed-confidence level to use as a guide for developing the testing program. Once these goals and needed-confidence levels are set, information needs are identified that include a set of parameters that will be used to evaluate the performance measures, the models needed for the evaluation, and any other necessary information to understand the characteristics of the site. The test program is then developed to satisfy the information needs.

2.1.2 STUDY PLANS AND SCIENTIFIC INVESTIGATION CONTROL

For site investigations defined in the SCP, Study Plans are developed to describe in more detail the tests and analyses that will be completed during site investigations. Laboratory tests performed for performance assessment do not have Study Plans, and are controlled by Scientific Investigation Planning Documents (SIPS). Study Plans are issued periodically throughout the testing program, based on a prioritization schedule developed and controlled by the Yucca Mountain Project Office (Project Office), with the concurrence of OCRWM/HQ. SIPS are issued periodically throughout the testing program, according to priorities developed from the Project Planning and Control System System Description (PACS). The list of required Study Plans and SIPS is maintained by the Regulatory and Site Evaluation Division (RSED) of the Project Office.

A Study Plan is prepared by the Participant responsible for the activity. It describes the studies, activities, tests, and analyses that constitute site characterization as defined by the NWPA. Test procedures used to conduct the tests are referenced in the Study Plans. The required level of detail, format, and content of Study Plans is defined in a May 7-8, 1986 agreement between the NRC and DOE (DOE/NRC, 1986). The preparation, review, and approval of Study Plans are controlled by a Project-level administrative procedure. Approved SCP Study Plans are controlled documents that are revised by issuing approved, controlled Interim Change Notices (ICNs) or complete revisions of the Study Plan. Study Plans are fully compatible with the objectives and testing activities described in Chapter 8 of the SCP. Study Plan testing objectives cannot be changed without securing formal management approval from the Change Control Board (CCB) and issuance of an ICN that revises the appropriate parts of the T&EPB. The Study Plans and the test procedures form the basis for audits of the test programs. The acceptance criteria for tests are developed through an evaluation of the Study Plan requirements and specific test controls developed as part of the T&EP process, and are included in the T&EPB.

A SIP is prepared by the Project Participant responsible for the performance assessment activity. The content conforms to the applicable requirements of the QA Requirements Document (QARD). SIPS do not require NRC review. SIPS are reviewed by the Project Office, in accordance with Project-level procedure.

2.1.3 TEST CATEGORIES

The test categories were developed as part of the preparation of the SCP and include geohydrology, geochemistry, rock characteristics, erosion, postclosure tectonics, human interference, meteorology, radiological monitoring, climate, thermal and mechanical properties, surface characteristics, preclosure hydrology, preclosure tectonics, seal characteristics, and waste package characteristics. Each category is listed in the PWBS, and scope is defined in the PWBS Dictionary.

2.1.4 COMPLETED TESTS

Tests completed prior to the site characterization phase of the Project (May 1986) were field and laboratory tests conducted during the site evaluation phase. The information collected provided a data base for the site suitability analyses contained in the Environmental Assessment (DOE, 1986) and a basis for determining what further studies are needed. The Project maintains a Site Atlas of completed field work, which contains maps and descriptions of completed boreholes, trenches, roads, and other construction features, as well as maps of completed geologic, environmental, and archaeological surveys. The Atlas is part of the T&EPB.

The information from previous studies is summarized in Chapters 1 through 7 of the SCP and provides the current understanding at the time of publication of the SCP of the geology, geochemistry, hydrology, geoengineering, and climate for the Yucca Mountain Site and region.

2.2 SCHEDULE OBJECTIVES

The Project schedule and schedule objectives are defined in the PMP. The Program schedule is defined in the PMP and the current Mission Plan Amendment.

The Project Office RSED is responsible for determining schedules and priorities for testing in order to accomplish the test program objectives. The Project Office will review priorities on a regular basis, making adjustments to accommodate changes in the test program as necessary. Detailed schedules and logic diagrams for activities are maintained and integrated by the Technical and Management Support Services (T&MSS) contractor. The Participants maintain detailed schedules and logic diagrams for their specific activities. The major Project milestones are given in the PMP.

2.3 COST OBJECTIVES

The primary cost objective for the testing program is to perform tests and experiments effectively, avoiding unnecessary duplication or repetition. Participants' technical efforts are integrated such that Participants are encouraged to use data available from tests or experiments done by others when possible. In addition, single facilities (e.g., boreholes) will be used for multiple purposes as much as possible to avoid redundancies. However, some redundancies in the testing program are planned as a check on critical parameters.

The Project Office oversees the activities using the PACS cost and schedule control monitoring system. Costs resulting from changes of scope or schedule are reflected in contract-level work packages and summary-level total Project costs. The PWBS provides the framework for accumulation of costs. The PMP provides a description of the budget preparation and submittal process, as well as the system for monitoring costs.

3.0 ORGANIZATIONAL AND MANAGEMENT RESPONSIBILITIES

This section presents the current organizational and management responsibilities for the Project testing program. Details of the Project Office interfaces with OCRWM/HQ, the DOE Nevada Operations Office (NVO), and the Project Participant organizations are covered in the PMP. Details of the field management organization and the role of the Site Office are provided in the FMP.

3.1 ORGANIZATION

Organizational responsibilities for the test and evaluation process are shared by the OCRWM and the Project Office. These responsibilities are defined in the following sections. Organization lines of responsibility for the entire Project are defined in the PMP.

3.1.1 OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM/HQ)

The Associate Director, Office of Geologic Disposal, is responsible for ensuring that the testing and evaluation of components and systems of the MGDS implement the statutory and regulatory requirements. The Associate Director, Office of Systems and Compliance, is responsible for identifying the system requirements and the regulatory requirements.

3.1.2 YUCCA MOUNTAIN PROJECT OFFICE

Technical direction of the Project is the responsibility of the Project Office Division Directors (DDs). The role and interaction of the DDs and the Yucca Mountain Site Manager (Site Manager) with respect to field operations is described in the FMP. Due to the significance of the RSED Director's role in the testing and evaluation process, the following supplementary discussion is provided.

3.1.2.1 Regulatory and Site Evaluation Division (RSED)

The RSED Director is responsible for the test and evaluation process and has authority for the prioritization, integration, management, revision, and termination of tests and analyses for the scientific investigations program. The RSED Director monitors testing to ensure it is in compliance with designated criteria and controls. The activities described in approved Study Plans are authorized for field implementation through a process described in Section 4.0 of this plan. The RSED Director ensures that test requirements and prerequisites (such as QA grading and environmental surveys) for initiating tests are completed before work authorization is given.

The responsibility for the implementation of the postclosure performance assessments to support the design, licensing, and scientific investigations programs also lies with the RSED.

Within the RSED, the Regulatory Interactions Branch is responsible for ensuring that the test and evaluation program (and results from it) conform to regulatory and licensing requirements. The Regulatory Interactions Branch coordinates Project interactions with the Nuclear Waste Technical Review Board (NWTRB) and NRC.

The Site Investigations Branch (SIB) provides test management for both subsurface and surface-based site investigations programs, and is responsible for day-to-day technical direction of field activities. The SIB manages the technical activities of the Sample Management Facility (SMF).

The Technical Analysis Branch is responsible for data management, report reviews, input to OCRWM Semiannual Progress Reports, and Project Semiannual Technical Status Reports.

3.1.2.2 Engineering and Development Division (EDD)

The EDD Director is responsible for ensuring that test facility design requirements are incorporated into the SBTFRD and ESFDR, for providing test facility designs, and for application of the design-related data results.

3.1.2.3 Project and Operations Control Division (POCD)

The Project Control Branch within the POCD is responsible for coordinating the budget, schedule, cost control, and job package completion functions for test activities.

The Operations Control Branch within the POCD is responsible for ensuring that environmental requirements are incorporated into the SBTFRD and ESFRD, for providing preactivity environmental and cultural surveys, and for monitoring tests for environmental and land access compliance.

3.1.2.4 Yucca Mountain Site Office (Site Office)

The Project Office has established the Site Office and has identified the Site Manager as having full authority and sole responsibility for the field implementation portion of the Project.

The Site Office is the management organization for all field test support and facilities construction. Details of the field management organization, and its relation to other Project divisions, are provided in the FMP.

Within the Site Office, the Field Testing Coordinator (FTC) is responsible for coordinating field test activities, and reports to the Site Manager, as described in the FMP. The RSED provides technical direction to the FTC. The FTC is responsible for implementing the test instructions and specifications provided by the RSED. Technical conflicts will be resolved by the RSED Director. This interface, along with responsibilities and authorities, is controlled by a Project-level implementing procedure.

3.1.3 PARTICIPANT ORGANIZATIONS

With respect to the test and evaluation program, the Project Participant organizations are responsible for planning, conducting, and reporting on tests and analyses. The Project Participant Principal Investigator (PI) for a test prepares Study Plans and changes to Study Plans for approval by his/her Technical Project Officer (TPO), the Project Office, and OCRWM/HQ. The PI prepares technical procedures for conducting the tests, and coordinates the completion of prerequisites needed to implement tests.

3.1.4 PROJECT OFFICE/NEVADA OPERATIONS OFFICE (DOE/NVO) INTERFACES

A memorandum of agreement between the Project and DOE/NVO establishes the interfaces and working relationships between these organizations and their assigned programs. This agreement forms the basis for many of the protocol required for field implementation. This subject is discussed further in the FMP.

3.2 SAMPLE MANAGEMENT

The SMF is responsible for collection, processing, and storing samples collected in the field, and for ensuring that sample collection procedures are adhered to at drill sites and other test facilities. The SMF is managed by the SIB.

Sample collection is performed in accordance with the Project procedures and Project Participant's Study Plans and technical procedures. Deviations from the methods documented must be approved via proper change processes.

The Project Sample Overview Committee (SOC) reviews sample requests from Participants and makes recommendations for approval or modification of the requests. The SOC monitors use of the available samples such that an adequate inventory is retained.

3.3 MANAGEMENT CONTROLS

The Project is operated under the OCRWM Program Management System (PMS) (DOE, 1988) that defines the management control system for the Program.

Within the test and evaluation process, management controls are defined in this T&EP and in related Project procedures.

3.3.1 DATA MANAGEMENT

The evaluations of the results of scientific investigations are based on the data and interpretations included in the TDBs. The inclusion of information in these data bases is governed by the TDMP. The technical data management system does not require that data be qualified before they are included in the system, but the system must distinguish whether data have been collected under an approved QA program addressing quality-related information for each information item. Users are responsible for determining if the technical data are of sufficient quality for the intended use. The Project RIB is the controlled document that contains the best available Project-endorsed data for use by Project Participants.

Technical data collected before an approved QA program meeting the requirements of 10 CFR 60 Subpart G was in effect must be qualified by a process approved by the Project Office before it can be used to support quality analyses and reports associated with the License Application.

3.3.2 QUALITY ASSURANCE

As mentioned in Section 1.2, the governing regulation for QA is 10 CFR 60 Subpart G, which implements the criteria of Appendix B of 10 CFR 50. The requirements for conducting, verifying, and documenting activities affecting quality are given in the OCRWM QARD, RW-0214. Adequate documentation must exist to ensure the traceability of data to original data records. The Project TDB and the RIB are designed to meet these QA requirements. The control of these two data bases is described in the TDMP.

3.4 REPORTING AND COMMUNICATIONS

Various types of reporting documents and records will be produced throughout the testing program. Forms and notebooks generated through field and laboratory procedures will constitute part of the official Project record. Records of data qualification and certification by Project Participants will be incorporated into Project records.

3.4.1 PROGRESS REPORTS

As part of the regular reports required by the FMP, Participants will report on progress toward milestones, identify problem areas, and indicate whether changes are needed in the test or experiment. Similar progress reports will be prepared by Participants involved in laboratory, performance assessment, and analytical studies. Based on these communications, the

Project Office will control the cost and schedule of the test and evaluation process, and will be able to monitor technical progress of the program.

3.4.2 TECHNICAL STATUS REPORT (TSR)

The Project Office publishes a semiannual TSR. Based on information in this report, OCRWM prepares the Semiannual Progress Reports that are distributed to the NRC and State of Nevada. They are also distributed internally within DOE and the Project and to the NWTRB. The public may obtain these reports through the DOE Office of Scientific and Technical Information.

3.4.3 DATA REPORTS

The results of investigations, studies, and activities described in the T&EPB will be reported in various formats. Raw and reduced data will flow to the records centers in accordance with the TDMP and associated administrative procedures. Data reports and technical reports will be prepared for the DOE by Project Participants. The T&MSS contractor, with input and support from the Project Participants, has the responsibility for preparing technical position papers as input to draft sections of the license application in accordance with the TSDMP.

3.4.4 FIELD TESTING COORDINATOR (FTC) REPORTS

During field testing, the FTC will prepare daily status reports that summarize test progress, adherence to test controls, and any unusual or unexpected conditions encountered in the test. These reports will be maintained as part of Project records, and provide input to decisions regarding test strategies and controls.

4.0 TEST PLANNING

The test planning phase of the test and evaluation process encompasses the process from the initial definition of tests and controls, through evaluation of the planning basis, to compilation of the test planning package. The process shown in Figure 4-1 applies to both field and laboratory studies. Responsibilities for the Test Planning Phase are shown in Table 4-1. A Project-level implementing procedure directs this process.

4.1 SELECT TESTS FOR IMPLEMENTATION

In accordance with guidance from the Project Manager, RSED selects the tests to be conducted after considering factors such as:

- The sequence of testing proposed by individual principal investigators in the SCP and in Study Plans
- Programmatic initiatives and guidance
- budget constraints

RSED policy is to assign a single DOE staff member to manage each test activity. This staff member is referred to in the T&EP and its procedures as the Project Engineer (PE). The PE may be the Project PWBS manager, the Job Package Coordinator (JPC) for field tests, or other DOE staff member. The PE manages and coordinates the planning and execution of the chosen test. The PE's responsibilities are illustrated in Figure 4-1 and described in Table 4-1. Work is authorized through the Project PACS.

4.2 COMPILE PLANNING INFORMATION

The PE consults with all Project Office divisions and offices to determine the planning information needed by each one to complete their prerequisites for the activity or test. Then the PE will request that each Participant TPO responsible for conducting all or part of the selected test or tests submit planning information to the Project Office. The planning information may consist of the Study Plans and technical procedures defining the test, and any revisions, impacts, analyses, or management decisions or concerns relevant to the test. The PE will compile this information and distribute it to the appropriate divisions within the Project Office for their use in completing the prerequisites for implementing the work. The documentation of completed prerequisites becomes part of the Test Planning Package required for field or laboratory work authorization.

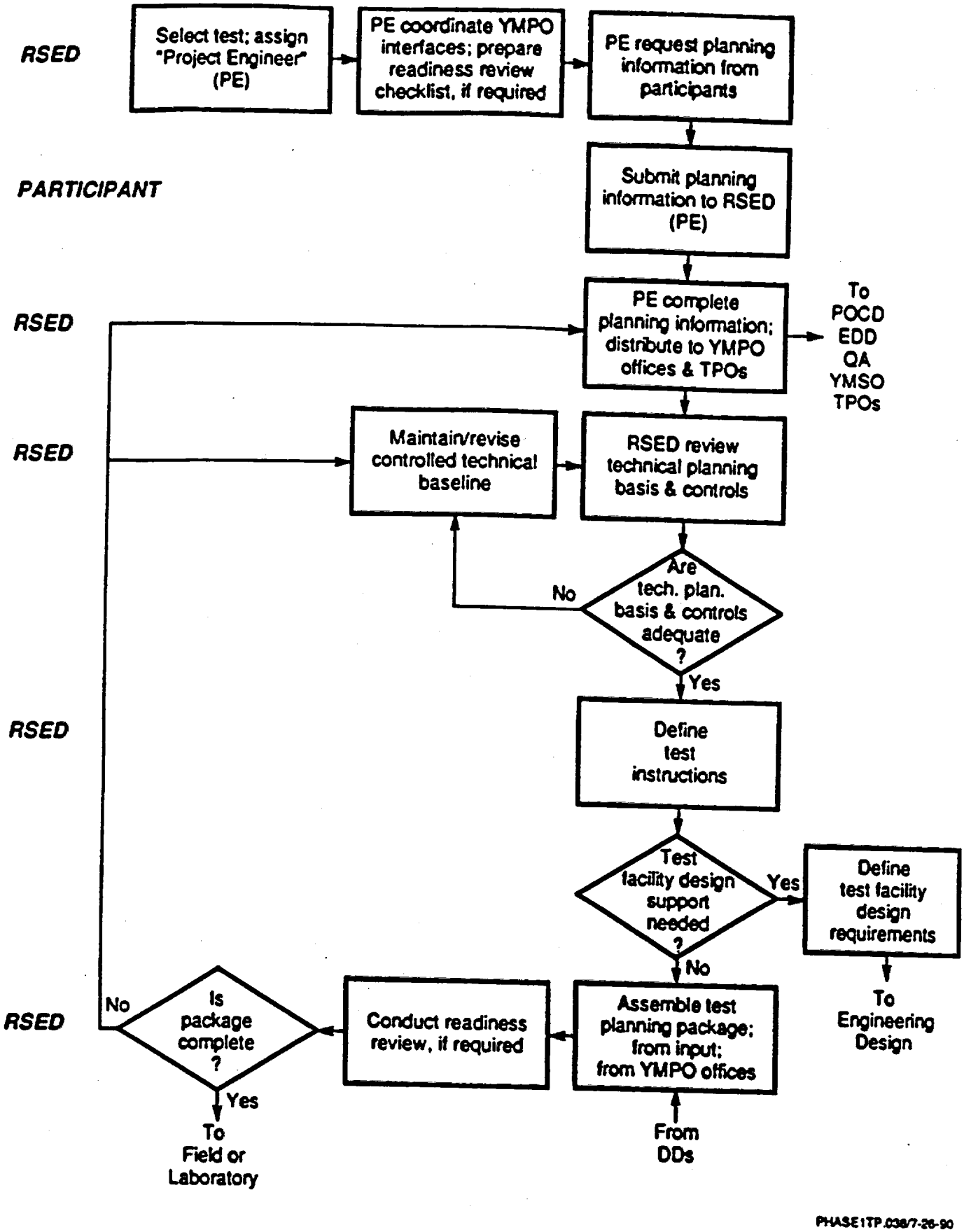


Figure 4-1. Phase 1: Testing.

Table 4-1. Responsibilities for Test Planning

Entity	Responsibilities
Regulatory and Evaluation Division Director	• Selects tests for implementation, and assigns Site PE to manage and coordinate test planning and execution
	• Prioritizes schedule for Study Plans
	• Approves Study Plans and SIPS
	• Selects the order for test implementation based on Project priorities, technical constraints, and budget constraints
	• Conducts impact analyses
	• Reviews and approves the T&EPB
	• Approves the Planning Package Test and Job Package
	• Reviews and approves nondesign-related instructions, hold points, criteria, and controls for field tests or laboratory experiments with respect to their readiness to proceed from planning stage to implementation stage
	• Approves data submittal schedules
Project Engineer	• PE compiles and distributes the planning information from input received from Project Participants
	• Coordinates with other DDs for environmental, engineering, financial support
	• Coordinates with Site Manager for field support
	• PE assembles the Test Planning Package, and conducts a review of the package for completeness
Other Division Directors	• Supports impact analyses through RSED

Table 4-1. Responsibilities for Test Planning (continued)

Entity	Responsibilities
Other Division Directors (continued)	• Coordinates field activities with RSED that have potential to impact waste isolation capability of sites or interfere with other tests in scientific investigation program • Provides support, as required, such as environmental survey, engineering design, financial/schedule information
Principal Investigator	• Recommends tests and controls • Prepares Study Plans and SIPs • Provides input to the T&EPB • Provides test planning information to RSED • Coordinates completion of prerequisites by all Participants involved in test • Prepares technical procedures for conducting the tests
Technical and Management Support Services (T&MSS)	• Develops and maintains controlled T&EPB • Integrates test program
Office of Civilian Radioactive Waste Management (OCRWM)	• Transmits Study Plans to the NRC

4.3 EVALUATE TECHNICAL PLANNING BASIS AND DEFINE TEST INSTRUCTIONS

A test that is selected for implementation will be reviewed to see if the planning basis, test requirements, and controls are sufficiently defined to:

- Integrate the test with associated activities
- Limit adverse impacts to the site
- Minimize test-to-test interference
- Ensure environmental impacts are within acceptable levels
- Monitor the tests and the controls
- Define facility design requirements
- Specify data schedules and interim data reports.

During the review of the planning basis, RSED will consider the factors in Table 4-2, at a minimum.

Test instructions will be defined, based on these controls, with the intent of minimizing impacts to the site, the environment, or to other tests. These test instructions will be considered in the design of the test and test facilities, and will become part of the Test Planning Package and Job Package prepared prior to authorization of field and laboratory work.

4.4 DEFINE DESIGN REQUIREMENTS

After an adequate technical basis for a selected test is in place and controls are identified, the facility design requirements for the test will be identified. The facility design requirements are approved and become part of the ESFDR or SBTFRD, depending on the test. These controlled documents provide the basis for the development of design drawings and construction specifications for the test facility. These drawings and specifications are transmitted to the Site Office as part of the Job Package, which is required by Project-level procedure.

4.5 COMPILE TEST PLANNING PACKAGE

The RSED, in coordination with other DDs, compiles test planning information, instructions, criteria, and controls for the field test or experiment, which include, at a minimum:

- Specific test controls to be used during the conduct of the test
- Specific instructions to the test coordinator and PI regarding hold points

Table 4-2. Factors to be considered in the Evaluation of Adequacy of Planning

1. Available technical information supporting the technical planning basis
2. Sufficiency of conceptual models applicable to topic
3. Relative need for the test in support of design and performance issues
4. Potential of test to cause an adverse impact on the site
5. Controls being employed to eliminate or minimize adverse impacts to the site
6. Controls to minimize interference between tests
7. Monitoring needed to evaluate effectiveness of controls
8. Actions to be taken if controls are not effective
9. Integration of test results with other tests and users of the data
10. Facilities and support needed from other organizations to conduct testing
11. Adequacy of preactivity environment surveys
12. Constraints upon field work to keep environmental impacts to within allowable levels

- Schedules for conducting tests and for interim data reports
- Controls to keep environmental impacts to within allowable levels
- Documentation of completion of prerequisites required before a test can begin

These instructions are compiled into the Test Planning Package according to a Project procedure.

If a readiness review is required, the PE initiates this review in accordance with appropriate Project procedures.

The completed Test Planning Package is forwarded to the appropriate TPO if the test is a laboratory test, or to the Site Manager if the test is to be conducted in the field at the site. The Site Manager incorporates the Test Planning Package into the Job Package, along with engineering designs and field instructions, as specified in the FMP and procedures. The Job Package may then be subject to readiness reviews as specified in the FMP.

Approval of the Test Planning Package is the responsibility of the RSED Director or designee. Approval of this package constitutes the completion of the planning phase. The test is then ready for the test implementation phase, described in Section 5.0.

5.0 TEST IMPLEMENTATION

Phase two of the test and evaluation process involves test implementation, management, and data collection. This phase begins for a specific test or group of tests after the RSED Director approves the Test Planning Package. The process for conducting and managing tests is shown in the flow diagram of Figure 5-1. Responsibilities are shown in Table 5-1. This phase is controlled through an implementing procedure to this plan.

The coordination and management of laboratory tests is the responsibility of the Participant organization. The coordination of field activities is the responsibility of the Site Office, in concert with the PI and the cognizant DD. The PI is responsible for conducting and monitoring the test, collecting and reporting data, and preparing progress reports in accordance with the test instructions received from the Project Office.

5.1 AUTHORIZE TEST

Transmittal of the approved Test Planning Package from the RSED Director to the Participant organization, the Site Office, and the other cognizant DDs indicates that the RSED Director believes that the test planning phase is complete. Activation of laboratory tests is controlled by procedures developed by the Participant organization. Activation of field tests at Yucca Mountain and the Nevada Test Site (NTS) is controlled by a Project procedure.

5.2 CONSTRUCT FACILITIES

Facility construction at the NTS or Yucca Mountain is performed under the authority and direction of the Site Manager, as described in the FMP. The Site Office will coordinate with the Nevada Test Site Office (NTSO) for activities on NTS land outside the Yucca Mountain Site, such as at G-Tunnel or other existing facilities. After preparations for testing are completed and the test facility is constructed, a final review will be conducted to ensure that the test and facility specifications have been met. This review will be conducted, as a minimum, by the Site Office (if a field activity), the PI whose test established the original facility requirements, EDD, and the RSED. In some cases, especially for complex test facilities, a demonstration test may be needed as part of this review.

Field activities in remote areas, such as prototype drilling offsite, will be managed by the RSED, or a Project Participant or subcontractor designated by the RSED Director. Test facilities at the national laboratories or other Participant locations will be controlled by the responsible TPO, using Participant procedures that implement this plan.

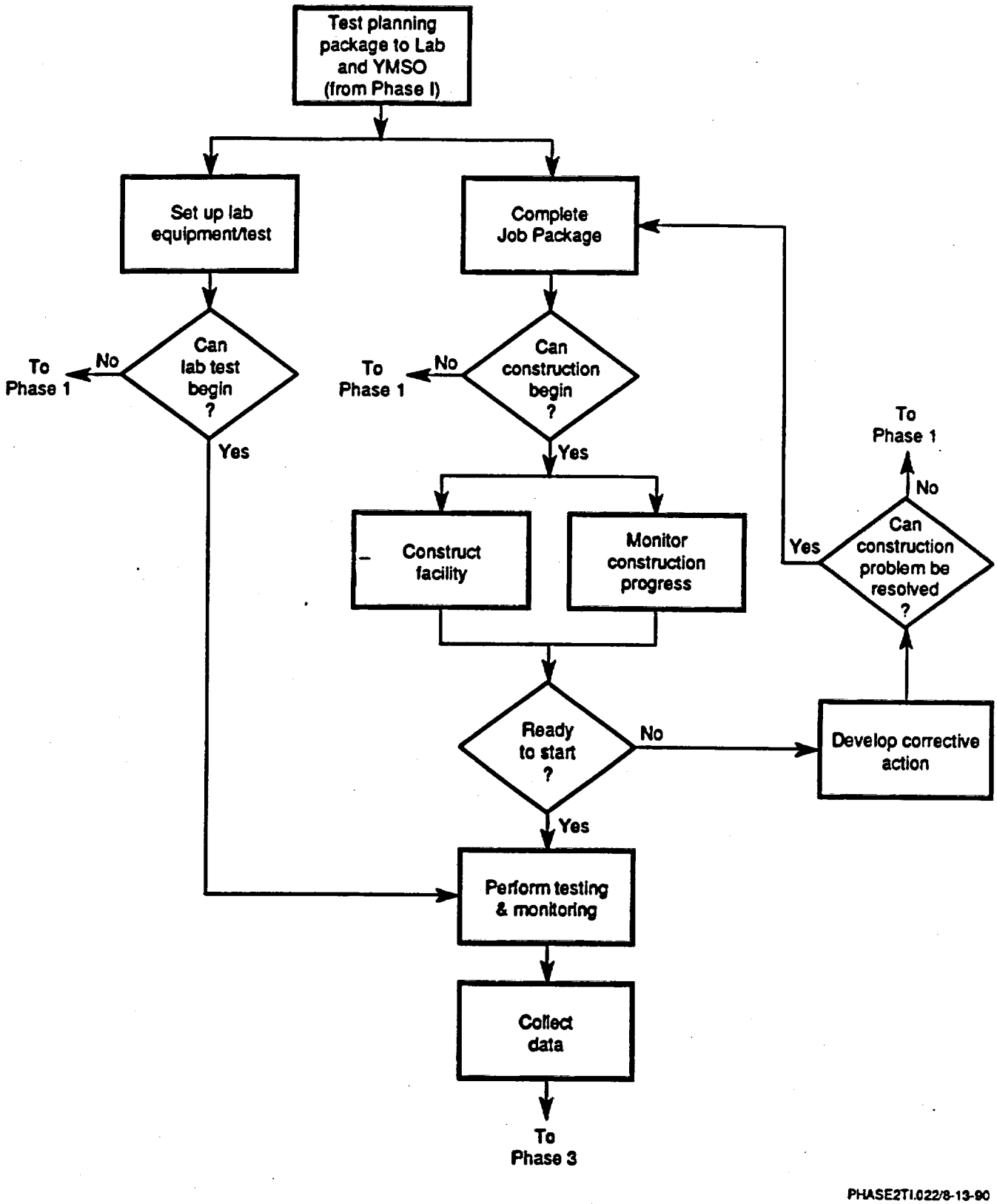


Figure 5-1. Phase 2: Test Implementation.

Table 5-1. Responsibilities for Test Implementation

Entity	Responsibilities
Regulatory and Site Evaluation Division-Project Engineer	• Manages field tests conducted at, and outside, the NTS, or assigns the management to a Project Participant or subcontractor • Conducts internal reviews of testing programs to ensure compliance with Study Plans and procedures • Resolves technical conflicts among test participants • Resolves technical conflicts among FTC and principal investigators • Ensures that SMF collects, processes, and stores samples collected in the field • Ensures that sample collection procedures are followed • Ensures that SOC reviews Project Participant sample requests and provides an adequate inventory of samples
Yucca Mountain Site Office Site Manager	• Reviews job package for support needs and adds schedules and budgets as required by the FMP • Coordinates tests with the NTS • Provides support to enable field implementation of site investigations • Conducts a final review of facility acceptability after initial test preparations are completed and before actual testing begins • Coordinates facility construction • Maintains test facilities • Implements job package through FTC • Monitors and reports test progress daily to the Regulatory and Site Evaluation Division

Table 5-1. Responsibilities for Test Implementation (continued)

Entity	Responsibilities
Principal Investigator	• Completes Participant prerequisites for conducting the test • Conducts and monitors test • Collects and reports data • Prepares progress and technical reports • Participates in final review of tests after initial test preparations are completed and before actual testing begins

5.3 CONDUCT TEST

The FTC monitors progress of the tests at Yucca Mountain, and prepares brief daily reports noting any unusual or unexpected conditions that have been encountered. Unusual or unexpected conditions are considered in accordance with established procedures, and could involve delaying the ongoing work while appropriate technical evaluations are conducted.

Test results are analyzed by the PI. Reports describing data and interpretations are prepared and submitted in accordance with the test instruction and the TDMP, which enables site evaluations and performance assessments to be conducted, and revisions to testing strategies to be made if needed, as described in Chapter 6.

The FTC also monitors tests daily to ensure that construction and testing activities are conducted within the controls established in the Test Planning Package. Daily reports are provided for making iterative assessments about adverse impacts caused to the site by these activities, or interference among test activities. Environmental monitoring is conducted to ensure impacts are within acceptable levels.

During the course of testing, the RSED Director, or designee, may conduct internal reviews of testing programs to ensure compliance with Study Plans and technical procedures.

Data, including FTC daily reports, are submitted to the Records Management System in accordance with the TDMP and its implementing procedures. In addition, FTC reports must be sent daily to the cognizant DDs.

6.0 DATA EVALUATION

This chapter describes activities that occur during the evaluation of the data collected by scientific investigations. This is the third and final phase of the test and evaluation process. The flow diagram for the evaluation phase (Figure 6-1), illustrates the logical relationships between the various decision points, evaluations, and actions comprising the evaluation phase. Responsibilities for this phase are presented in Table 6-1.

Data evaluations generally occur as a result of one of three situations associated with the testing:

1. The PI concludes that the objectives of the test, as described in the Study Plan, have been met.

2. The RSED has requested an interim evaluation of the results of an ongoing scientific investigation.

3. The results of monitoring of the scientific investigation suggest that an unexpected condition has been encountered or that prescribed controls have been or are expected to be exceeded.

These three status situations are reflected in the flow diagram: the first situation is associated with the decision point of whether the test objectives are met; the second and third are associated with the action to perform interim data evaluations.

There are several programmatic goals associated with the evaluation of the data. The most significant of these are to prepare evaluations and performance assessment calculations about:

1. The site with respect to disqualification.

2. The site with respect to suitability.

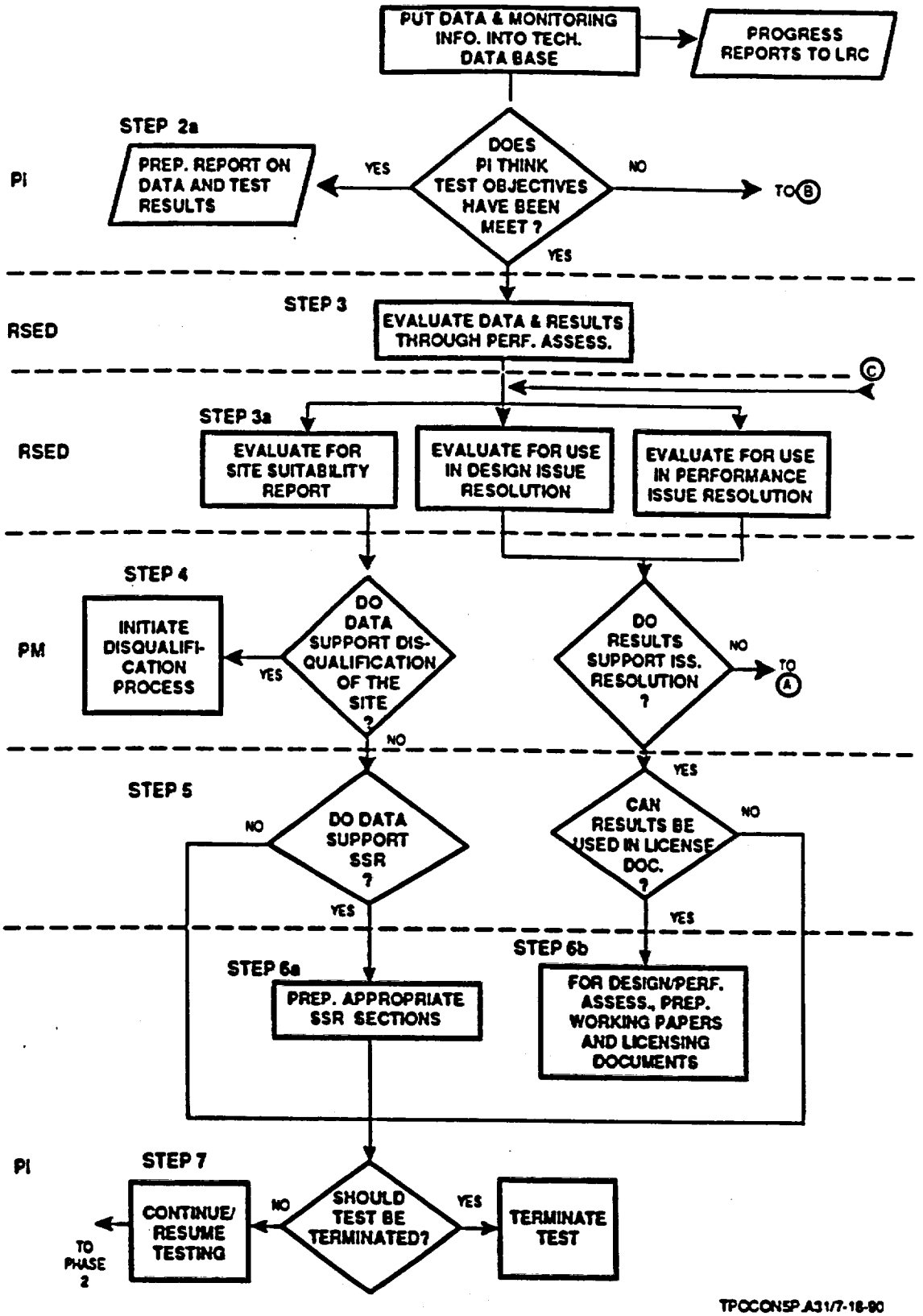
3. The site data with respect to their adequacy to support resolution of the design issues.

4. The site data with respect to their adequacy to support resolution of the performance issues.

5. The preparation of working papers, technical reports, and other documents to support the license application in accordance with the TSDMP.

These goals are reflected in the flow diagram as branches from the status situations described above. Each of the status situations and branches is individually described.

DATA USE AND EVALUATION



DATA USE AND EVALUATION
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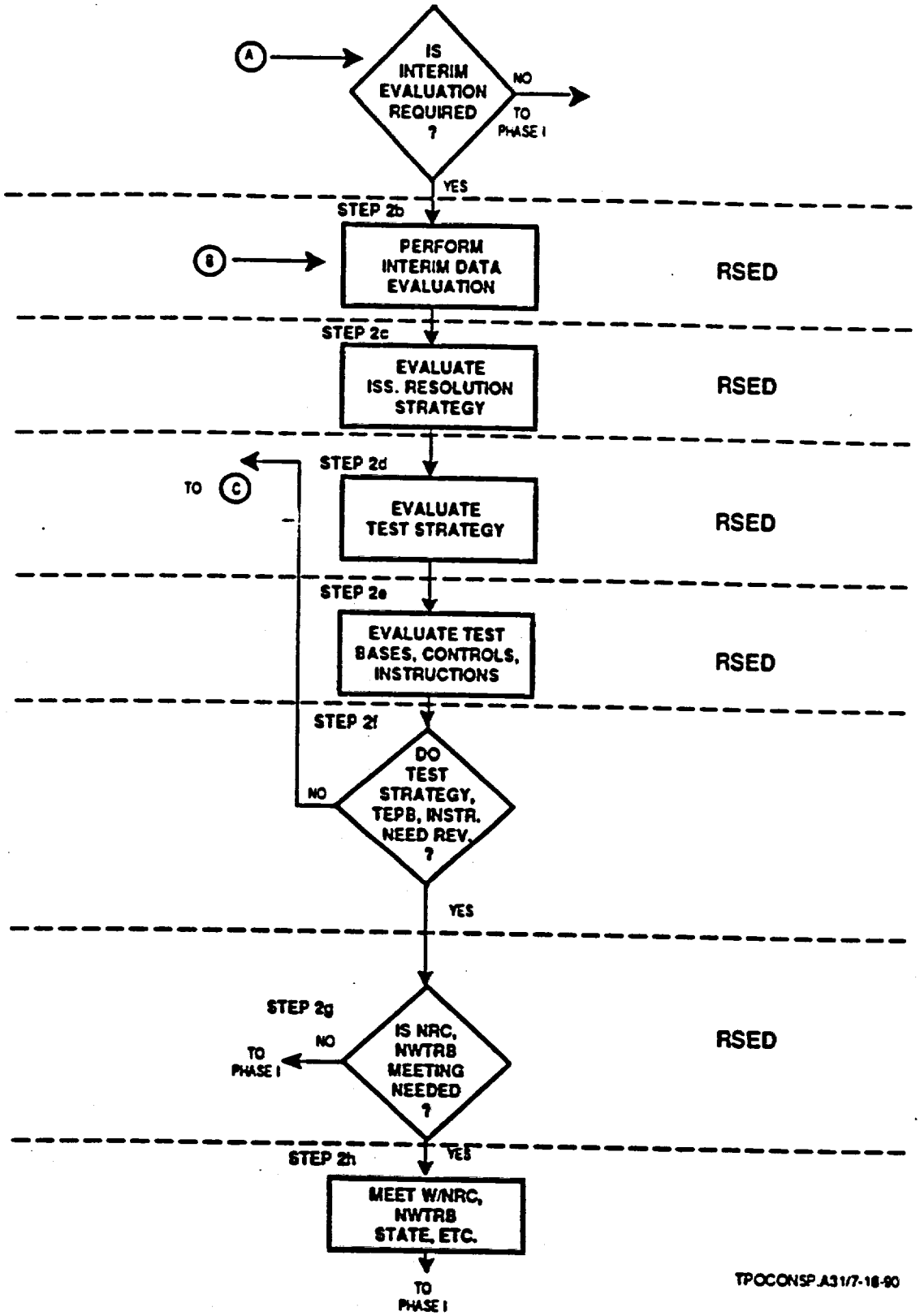

Table 6-1. Responsibilities for Data Evaluation Phase

Entity	Responsibilities
Regulatory and Site Evaluation Division	• Evaluates test results through technical or peer reviews and performance assessments with respect to disqualification • Evaluates test results through technical or peer reviews and performance assessments with respect to suitability • May decide to continue test as part of the performance confirmation phase of the Project • Interfaces with design activities, participates in design reviews • Initiates Performance Assessment evaluations and oversees technical or peer reviews required by complexity, controversy of test or exceedance of controls or limits • Initiates and oversees technical or peer reviews and performance assessments for interim evaluations • After technical or peer review and performance assessments have been done, decides to continue investigation unchanged, to terminate the investigation, or to modify the investigation • Determines if meeting with the U.S. Nuclear Regulatory Commission, the Nuclear Waste Technical Review Board, or other agency is needed • Continually reviews issues emanating from outside the Project related to test and evaluation program and determines if the issues require technical or peer reviews or evaluations • Makes and documents decisions regarding the need to continue ongoing tests or conduct different tests to provide data to meet regulatory or licensing needs • Evaluates unexpected geologic conditions

Table 6-1. Responsibilities for Data Evaluation Phase (continued)

Entity	Responsibilities
Principal Investigator	• Concludes whether the test objectives have been met
	• Prepares reports describing the test
Project Manager	• Approves decisions on site disqualification and site suitability

6.1 MANAGE DATA

The results of scientific investigations, including data and interpretations, will be placed in the TDBs in accordance with the TDMP. Other Project records, particularly those generated through the monitoring of the scientific investigations by the FTC and specific reports requested in the Test Planning Package, will be distributed in accordance with the TDMP. Copies of the daily FTC report will also be sent to the cognizant Division Offices involved in managing and monitoring these activities. Certain information gathered by the test monitors, especially that related to the discovery of unexpected conditions or exceedence of controls or limits, would be reported to the RSED as it is obtained so decisions could be made in a timely fashion.

6.2 EVALUATE COMPLETED TESTS

Evaluation of the data and results of scientific investigations begins with an assessment of the completion of a particular test. Completion is evaluated with respect to the test objectives established in the Planning Basis. This evaluation of whether the test objectives have been met divides the evaluation process into the two main paths in the flow diagram illustrated in Figure 6-1. The first path covers tests for which the PI has concluded that the test objectives have been met. This path is described in Section 6.2; Section 6.3 describes the path for tests that RSED has either chosen to evaluate on an interim basis, or is evaluating due to unexpected conditions, exceedence of limits or controls, or some other reason.

When the test objectives have been met as noted in Figure 6.1, the PI will prepare reports describing the test, the data obtained, the interpretations, and the appropriate conclusions. The content of the reports is placed in the Project TDBs, where it is used in evaluations of site suitability, issue resolution, design, and preparation of the license application. That process is described in the TSDMP.

When the test objectives have been met, RSED evaluates the results for three uses: (1) for site suitability report, (2) for design, and (3) for performance assessment.

6.2.1 EVALUATE RESULTS FOR USE IN SITE SUITABILITY REPORT

The logic shown in Figure 6-1 initially requires the RSED to prepare an assessment, or evaluation, of the site with respect to disqualification. The bases for a conclusion that the site should be disqualified would be developed through performance assessments employing sensitivity and uncertainty analyses. Performance assessments are conducted by Project Participants at the direction of RSED. Project Participants will implement their own procedures to govern the conduct of performance assessments.

Next, the RSED would prepare assessments of the site with respect to suitability. If the assessments show that the test objectives have been met, then the test may be terminated and the results of the test used in the preparation of other documentation about suitability. The RSED Director may elect to continue a completed test as part of the performance confirmation phase of the Project. If the assessment shows that the test objectives have not been met, then the test would be continued, or modified if the objectives cannot be met. Any modifications to tests or objectives will be in accordance with applicable change control processes and will be documented in the planning basis.

6.2.2 EVALUATE RESULTS FOR USE IN DESIGN

The second evaluation addresses the use of the test results in design activities. After the data from the scientific investigations have been placed in the Project TDBs, it is appropriate to use them in design activities, specifically to ascertain whether they support resolution of the design issues in the Issues Hierarchy. This evaluation will be undertaken as part of the design process and is conducted in accordance with design review procedures. RSED will interface with the design activities by EDD, and in particular, participate in the EDD design reviews to gain an understanding whether the data support issue resolution. If the data support design issue resolution or appear that they will, a joint EDD/RSED decision can be made to terminate the test and use the data and results in the preparation of the appropriate sections of the working papers and licensing documents, as described in the TSDMP.

If the evaluation showed the data were not adequate to support issue resolution, the planning basis for the test (particularly the test objectives) would have to be evaluated as described in Section 4.2, and modified using the appropriate change control procedures.

6.2.3 EVALUATE RESULTS FOR USE IN PERFORMANCE ASSESSMENT

The third evaluation addresses the use of the test results in performance assessment calculations. After the data from the scientific investigations have been placed in the Project TDB, it is appropriate to use them in performance assessment activities, specifically to ascertain whether they support resolution of the performance assessment issues. These evaluations will be undertaken as part of the performance assessment program, which is under the control of the RSED and described in the PAMP. The performance assessment activities will be specifically focused on calculations that address the reduction in uncertainty in the data and the resolution of the performance issues. Depending on the complexity and degree of controversy associated with the particular test, the RSED may choose to employ a technical review, a technical analysis review, or a peer review of the data. The RSED would establish the review criteria, set the qualifications for the reviewers, and initiate the review in accordance with applicable procedures.

If the data support performance issue resolution or appear that they will, the decision can be made to terminate the test and use the data and results in the preparation of the appropriate sections of the working papers and licensing documents, as described in the TSDMP.

If the data were not adequate to support, or appeared to be not adequate to support issue resolution, the planning basis for the test (particularly the test objectives) would have to be evaluated as described in Section 4.2 and modified using the appropriate change control procedures.

6.3 INTERIM EVALUATION OF RESULTS

The other category of evaluations described in this chapter are of tests that RSED has either chosen to evaluate on an interim basis, or is evaluating of necessity due to presence of unexpected conditions, the exceedence of specified limits or controls, or for other reasons. These are addressed as the second situation on the flow diagram illustrated in Figure 6.1. Also of particular importance are the evaluations of ongoing tests. These evaluations are necessary to ensure that ongoing scientific investigations, many of which were in process prior to the issuance of the SCP, are in conformance and integrated with the scientific investigations initiated under this management plan. As illustrated in Figure 6.1, the branch that addresses the evaluation of interim data is composed of three general categories of assessment.

In practice, the three evaluations could overlap and could be addressed in one or more comprehensive technical reviews of the data. Depending on the complexity and degree of controversy associated with the particular test, the RSED may choose to employ technical reviews, technical analysis reviews, or peer reviews of the data. The RSED would establish the review criteria, set the qualifications for the reviewers, and initiate the necessary reviews in accordance with applicable procedures.

The first of the three evaluations of interim data concerns a possible need to change the issue resolution strategies that formed the basis for the test programs in the SCP. The licensing strategy, tentative goals, and level of confidence for performance parameters and related parameters that were developed as part of the performance allocation process in the SCP, may need to be changed to reflect the results of the scientific investigations. The performance allocation process was founded upon data about the site that was available at the time of preparation of the SCP; it was admittedly preliminary, and there was an expressed expectation that elements of it would change. Changes in the performance measures could directly result in changes to the test strategies, and perhaps a reduced need for, or an increased emphasis on, a particular test. Because the elements of the performance allocation process form a significant portion of the test planning basis, changes to the issue resolution strategy would typically result in a reconsideration of the planning for the test (Chapter 4). The evaluations also could support a conclusion that the test could be stopped.

The second of the three evaluations of interim data concerns changes to the test bases, instructions, or controls. Each testing activity in both the SBT program and the ESF will have to be periodically evaluated to assess potential effects on the physical conditions at the site. Potential impacts on the natural barriers and postclosure performance objectives will have been determined prior to test authorization. Established limits on fluids and material use, and other instructions relevant to the conduct of the test may need to be revised. Also, environmental impact monitoring established in the EMMP will be performed for the tests and may have an effect on the way the test is conducted. If evaluations of the results of scientific investigations or the results of monitoring for impacts associated with the test suggest that the controls or limits have been or will be exceeded, it will be necessary to re-establish controls and investigate mitigative measures. Alternatively, the evaluations could support a conclusion that the controls or limits are too severe or strict, and it would be appropriate to relax them. In either case, a modification to the planning basis (Chapter 4) will be made. The discovery of unexpected conditions, as defined by procedure, would similarly need to be evaluated to ensure that the limits, controls, and test bases were adequate.

The third of the three evaluations of interim data concerns changes to the integration strategies that formed the basis for the authorization of scientific investigations to proceed. The evaluations of the data could suggest alternative priorities for the tests or provide statistical information that could result in changes to the program drilling or exploration strategies. This information, considered together with current budget information and management policies, could indicate a need to modify the planning basis (Chapter 4).

As a result of the three evaluations on the interim data, the RSED will gain a basis to decide whether or not the planning basis or test instructions or controls need modification. If the evaluations support the conclusion that the planning basis, test instructions, controls, or integration do not need modification, the conclusion will be documented and the data would then be available for use in a preliminary fashion in the site suitability and issue resolution evaluations described in Section 6.2. If it is concluded that the planning basis, test instructions, controls or integration do need

modification, the RSED must ascertain whether a meeting with the NRC, NWTRB, or other agency is warranted or required.

If the RSED concludes that a meeting with the NRC, NWTRB, or other agency is not warranted, it can proceed directly to the modification of the planning bases (Chapter 4). If a meeting or technical exchange is necessary, it will be arranged and the necessary material prepared. Following the meeting or technical exchange, any necessary additional evaluations will be undertaken and the modification of the planning bases can occur. The modification to the planning bases, which would be done in accordance with the appropriate change control procedures, could result in changes to the Study Plan or other changes to the Test Instruction Package.

6.4 POLICY GUIDANCE

The Project is influenced by a number of external entities, including the NRC, the NWTRB, the National Academy of Science, the Edison Electric Institute, the State of Nevada, and various public interest groups. Each of these organizations reviews the progress and results of scientific investigations and often raises issues in private or public forums that DOE must address. It is likely that some of these issues and concerns will influence the testing strategies or the site characterization program. The flexibility to address this possibility is incorporated into the test management system presented in this plan.

Issues emanating from outside the Project that are related to the testing program are reviewed by the RSED Manager to evaluate his/her potential for affecting the strategies for conducting scientific investigations. The RSED Manager may ask for a technical review, peer review, or technical analysis review of the issue to provide additional information from which a recommendation can be made. The RSED would establish the review criteria, set the qualifications for the reviewers, and initiate the review in accordance with applicable procedures. If a recommendation that has ramifications to the test program is made, impacts to the test program arising from that recommendation will be evaluated and the proposed changes to the test program will be processed in accordance with applicable procedures.

7.0 RESOURCE REQUIREMENTS

Resource requirements in the current phase of the repository program are described in the PMP. Major facilities for the site characterization program include a variety of facilities and structures that will be used to complete Project testing. Some of these facility resources are described in Table 7-1.

Table 7-1. Major Facilities for Site Characterization

Facility Name	Description Examples
Surface-based test facilities	• Drill holes
	• Trenches
	• Instrument and monitoring stations
	• Test plots
Exploratory Shaft Facility	• Surface support building and equipment
	• Two accesses
	• Demonstration breakout rooms
	• Main test level
	• Exploratory drifts
Area 25 Support facilities	• Sample Management Facility
	• Radiological monitoring
	• Hydrology Research Laboratory
Prototype Test facilities	• G-Tunnel
	• Other NTS tunnels
	• Climax Mine
	• Field locations
Laboratory facilities	• Los Alamos National Laboratory
	• Sandia National Laboratories
	• Lawrence Livermore National Laboratory
	• U.S. Geological Survey
	• Pacific Northwest Laboratory
	• Nevada Test Site laboratory facilities

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APPENDIX A

ILLUSTRATION OF WHERE SPECIFIC PARTS OF THE SCP HAVE BEEN REALLOCATED INTO THE DOCUMENT HIERARCHY