

JUL 21 1994

**MEETING MINUTES**  
**DEPARTMENT OF ENERGY/NUCLEAR REGULATORY COMMISSION**  
**BI-MONTHLY MANAGEMENT MEETING**  
**MAY 19, 1994**

Staff from the United States (U.S.) Nuclear Regulatory Commission held a management meeting at NRC headquarters in Rockville, Maryland with representatives of the U.S. Department of Energy (DOE) to discuss items of mutual concern regarding the high-level waste repository program. Also in attendance were representatives of the Nuclear Waste Technical Review Board; the U.S. Office of Management and Budget; the U.S. General Accounting Office; the State of Nevada (NV), and Nye County, NV. The other Affected Units of Local Government were notified of the meeting, but did not attend. An attendance list is included as Attachment 1.

The first half of the meeting consisted of a briefing by DOE and a discussion by all participants present of DOE's proposed program approach for FY 95 and out-years (see Attachment 2). Representatives of DOE explained that Congress intended that the program created by the Nuclear Waste Policy Act, as amended, demonstrate progress in a cost-effective manner. According to DOE, its proposed program approach:

- 1) Would have DOE visit decisions involving suitability findings in a "stepwise manner" during site characterization;
- 2) Would initiate the National Environmental Policy Act process as soon as possible;
- 3) Would identify the types of information considered necessary for construction authorization and for operating;

(This would include reliance on bounding of conditions in order to make determinations on radionuclide releases and total system performance. DOE believes that this approach would enable it to develop a license application for construction authorization in accordance with 10 CFR Part 60).

- 4) Would involve stakeholders and the public before key decisions are made.

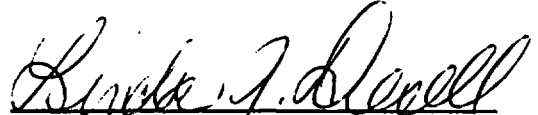
In a second presentation (Attachment 3), a representative of DOE discussed its proposed approaches for resolving several issues of mutual concern to NRC and DOE. The attachment describes these approaches. Also included in this presentation (and addressed in Attachment 3) was a discussion of the planned submittal of documents by DOE to NRC and the priority DOE placed on these

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documents. The NRC staff then discussed its prioritization of reviews of DOE documents currently in-house (Attachment 4). Finally, DOE and NRC agreed that a tracking system for DOE document submittals and NRC reviews would be developed for use in future Management Meetings.



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High-Level Waste & Uranium Recovery  
Projects Branch  
Division of Waste Management  
Office of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission



Linda Desell, Chief  
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Office of Civilian Radioactive  
Waste Management  
U.S. Department of Energy

**NRC/DOE MANAGEMENT MEETING**

**ATTENDANCE LIST**

**MAY 19, 1994**

**ATTACHMENT 1**

DIVISION OF WASTE MANAGEMENT  
NMSS, NRC

ATTENDANCE LIST

SUBJECT OF MEETING: NRC/DOE Agreement DATE: 5/19

LOCATION: OWF 4B11 Rockville, MD

NAME:	ORGANIZATION:	TELEPHONE NO:
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Chris Guberg	<del>DOE</del>	(202) 586-8869
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DIVISION OF WASTE MANAGEMENT  
NMSS, NRC

## ATTENDANCE LIST

SUBJECT OF MEETING: DR/DOF ACCT

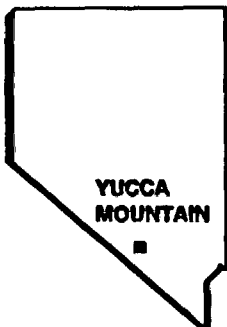
DATE: 5/11

LOCATION: 9000 4th Rockville, MD

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U.S. DEPARTMENT OF ENERGY

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M**



**YUCCA MOUNTAIN**

**SITE CHARACTERIZATION**

**PROJECT**

# **PROPOSED PROGRAM APPROACH**

**PRESENTED TO**

**NUCLEAR REGULATORY COMMISSION**

**PRESENTED BY**

**STEPHAN J. BROCOUM**

**ASSISTANT MANAGER**

**SUITABILITY AND LICENSING**



**MAY 19, 1994**

# Current Program Situation

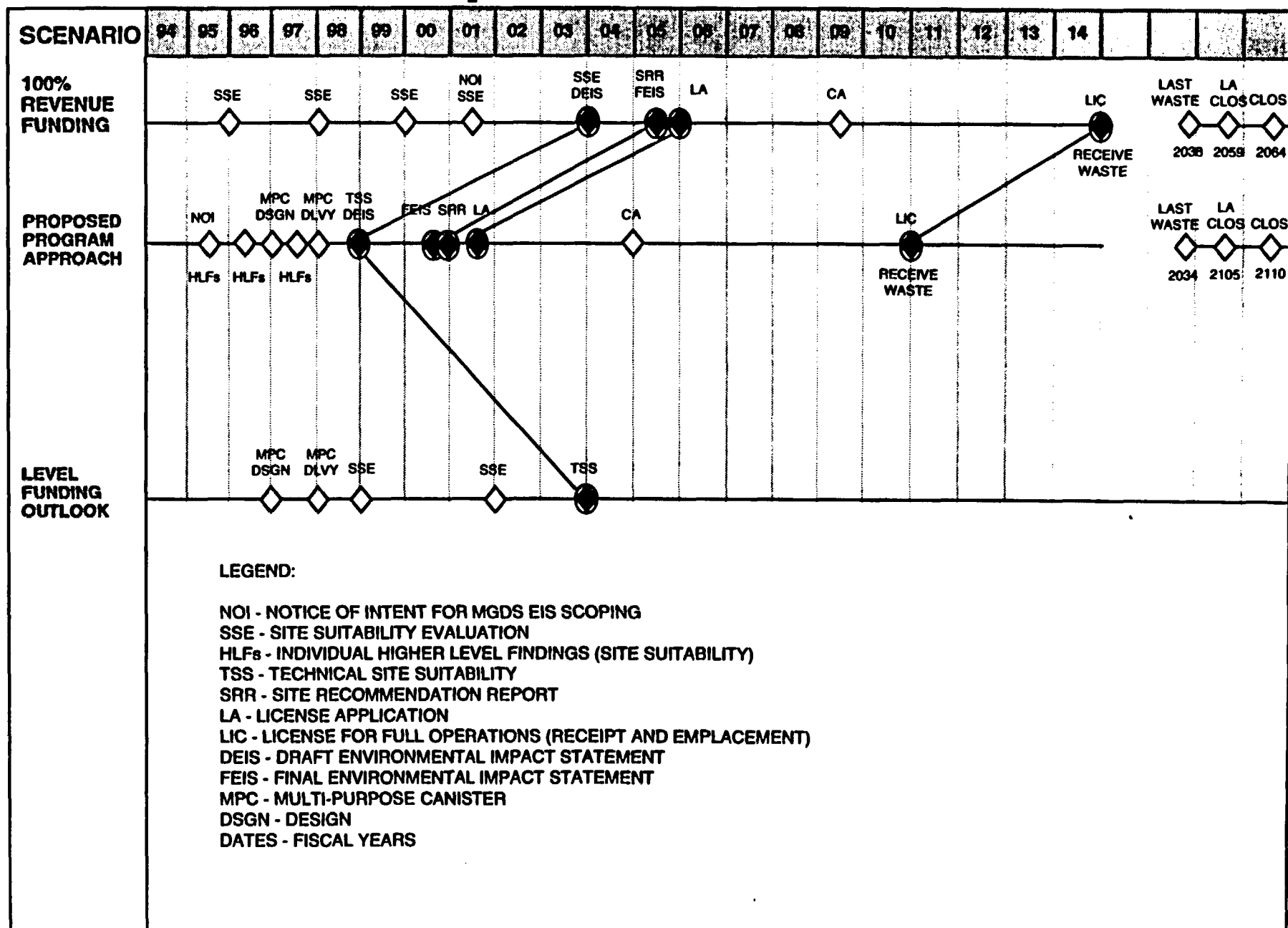
- **The current program, as described in the SCP and implemented in the ESAAB approved baseline for Yucca Mountain, cannot be accomplished with projected funding level**
- **Congressional expectations: streamline program to show demonstrable progress at reduced cost**



# **Alternative Program Strategies**

- **Two alternatives were evaluated:**
  - **A program restructured for management efficiency operating within existing legislative and regulatory framework (assumes availability of increased funding)**
  - **A resource-constrained program operating within existing legislative and regulatory framework (assumes level funding outlook)**
- **DOE is moving forward with further evaluation of restructured program within existing legislative and regulatory framework (Proposed Program Approach)**

## Comparative Schedules



# **Basis for Proposed Program Approach**

- **Responds to Congressional expectations to show demonstrable progress at reduced cost**
- **Consistent with original intent of NWPA and 10 CFR 60 regarding sequencing of DOE and NRC decisions**
- **Reflects some of the recommendations of the NAS Report, "Rethinking High Level Waste"**
- **Responds to suggestions from NWTRB and others regarding the need for effective management of a well focused technical program**

# **Planning Assumptions**

- **No changes to legislative and regulatory framework - make use of inherent flexibility**
- **Increased funding in FY95 and assured funding in out-years**
- **Waste acceptance and near-term storage issues addressed by delivery of MPCs to utilities starting in 1998**
- **Restructure site characterization program based on available information to focus on most significant issues for suitability and licensing**
- **Retrievability maintained for up to 100 years**

# **Summary of Proposed Top-Level Strategy for Repository**

- **Make formal suitability findings in a stepwise manner**
- **Initiate the NEPA process as soon as possible**
- **Provide sufficient information in LA to support NRC's reasonable assurance finding**
  - **Ensure safety of repository operations**
  - **High confidence in waste package containment for at least 1,000 years**
  - **Bounding/conservative analyses relevant to radionuclide releases and total system performance for 10,000 years**
  - **Testing programs to focus on supporting design (construction, operations, waste package performance) and bounding/conservative analyses**
  - **Additional information to confirm basis for assessment of long-term performance provided under post-LA performance confirmation program**
- **Involve stakeholders and public prior to making key decisions**

# Preliminary Site Suitability Decision Schedule

## SURFACE PROCESSES

- Erosion; -Surf. Char; -Precl Hydro Report
- Peer Review
- Draft DOE Reg. Assessment: HLF Evaluation

## PRECLOSURE ROCK CHARACTERISTICS

- Report
- Peer Review
- Draft DOE Reg. Assessment: HLF Evaluation

## SEISMIC/TECTONIC/VOLCANIC

- Report
- Peer Review
- Draft DOE Reg. Assessment: HLF Evaluation
- Postcl Tect DSQ & Precl Tect QC and DSQ

*Draft DOE Reg. Assessment  
Reas Avail Tech: HLF Evaluation*

## GEOCHEM/POSTCL ROCK CHARACTERISTICS

- Hum Inter; -Postcl Rock Char; -Geochem Report
- Peer Review

## GEOHYDROLOGY/TRANSPORT

- Geohydr/Trans; -Climate Reports
- Peer Review
- Draft DOE Reg Assessment
- Ground Water Travel Time DSQ: HLF Evaluation

## TOTAL SYSTEM PERFORMANCE ASSESSMENT

- TSPA Peer Review

*Draft DOE Reg Assmnt: HLF Evaluation on Postcl Syst  
& all remaining Postcl QCs (Geohyd, Geochem, Rock  
Char, Climate, Tect)*

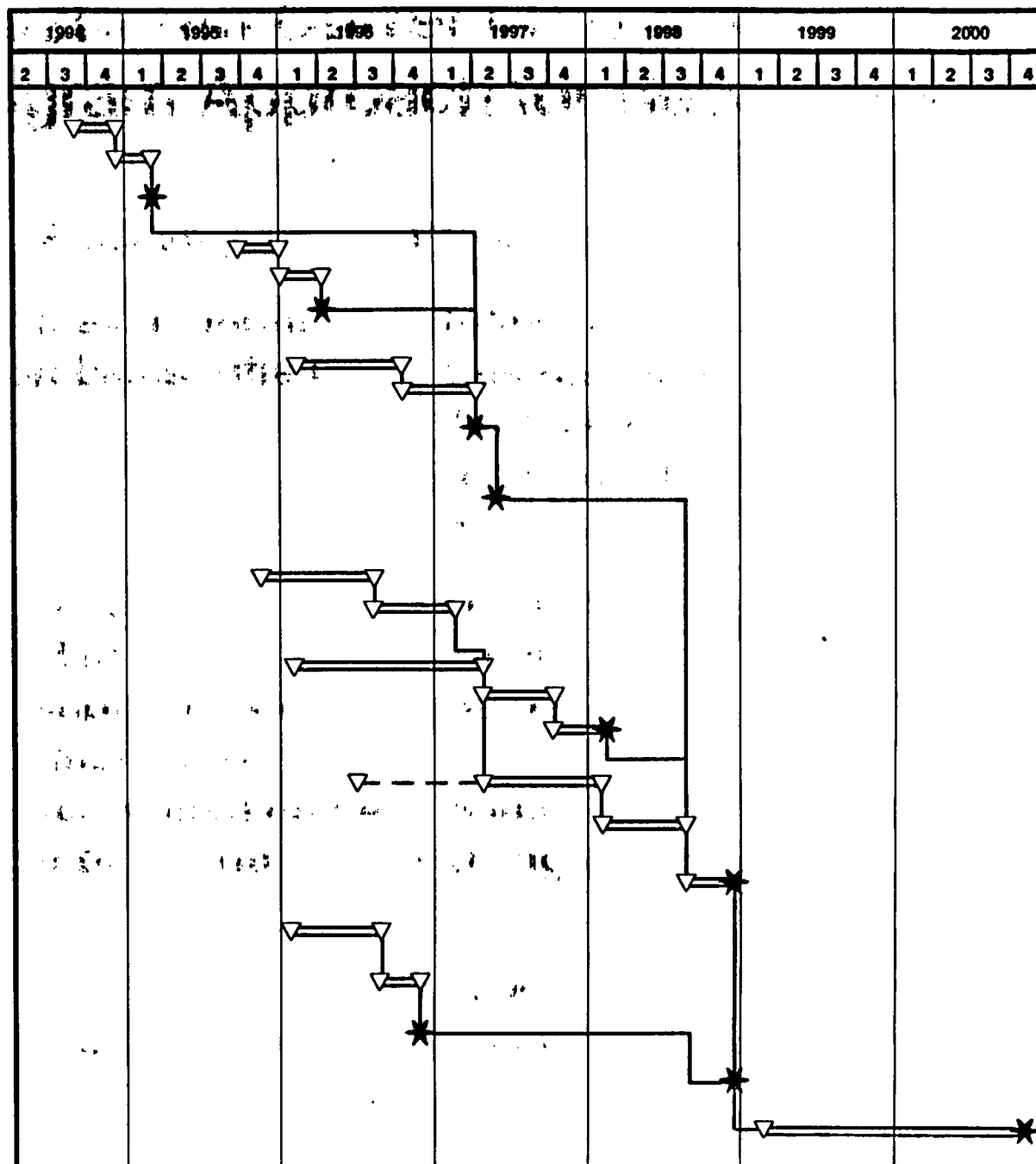
## PRECLOSURE RADIOLOGICAL SAFETY

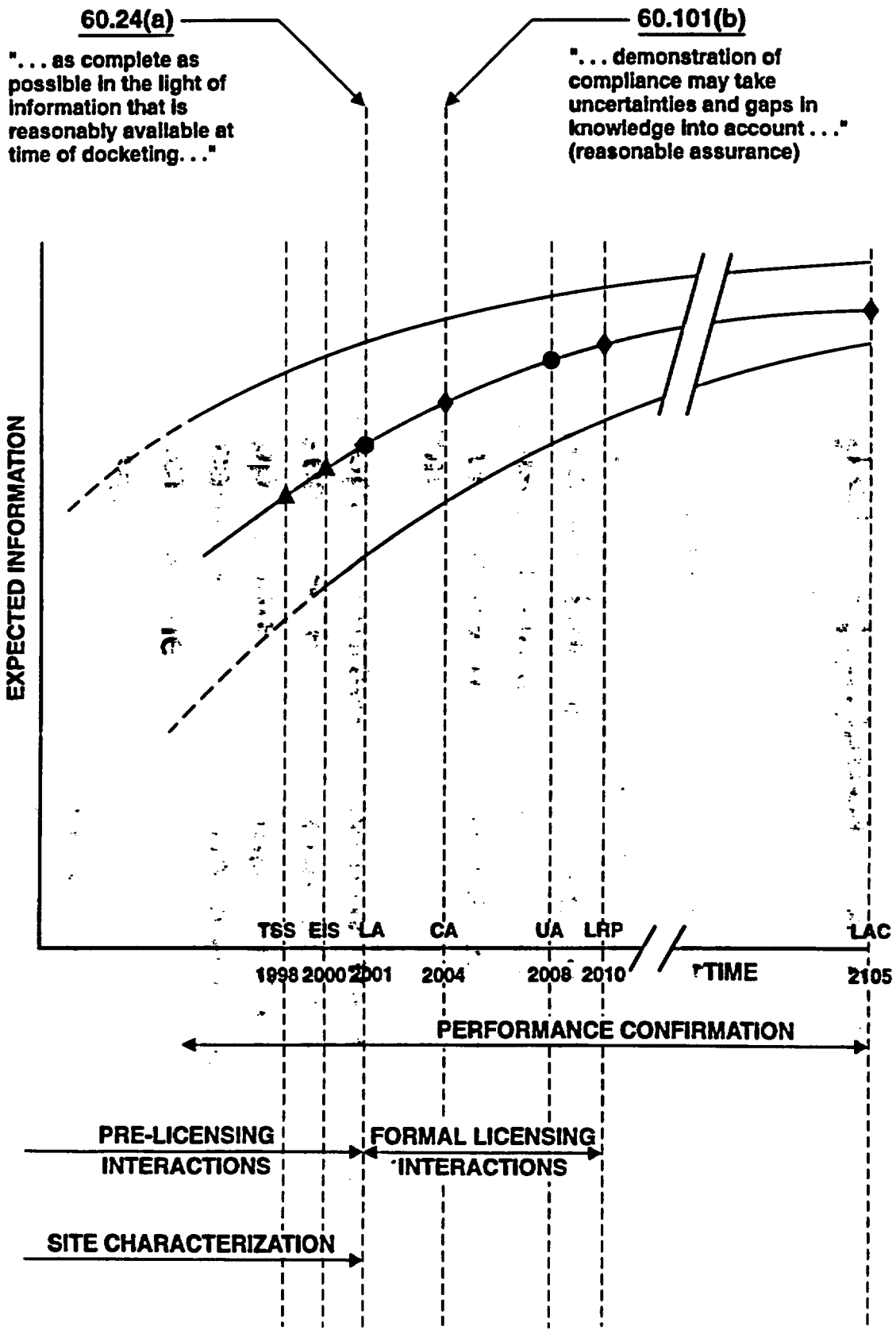
- Site O&C; -Pop Density; -Offset Install; -Meterol
- Peer Review

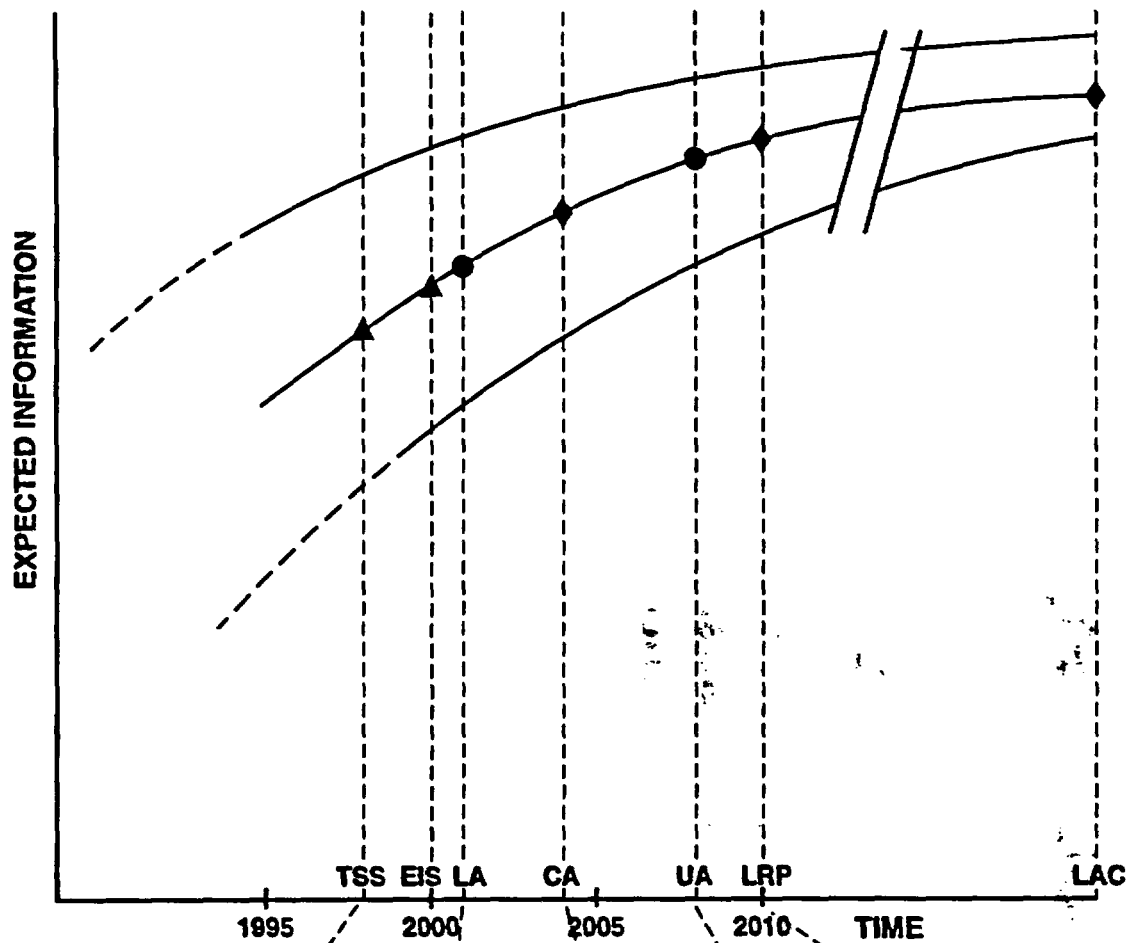
*Draft DOE Reg Assessment Preclos Rad Safety:  
HLF Evaluation*

## TECH. SITE SUITABILITY EVALUATION

**PREPARE SITE RECOMMENDATION REPORT  
& AFFIRM PREVIOUS FINDINGS**







	TSS/DEIS - 1998	LA/CA - 2001	CA - 2004	ULA/R&P - 2008	LR&P - 2010	Perf. Confirm. *
<b>NAT.BAR.EVAL</b>						
GWTT	Bounded	Sub. Finished		Final		
Scenarios	Bounded	Bounded -		Sub. Finished		Final
Subsystem Analyses	Bounded	Sub. Finished		Final		Updated
TSPA Source Term	Bounded Model	Bounded Model		Complete		Confirmed
Post Cl. TSPA	Bounded	Bounded		Sub Finished		Final
<b>REPOSITORY DESIGN</b>	ACD	Title I	Title II	Title III	Title III	Title III
Backfill/Seals		Title I (Flex)		Demonstrated		Decision
Materials Inter'n	Bounded	Bounded	Mat'l's Sel.			
Retrievability		Title I	Proof of Princ.	Demonstrated		
Ar. Pwr. Den.	Bounded	Bounded		APD Decision		Final APD
Emplacement Mode		Title I		Decision		
Preci. P.A.	Bounded	Sub. Finished		Final		
Lag Storage	ACD	Title I	Title II	Title III		
Rail Spur	CD		Title II/III	Title III/III	Title III	
<b>WASTE PKG. DESIGN</b>	ACD/Title I	Title II (P'type)	Full Scale	P'type Tested	Title III	Oper'n's Conf.
Sub Cmp. Con.		Complete		Updated		
Criticality Con.		Complete		Updated		
Contr. Rel.	Bounded	Conserv. Calcs		Complete		
Materials	Concepts	Determined		Test Complete		Model Confirmed
Waste Form		Src Term Bnd'd		Final Src Term		
EBS Thermal	Concepts	Bounded				

MDVGRAPH1.CDR.129/4-20-94

MDVGRAPH.CDR.129/5-13-94



# Information Levels Supporting Key Milestones

	TSS/DEIS - 1998	LA/CA - 2001	CA - 2004	ULA/R&P - 2008	L/R&P - 2010	Perf. Confirm. *
<b>NAT.BAR.EVAL.</b>						
<b>GWTT</b>	Bounded	Sub. Finished		Final		
<b>Scenarios</b>	Bounded	Bounded		Sub. Finished		Final
<b>Subsystem Analyses</b>	Bounded	Sub. Finished		Final		Updated
<b>TSPA Source Term</b>	Bounded Model	Bounded Model		Complete		Confirmed
<b>Post Cl. TSPA</b>	Bounded	Bounded		Sub Finished		Final
<b>REPOSITORY DESIGN</b>	ACD	Title I	Title II	Title III	Title III	Title III
<b>Backfill/Seals</b>		Title I (Flex)		Demonstrated		Decision
<b>Materials Inter'n</b>	Bounded	Bounded	Mat's Sel.			
<b>Retrievability</b>		Title I	Proof of Princ.	Demonstrated		
<b>Ar. Pwr. Den.</b>	Bounded	Bounded		APD Decision		Final APD
<b>Emplace. Mode</b>		Title I		Decision		
<b>Precl. P.A.</b>	Bounded	Sub. Finished		Final		
<b>Lag Storage</b>	ACD	Title I	Title II	Title III		
<b>Rail Spur</b>	CD		Title I/II	Title II/III	Title III	
<b>WASTE PKG. DESIGN</b>	ACD/Title I	Title II (P'type)	Full Scale	P'type Tested/Title III	Title III	Oper'ns Conf.
<b>Sub Cmp Con</b>		Complete		Updated		
<b>Criticality Con.</b>		Complete		Updated		
<b>Contr. Rel.</b>	Bounded	Conserv. Calcs		Complete		
<b>Materials</b>	Concepts	Determined		Test Complete		Model Confirmed
<b>Waste Form</b>		Src Term Bnd'd		Final Src Term		
<b>EBS Thermal</b>	Concepts	Bounded				

\* Performance confirmation program is required to start during site characterization and continue until permanent closure (10 CFR 60.140 (b))

## Studies Required to Support Expected Information

[illegible]

# Differences Between Current Program and Proposed Program Approach for Repository

<u>Key Elements</u>	<u>Current Program</u>	<u>Proposed Program Approach</u>
Site suitability evaluation	<ul style="list-style-type: none"><li>• Interim evaluations</li><li>• Design basis-Title I</li></ul>	<ul style="list-style-type: none"><li>• Individual interim findings</li><li>• Design basis - ACD</li><li>• Technical site suitability determination by Secretary - 1998</li></ul>
EIS	<ul style="list-style-type: none"><li>• Draft 2003</li><li>• Final 2005</li><li>• Final supports site recommendation</li><li>• Final accompanies LA</li><li>• Design basis-Title I</li></ul>	<ul style="list-style-type: none"><li>• Draft 1998</li><li>• Final 2000</li><li>• Same</li><li>• Same</li><li>• Design basis - ACD</li></ul>
Site Recommendation	<ul style="list-style-type: none"><li>• 2005</li><li>• Design Basis-Title I</li></ul>	<ul style="list-style-type: none"><li>• 2000</li><li>• Same</li></ul>

# Differences Between Current Program and Proposed Program Approach for Repository

(Continued)

<u>Key Elements</u>	<u>Current Program</u>	<u>Proposed Program Approach</u>
Licensing	<ul style="list-style-type: none"><li>• 2005 LA</li><li>• Design basis - Title II for items important to safety and waste isolation</li></ul>	<ul style="list-style-type: none"><li>• 2001 LA</li><li>• Design basis - Title I for repository, Title II for waste package</li></ul>
Technical and Scientific Studies	<ul style="list-style-type: none"><li>• Full scope of studies proposed in SCP, with appropriate modifications, to reflect priorities and budget</li></ul>	<ul style="list-style-type: none"><li>• Narrow the focus to technical issues most important to suitability and licensing</li><li>• Make effective use of required performance confirmation program</li></ul>

# Differences Between Current Program and Proposed Program Approach for Repository

(Continued)

<u>Key Elements</u>	<u>Current Program</u>	<u>Proposed Program Approach</u>
<b>Retrievability</b>	<ul style="list-style-type: none"><li>• 50 years after start of emplacement operations</li></ul>	<ul style="list-style-type: none"><li>• 100 years after start of emplacement operations or when results from performance confirmation provide adequate confidence to proceed with closure application</li></ul>

## **Next Steps**

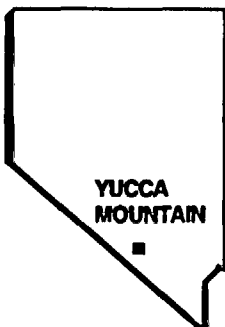
- **Identify testing, design, and performance assessment activities needed to support each step in the DOE and NRC decision process**
- **Allocate budgets and determine schedules**
- **Revise appropriate project documentation**

# **Interactions With NRC**

- **June 6, 1994: OCRWM Director's briefing to Commissioners**
- **July 1994: Site Characterization Progress Report 10**
  - **Upper-level description of Proposed Program Approach**
- **January 1995: Site Characterization Progress Report 11**
  - **Description of detailed changes to program**
- **Revised project documentation will be provided to NRC, as appropriate**

U.S. DEPARTMENT OF ENERGY

**YUCCA  
MOUNTAIN**



**YUCCA MOUNTAIN  
SITE CHARACTERIZATION  
PROJECT**

**ISSUE RESOLUTION**

*PRESENTED TO*  
**U.S. NUCLEAR REGULATORY COMMISSION**

*PRESENTED BY*  
**APRIL VANCAMP GIL**  
LICENSING TEAM LEADER  
ASSISTANT MANAGER FOR SUITABILITY AND LICENSING



**MAY 19, 1994**



# **ISSUE RESOLUTION OVERVIEW**

- **Background**
- **Development of Issue Resolution Topics**
- **Methods for Resolution**
- **Issue Resolution Organization**
- **Status of Issues**

# **ISSUE RESOLUTION**

## **BACKGROUND:**

- **SCP Issues Hierarchy**  
**Issue identification, performance allocation,  
data collection and analysis,  
documentation**
- **Issue Resolution Initiative**  
**focus on documentation and interactions**

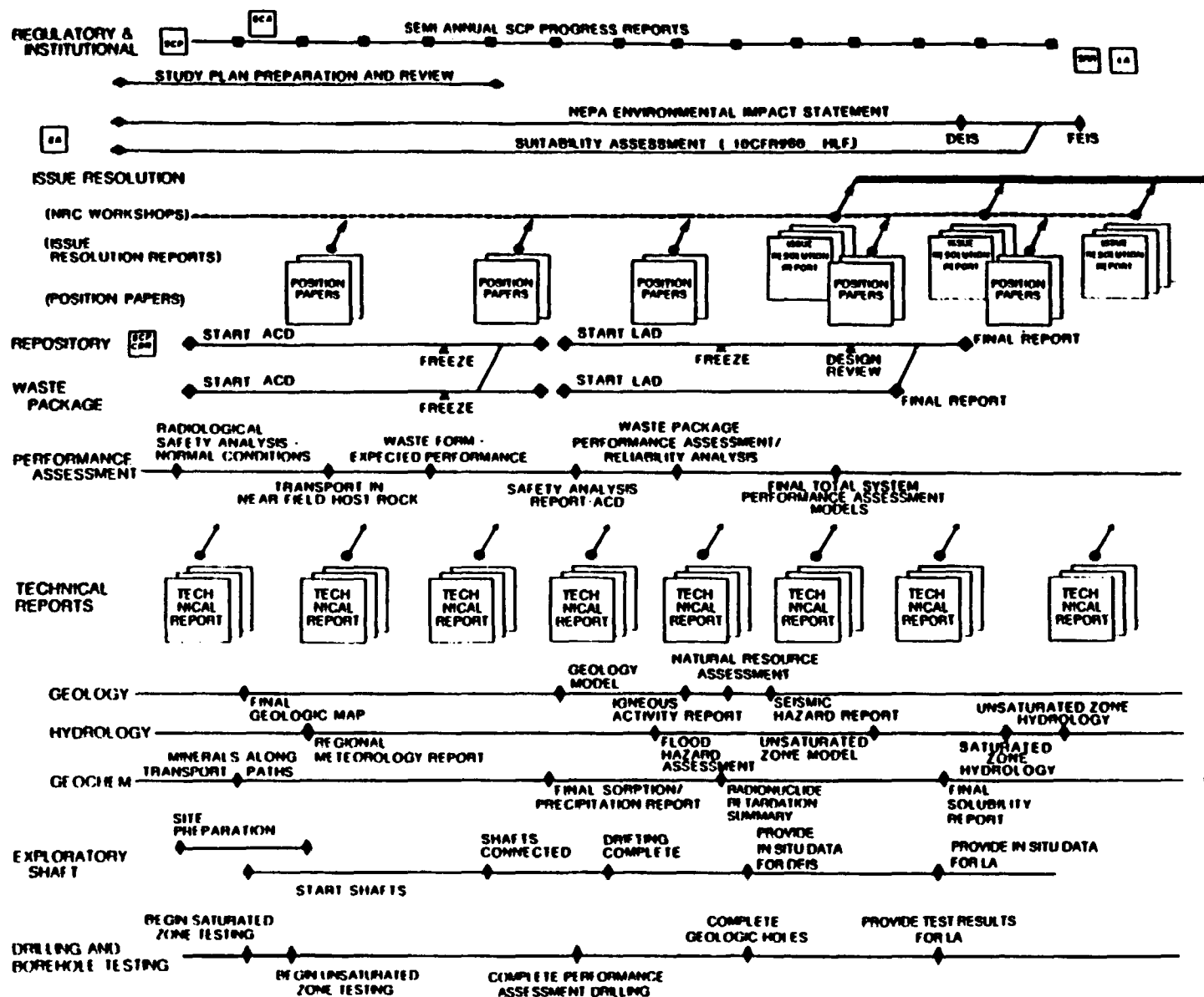


Figure 8.2-6. Schematic diagram showing utilization of site data by performance assessment and design, and for preparation of regulatory documents (ACD - advanced conceptual design; DEIS - draft environmental impact statement; FEIS - final EIS; HLF - higher-level findings; LA - license application, LAD - LA design, NEPA - National Environmental Policy Act; SCA - site characterization analysis; SCP - site characterization plan; SRR - site recommendation report)

# **ISSUE RESOLUTION**

## **DEVELOPMENT OF ISSUE RESOLUTION TOPICS:**

- **SCP, LA AO, Meetings**

**e.g.**

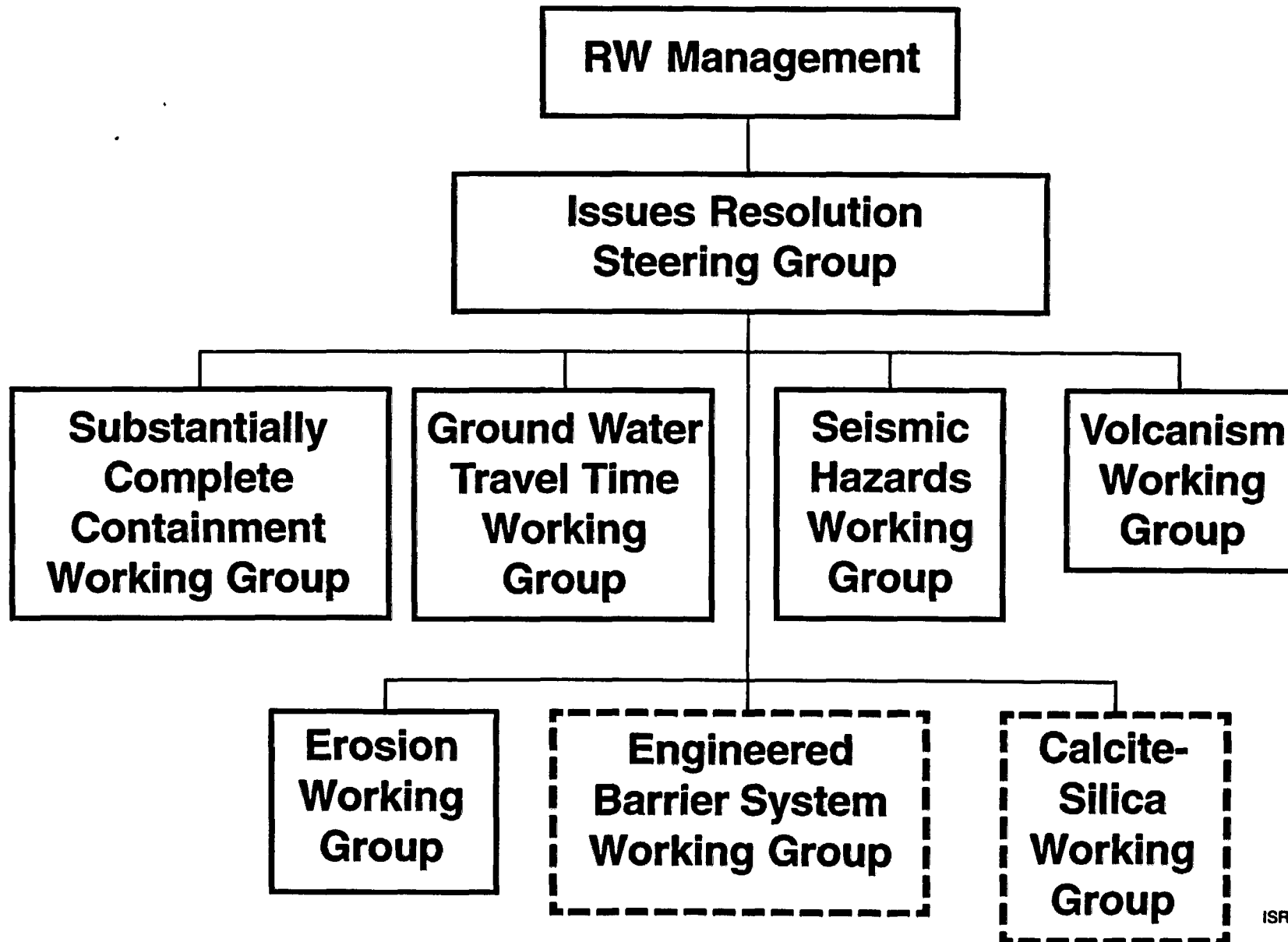
- **Technical Concerns**
- **Regulatory Clarification**

# **ISSUE RESOLUTION**

## **METHODS FOR RESOLUTION OF ISSUES:**

- **Responses to Site Characterization Analysis Comments and Questions**
- **Progress Reports**
- **License Application Annotated Outline**
- **Letter Reports**
- **Technical Reports**
- **Topical Reports**

# MGDS ISSUE RESOLUTION ORGANIZATION



# **SUBSTANTIALLY COMPLETE CONTAINMENT (SCC)**

## **ISSUE:**

- **10 CFR 60.113 (a)(1)(ii)(A) requires that**  
    **“Containment of HLW within the waste packages will be substantially complete**  
    **for a period to be determined by the Commission ...(of)...not less than 300**  
    **nor more than 1,000 years after permanent closure of the geologic repository.”**
- **The term “substantially complete containment “ needs clarification**

## **APPROACH TO RESOLUTION:**

- **NRC informed of DOE's intent to use performance goal >1,000 years**
- **DOE responses to Site Characterization Analysis (SCA) open items:**
  - Comment 5: SCP's technical interpretation of SCC**
  - Comment 80: Performance goals may be inconsistent with regulation**
  - Question 46: Release of isotopes with long half-lives from the waste packages**
  - Question 47: Relationship of postclosure tectonics to the waste package and EBS requirements**

## **STATUS:**

- **Comment 80: Submitted to NRC, 3/30/94**
- **Comment 5 and Question 46: Scheduled for submittal to NRC, 5/94**
- **Question 47 - Scheduled for submittal to NRC, 6/94**

# **SUBSTANTIALLY COMPLETE CONTAINMENT**

(Continued)

## **DOE EXPECTATIONS FROM NRC:**

- **Waste package design is important element of repository Advanced Conceptual Design**
- **Compliance with SCC is a key aspect of waste package design**
- **NRC evaluation of DOE's approach to compliance with SCC requirement**



# **GROUNDWATER TRAVEL TIME (GWTT)**

## **ISSUE:**

- **Determine whether the GWTT at site complies with 10 CFR 60.113(a)(2)**
- **Development, by DOE, of a methodology acceptable to NRC to evaluate regulatory compliance**

## **APPROACH:**

- **Involves defining the groundwater boundary considering disturbances having a significant effect on post-closure performance**
- **Includes developing separate distributions for transport in the unsaturated and saturated zones**
- **Involves conducting sensitivity analysis**
- **Evaluation of significance of travel times <1000 years on the performance of the system as a whole**

# **GROUNDWATER TRAVEL TIME**

(Continued)

## **STATUS:**

- **DOE has outlined alternative approaches to the development of the desired methodology, one of which could provide input for a 1996 Site Suitability Evaluation**
- **DOE outlined one approach for evaluating GWTT in presentations to the NWTRB on 3/12/94**
- **Prepare a submittal to NRC describing this approach and requesting feedback on consistency of approach with 10 CFR 60.113 (a)(2)**

## **DOE EXPECTATIONS FROM NRC:**

- **DOE needs feedback on the consistency of the approach for evaluating GWTT with 10 CFR 60.113 (a)(2)**
- **If NRC agrees with approach, submit DOE methodology**
- **NRC evaluation of DOE's compliance with requirement (SER)**

# SEISMIC HAZARDS

## ISSUE:

- **10 CFR Part 60 describes potentially adverse conditions relating to faulting and seismic activity at a potential repository site, but does not contain seismic design guidance for repository facilities**
- **DOE's program for geologic and seismologic studies and approach to seismic design in SCP 8.3.1.8 (Postclosure Tectonics) and 8.3.1.17 (Preclosure Tectonics)**

## APPROACH:

- **DOE intends to employ probabilistic approach to seismic design.**
- **Approach is needed to be consistent with the probabilistic total system performance assessment calculations that consider seismic events and processes**
- **Develop three topical reports to submit to NRC for review and issuance of an NRC Safety Evaluation (SE)**
  - **Topical Report I provides a description of the methodology for assessing seismic hazards**
  - **Topical Report II will address the selection of the appropriate seismic hazard level for design**
  - **Topical Report III will describe the development of seismic design inputs for the appropriate seismic hazard levels**
- **Three topical reports are a logical way to present the methodology and its application to the NRC**

# **SEISMIC HAZARDS**

(CONTINUED)

## **STATUS:**

- **Topical Report I has been prepared and is currently undergoing DOE review**
- **Plan to submit it to NRC in June 1994**
- **Topical Report II outline to NRC in July 1994**
- **Topical Report II to NRC in March 1995**
- **Topical Report III outline to NRC in April 1995**
- **Topical Report III to NRC in October 1995**

## **DOE EXPECTATIONS FROM NRC:**

- **NRC feedback on approach of sequentially submitting topical reports to address:**
  - **Assessment of seismic hazards;**
  - **Selection of the appropriate seismic hazard level for design;**
  - **Development of seismic design inputs for the appropriate seismic hazard levels.**
- **NRC acceptance of each topical report and NRC SERs documenting that acceptance**

# **PROBABILITY OF BASALTIC VOLCANISM**

## **ISSUE:**

- **Evaluate the potential effects of basaltic volcanism disrupting the repository to address 10 CFR 60.122(a)(2)(iii)(A) and 60.122(c)(15)**

## **APPROACH:**

- **Described in SCP and in:**
  - **Study Plan 8.3.1.8.1.1, Probability of Magmatic Disruption of the Repository**
  - **Study Plan 8.3.1.8.1.2, Physical Processes of Magmatism and Effects on the Potential Repository**
  - **Study Plan 8.3.1.8.5.1, Characterization of Volcanic Features**
  - **Study Plan 8.3.1.8.5.2, Characterization of Intrusive Igneous Features**
- **Obtain NRC agreement on DOE methodology for quantifying probability calculations for volcanic disruption of the repository**
- **Address SCA open items related to volcanism**

# PROBABILITY OF BASALTIC VOLCANISM

(continued)

## STATUS:

- **SCA Comments and Questions**

**Comment 8    Open**

**Comment 43   Open**

**Comment 45   Open**

**Comment 49   Open**

**Comment 52   Open**

**Question 12   Open**

**Comment 46**

**Question #13**

**Closed**

**Closed**

- **Comments received on 2 of 4 Study Plans**

## DOE EXPECTATIONS FROM NRC:

- **Review of study plans, and help resolve study plan comments**
- **Resolution of SCA comments**

# **BOUNDARY OF THE ENGINEERED BARRIER SYSTEM**

## **ISSUE:**

- Originally, DOE and NRC had different views on the definition of the Engineered Barrier System (EBS), ie., whether EBS includes a portion of the host rock
- DOE has decided there is no need to include a portion of the host rock within the boundary

## **APPROACH:**

- Prepare DOE letter report documenting the DOE position on EBS
- Adopt it as a formal DOE position
- Submit letter to NRC describing position
- Incorporate into Progress Report 10 and the License Application Annotated Outline (LAAO)

## **STATUS:**

- Letter report has been completed
- DOE has established its conclusions as a DOE position. DOE agreed with NRC's definition of EBS
- The DOE position has been incorporated in Progress Report 10 (publish in July 1994)
- A letter for transmittal to NRC is scheduled for July 1994
- The letter report will be incorporated into Revision 4 of the LAAO

# **BOUNDARY OF THE ENGINEERED BARRIER SYSTEM**

**(continued)**

## **DOE EXPECTATIONS OF NRC:**

- **DOE considers this issue resolved**
- **Request NRC review of DOE position and provide feedback**



# **EXTREME EROSION**

## **ISSUE:**

- **10 CFR 60. 122(c) Potentially Adverse Condition of "Extreme Erosion during the Quaternary".**

## **APPROACH:**

- **SCP outlined studies to assess erosion rates during the Quaternary Period and called for the preparation of a Topical Report**

## **STATUS:**

- **Responses to SCA comments 42 and 43 to NRC 7/23/92. No NRC response to this letter has been received**
- **Topical Report submitted to NRC in 3/93, document accepted by NRC for review 10/15/93**
- **Four questions were posed to DOE about report and its scope 12/30/93 and request for additional information**
- **DOE response to questions in 1/26/94**
- **Remaining information to NRC 3/31/94**

# **EXTREME EROSION**

(continued)

## **EXPECTATIONS FROM NRC:**

- **SER accepting the report's conclusions, or accepting the reports conclusions with conditions**
- **NRC feedback on DOE's responses to SCA comments**

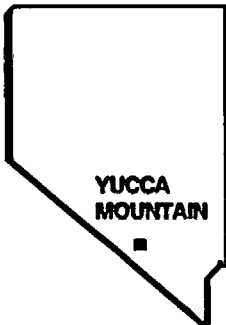
# **ISSUE RESOLUTION**

## **CONCLUSIONS:**

- **Identification and resolution of licensing issues**
  - **Goal is early mutual understanding of issues and appropriate approach to resolution**
  - **Documentation of issue resolution**

U.S. DEPARTMENT OF ENERGY

**YUCCA  
MOUNTAIN**



**YUCCA MOUNTAIN**

**SITE CHARACTERIZATION**

**PROJECT**

## **DOE DOCUMENTS AND PRIORITIES**

*PRESENTED TO*

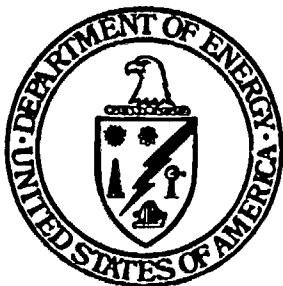
**U.S. NUCLEAR REGULATORY COMMISSION**

*PRESENTED BY*

**APRIL VANCAMP GIL**

**LICENSING TEAM LEADER**

**ASSISTANT MANAGER FOR SUITABILITY AND LICENSING**



**MAY 19, 1994**

# **DOE STUDY PLAN SUBMITTALS AND PRIORITIES LATE FY 1994:**

- 8.3.1.2.2.4R2 Characterization of the Yucca Mountain Unsaturated-Zone  
in the ESF**
- 8.3.1.3.1.1 Ground-Water Chemistry Model**
- 8.3.1.3.3.2 Kinetics and Thermodynamics of Mineral Evolution**
- 8.3.1.3.4.1/.3 Batch Sorption Studies and Development of Sorption  
Models**
- 8.3.1.3.6.1 Dynamic Transport Column Experiments**
- 8.3.1.4.3.2 Three-Dimensional Rock Characteristics Models**
- 8.3.1.5.1.1 Characterization of Modern Regional Climate**
- 8.3.1.8.2.1R1 Tectonic Effects**
- 8.3.1.15.1.4 Laboratory Determination of the Mechanical Properties of  
Fractures**
- 8.3.1.15.1.5R1 Excavation Investigations**
- 8.3.1.15.1.6 In-Situ Thermomechanical Properties**
- 8.3.1.15.1.7 In-Situ Mechanical Properties**
- 8.3.1.15.2.1 Characterization of Site Ambient Stress Conditions**
- 8.3.1.15.2.2 Characterization of the Site Ambient Thermal Conditions**
- 8.3.1.17.3.1R1 Relevant Earthquake Sources**
- 8.3.4.2.2.4 Engineered Barrier System Field Tests**

# **DOE STUDY PLAN SUBMITTALS AND PRIORITIES EARLY FY 1995**

- 8.3.1.2.2.4R3      Characterization of the Yucca Mountain Unsaturated-Zone in the ESF**
- 8.3.1.5.1.6        Characterization of Future Regional Climates and Environments**
- 8.3.1.15.1.3R1    Laboratory Determination of the Mechanical Properties of Intact Rock**
- 8.3.1.17.3.3        Ground Motion from Regional Earthquakes and UNE's**
- 8.3.1.17.4.12      Tectonic Models and Synthesis**
- 8.3.4.2.4.1        Characterization of Chemical and Mineralogical Changes in the Postemplacement Environment**
- 8.3.4.2.4.2        Hydrologic Properties of the Waste Package Environment**
- 8.3.4.2.4.5        Effects of Man-Made Materials on Water Chemistry**

# **OTHER DOE DOCUMENT SUBMITTALS AND PRIORITIES**

## **Progress Reports**

**Seismic Hazards Topical Report I (June 94)**

**Seismic Topical Report II Outline (July 94)**

**Update of the Waste Package Implementation Plan (FY 94)**

**Seismic Topical Report II (March 95)**

**Seismic Topical Report III Outline (April 95)**

**Seismic Topical Report III (October 95)**

**Summary Report Waste Package Design for Interim Review (FY 95)**

**MGDS Annotated Outline for the LA (FY 95)**

## **SCA Open Items**

**Submitted to NRC pending review 23**

**Submit in FY 94 - approximately 30**

**Submit in FY 95 - approximately 60**

# **OTHER DOE DOCUMENT SUBMITTALS AND PRIORITIES**

(continued)

## **ESF Design Reviews:**

**FY 94**

**Package 2C (Note - this will be the largest design review package)**

**FY 95 - 50% and 90%**

**Package 8A - completed design of main drift**

**Package 4 - South Ramp**

**Package 8B - North Ramp Extension**

**Package 3A - South Portal pad/access road**

**Package 1E - North Portal warehouse/utilities**

**Package 9 - Main Test Area**



NRC REVIEW PRIORITIES AND NUMBER OF ONGOING REVIEWS

1. DOE Progress Reports (1)
2. Site Suitability Evaluations
3. Mined Geologic Disposal System Annotated Outlines (1)
4. Topical Reports and topical Report Annotated Outlines (1)
5. DOE Study Plans
  - Expedited reviews (1)
  - Revision 0, Site impacting
  - Other Revision 0 (4)
  - Revisions 1..... (6)
  - Detailed comments (5) note: DOE notified of results of acceptance review
6. DOE Responses to SCA Open Items
7. DOE Responses to Study Plan Open Items
8. Other Technical, Design, and Performance Reports

\* A technical report may become higher priority depending on topic (e.g., volcanism) or if technical report provides the basis for discussion for a scheduled DOE/NRC interaction.