



UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD
2300 Clarendon Boulevard, Suite 1300
Arlington, VA 22201

Agenda
1995 Spring Board Meeting

The Emerging Waste Isolation Strategy
Thermal Management Strategy
Engineered Barrier System Design & Research

Holiday Inn Crowne Plaza
Las Vegas, Nevada 89109
Tel: (702) 369-4400
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April 19-20, 1995

Wednesday, April 19, 1995

8:30 A.M.

Welcome and opening remarks

John Cantlon, Chairman

Nuclear Waste Technical Review Board (NWTRB)

- Board's 11th report
- Recent testimony and other communications

PROGRAM

ISSUES

8:40 A.M.

State of the program

[Daniel Dreyfus](#), Director

Office of Civilian Radioactive Waste Management (OCRWM)

- Introductions
- Recent testimony
- Major objectives for fiscal year 1996 budget
- Effects of funding shortfalls on program schedules
- Potential effects of key legislative proposals
- Other near-term events
- Responses to Board's December 6, 1994, and March 3, 1995, letters
- Update on TBM operations

Wednesday, April 19 — continued

9:20 A.M.

Alternative licensing concepts

[Steven P. Kraft](#)

Nuclear Energy Institute

[Rosa L. Yang](#)

Electric Power Research Institute (EPRI)

10:05 A.M.

BREAK (15 minutes)

WASTE ISOLATION STRATEGY

10:20 A.M.

The emerging waste isolation strategy and site suitability

[Stephan Brocoum](#), OCRWM

- Refinements to strategy since January 1995 Board meeting
- Waste isolation strategy white paper
- Barriers that will *not* be relied on for initial site suitability/license application (e.g., due to lack of sufficient laboratory or site-characterization data)
- Integration of strategy with engineering activities

THERMAL MANAGEMENT STRATEGY

10:45 A.M.

Session introduction

Edward Cording, NWTRB

10:50 A.M.

Session on thermal management strategy

[Stephan Brocoum](#), OCRWM

[Thomas Geer](#)

TRW Environmental Safety Systems (TRW)

Management and Operating Contractor (M&O)

[Thomas Statton](#)

Woodward-Clyde Federal Services (M&O)

- Current work on thermal strategy
- Its linkage to the waste isolation strategy and site suitability
- What are the data and analysis needs to support "low" thermal loading? "High" thermal loading?
- Progress made in developing a definition of "low" thermal loading.
- Thermal testing (laboratory, field, and *in situ*) planned to support the license application
- Thermal testing needs to support a site-suitability decision
- Schedule and plans for characterizing expansion areas

12:30 P.M. LUNCH (1 hour and 15 minutes)

Wednesday, April 19 — continued

1:45 P.M. Continue thermal management strategy session

2:45 P.M. The Calico Hills system study
Richard Memory, TRW (M&O)

- Purpose of study
- Methodology of study
- Conclusions thus far
- What information is needed about the Calico Hills, when, and how can it be obtained in a timely fashion and at reasonable cost?
- Access methods for the Calico Hills

3:20 P.M. BREAK (15 minutes)

3:35 P.M. Fiscal year 1996 budget
Stephan Brocoum, OCRWM

- Linkage to waste isolation strategy, technical site suitability, and the environmental impact statement
- Major changes compared to fiscal year 1995
- Contingency plans, including outyears
- Status of defense program's share of repository costs

3:55 P.M. Public questions and comments

4:30 P.M. Panel discussion:

Panelists will include speakers of the day and the following Board invitees: Daniel Bullen (Iowa State University), John Greeves (Nuclear Regulatory Commission), Stephen Hanauer (OCRWM), Carl Johnson (state of Nevada), and John Kessler (EPRI).

- Is the waste isolation strategy sufficiently clear and coherent to serve as a basis for understanding and planning? If not, what is still needed? Is there appropriate balance between natural and engineered barriers?
- To what extent will the thermal testing program support technical site suitability? a license application? subsequent decisions?
- Is the Calico Hills issue (the appropriate role for Calico Hills in site suitability and license application) on its way to being resolved in a timely fashion?
- Other topics within the scope of the day's presentations.

5:30 P.M.

Recess until 8:30 A.M., Thursday, April 20

Thursday, April 20, 1995

8:30 A.M.

Welcome

John Cantlon, Chair, NWTRB

ENGINEERED BARRIER SYSTEM (EBS)

8:35 A.M.

Session introduction

Donald Langmuir, NWTRB

8:40 A.M.

Concept of repository operations — subsurface

[Kalyan Bhattacharyya](#)

Morrison-Knudsen Corporation (M&O)

- Describe current concept of operations and explain how it relates to and is compatible with the current waste isolation strategy and thermal management strategy and with placement, monitoring, retrieval, and "reasonably available technology" needs.
- What concept-of-operations alternatives were considered, and why were they rejected?
- What is the current concept for drift monitoring and maintenance after emplacement?
- How will ventilation be used during emplacement and for balance of the operational period?

9:20 A.M.

Multipurpose canister (MPC) system study: MPC-repository interface issues

[Richard Memory](#), TRW (M&O)

- How do MPCs affect repository thermal management strategy(ies) and vice versa?
- How do MPCs affect repository criticality control and vice versa?
- Compatibility of MPC basket and shell materials with containment and criticality control requirements?

Thursday, April 20 — continued

9:45 A.M.

Waste package design

[Hugh Benton](#)

B&W Fuel Company (B&W), M&O

- Describe the roles and relative importance of the following waste package barriers in the new waste isolation strategy: the waste form, cladding, basket, fillers (if any), MPC canister, inner wall, middle wall (if any), outer wall, any other materials in or on the waste package
- Current design for spent fuel in MPCs
- Waste package costs
- Internal heat transfer in waste packages
- Status of EBS design outside waste package
- In-repository shielding studies
 - Integration with concept of operations. (E.g., how frequently will each waste package and each drift be examined and why?)
 - Criteria used to select shielding method (include radiolysis)
 - Extant shielding studies
- Engineering development plans
 - Joining (welding) needs and plans
 - Nondestructive testing needs and plans
 - Waste package fabrication
 - Linkage of engineering development program with corrosion research program
 - Cooperation with other countries

10:30 A.M.

BREAK (15 minutes)

10:45 A.M.

EBS processes to be implemented in TSPA-95

[Robert Andrews](#)

INTERA, Inc. (M&O)

- Description of the differences between Total System Performance Assessment (TSPA)-93 and TSPA-95 regarding the

EBS/waste package PA modeling. Which barriers will *not* be included in TSPA-95?

- Will effects of corrosion products be included?

Thursday, April 20 — continued

(Robert Andrews, INTERA — continued)

- Backfill/packing (10-15 min)
 - What benefits do backfills and packings have to offer?
 - What prior analyses of backfill/packing have been done?
 - What current effort is under way in assessing the efficacy of backfill/packing for waste isolation?
 - Describe the engineering aspects of backfill/packing?
 - What effect does use or non-use of backfill/packing have on the site-suitability decision?
 - What are the retrieval consequences of backfill/packing?

11:25 A.M.

Corrosion research and modeling update

[R. Daniel McCright](#)

Lawrence Livermore National Laboratory (LLNL), (M&O)

- Corrosion research update
 - Data needs for technical site suitability decision — for licensing?
 - Status of long-term research plan
 - Thermogravimetric unit data
 - Plans for microbially influenced corrosion research
 - Stress-corrosion cracking research
 - Radiolysis
 - Linkage of engineering development program with corrosion research program
 - Defense waste repository packages
- Corrosion modeling update
 - For TSPA-95, what are the planned waste package corrosion models for the following materials:
 - + Monel (or other copper-nickel alloys)
 - + Carbon steel
 - + Alloy 825 (or other nickel alloys)
 - + MPC canister materials
 - + Welds of these materials
 - What are the mechanistic bases for these models?
 - What data are they based on?

- How will the environments that affect these models be modeled in TSPA-95?

Thursday, April 20 — continued

12:15 P.M.

Effects of engineered materials on repository performance

[James Houseworth](#), TRW (M&O)

- Determination of importance evaluations (DIEs)
- Effects of concrete
- Effects of iron (e.g., rails, rebar drift sets and rock bolts) and iron corrosion products
- Procedures for communicating with repository designers and TSPA team

12:35 P.M.

LUNCH (1 hour and 10 minutes)

1:45 P.M.

In-repository long-term criticality

[Stephen Hanauer](#), OCRWM

[Hugh Benton](#), B&W (M&O)

- What are the criticality issue(s)?
- Description of the DOE's efforts to date, plans, and timetable for analyzing long-term criticality issue(s).
- Can the probability of a criticality event in a repository be demonstrated?
- If not, can the likelihood and effects of a criticality event at least be bounded?
- What would be the worst-case and most likely consequences of such an event?
- If there are events, how would the source term for performance assessments be affected? Would events extend the period of regulatory concern?
- Comments on recent papers by Los Alamos National Laboratory (LANL) scientists
- DOE plans to analyze the LANL papers

