

NWTRB Perspectives on the HLW Management System

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Panel on Preclosure Operations
Nuclear Waste Technical Review Board

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NWTRB Mission

- Created by Congress to evaluate DOE technical activities related to disposal & management of SNF and HLW
- The Board examines all aspects of SNF and HLW management by DOE
 - Site characterization studies
 - Waste acceptance
 - Transportation
 - Surface facility activities
 - Underground emplacement

NWTRB Members

- B. John Garrick, Chairman
- Mark D. Abkowitz
- Wm. Howard Arnold
- Thure E. Cerling
- David J. Duquette
- George M. Hornberger
- Andrew C. Kadak
- Ronald M. Latanision
- Ali Mosleh
- William M. Murphy
- Henry Petroski

NWTRB Organization

- Panel on Preclosure Operations
- Panel on Postclosure Performance
- Panel on System Integration
- Technical Issue Leads assigned for: Source Term, Engineered System, Natural System, Thermal Management, Transportation, Surface Facilities, Dose Assessment, and Performance Assessment

New Yucca Mountain Schedule

Certify Licensing Support Network: December 2007

- Issue Supplemental Environmental Impact Statement: May 2008
- Submit License Application (LA) by June 30, 2008

Best Achievable Construction Schedule

- Start Nevada rail line: October 2009
- Start repository construction: September 2011
- Submit operating license application: March 2013
- Begin receipt of fuel: March 2017

Some recent NWTRB Recommendations - 1

- Continued study of natural barriers can produce useful information, e.g., matrix diffusion, secondary mineralization, and colloids
- The thermal management strategy adopted will significantly affect both pre- and post-closure performance of a Yucca Mountain repository
- The technical basis for evaluating possible localized corrosion caused by deliquescence has not yet been fully developed

Recent NWTRB Recommendations - 2

- A more realistic performance assessment would provide important and relevant information to interested and affected parties
- The DOE's Total System Model has considerable potential as a tool for understanding the performance of the coupled waste management system

Preclosure Operations Issues-1

- A transport-aging-disposal (TAD) canister has the potential to minimize handling of bare spent fuel and simplify the design of surface facilities
- Success of TAD dependent on many factors
 - Condition of spent fuel at reactor sites
 - Availability of compatible infrastructure at reactor sites
 - Extent of coordination with nuclear utilities
 - Availability of rail access to repository
 - Timetable for TAD certification
 - Repository thermal management strategy
 - Design of YM surface facilities
 - Post-closure containment involving materials & criticality

Preclosure Operations Issues-2

The DOE should:

- visit each waste generating site to assess infrastructure and ability to handle wastes
- facilitate selection of transportation routes and identification of emergency-preparedness needs
- manage emergency response grants using a systems approach that considers anticipated responses to accidents and methods for monitoring and verifying adequate response capability

Preclosure Operations Issues-3

The DOE should:

- perform a comparative risk analysis of alternative rail corridors
- develop a contingency plan for delay or unavailability of the Nevada rail branch
- evaluate phased approaches such as handling normal fuels first and “exceptional” fuels later

Closing Remarks

- Over the next several years, much attention will be directed to the licensing review for a Yucca Mountain repository
- During that time, significant efforts will be needed to develop a transportation system and to prepare for waste acceptance and repository operations.
- Many of these efforts will occur outside the licensing process – NWTRB will review these activities