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# **Update on Status of Yucca Mountain Studies**

**Dr. Jared L. Cohon, Chairman**  
**Dr. Debra S. Knopman, Member**  
**Dr. Alberto A. Sagüés, Member**  
**June 14, 2001**

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# **What is the NWTRB?**

- **An independent federal agency created by NWPAA of 1987**
- **11 members nominated by NAS and appointed by the President**
- **Reviews characterization of Yucca Mountain and packaging and transportation of waste**

# **What is the NWTRB (cont'd)?**

- **Reports to Congress and Sec'y of Energy twice each year**
- **Recommendations only; no enforcement or implementation authority**
- **Board (and Panels) often meet in Nevada; meetings open to the public**

# DOE Program Milestones

- ***Viability Assessment* was issued in 1998**
- **Site recommendation documents are pending**
- **Site recommendation is planned for late 2001**

# NWTRB Priorities

- **Meaningful quantification of conservatisms and uncertainties**
- **Progress in understanding processes of waste package corrosion**
- **Evaluate and compare base-case and low-temperature designs**
- **Multiple lines of evidence for technical defensibility**

# Meaningful Quantification of Uncertainties

- **Essential information for policy-makers**
- **Difficult to interpret performance predictions based on conservative, realistic, and optimistic assumptions**
- **Uncertainties cannot be eliminated**
- **Decision-makers must decide how much uncertainty is acceptable**

# **Understanding Fundamental Corrosion Processes**

- **Waste package may be most important barrier**
- **Predicting long-term corrosion rates from short-term data is uncertain**
- **Need progress in understanding the fundamental processes that affect passive layer stability**

# **Lower-Temperature Repository Design**

- **Higher temperatures increase “coupled” thermal, hydrological, mechanical, and chemical effects**
- **Waste packages may be more vulnerable to corrosion at higher temperatures**
- **Comparison with a low-temperature, ventilated design would be helpful**



# Multiple Lines of Evidence

- **Safety case relies on:**
  - performance-assessment calculations
  - safety margins and defense-in-depth
  - evaluation of potentially disruptive events
  - insights from natural analogs
  - performance confirmation
- **Emphasis is needed on lines of evidence that are independent of performance assessment**

# **DOE's Relationship with the Board**

- **DOE responded to Board recommendations:**
  - **Began quantifying conservatisms and uncertainties**
  - **Peer review of waste package corrosion issues**
  - **Developed low-temperature operating mode**
  - **Meeting on multiple lines of evidence**