

**U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**PRESENTATION TO
THE NUCLEAR WASTE TECHNICAL REVIEW BOARD**

**SUBJECT: INTRODUCTION TO
SURFACE-BASED TEST
PRIORITIZATION**

PRESENTER: DR. J. RUSSELL DYER

**PRESENTER'S TITLE
AND ORGANIZATION: PHYSICAL SCIENTIST,
REGULATORY AND SITE EVALUATION DIVISION
YUCCA MOUNTAIN PROJECT OFFICE
U.S. DEPARTMENT OF ENERGY**

**PRESENTER'S
TELEPHONE NUMBER: (702) 794-7586**

JULY 24-25, 1990

Prioritization of Surface-based Testing

— Agenda —

- **Introduction to surface-based test prioritization** *J. Russell Dyer, DOE*
 - **Why the study was initiated**
 - **Goals, participants, and schedule**
- **Decision analysis framework for SBT prioritization** *Bruce Judd, DAC*
 - **Overview of the methodology**
 - **Model development and data assessment**
 - **Illustrative assessments and analysis**
- **Possible methods to assess site suitability** *Steven Mattson, SAIC*
 - **Suitability assessment and decision making**
 - **Relationship to SBT prioritization**
- **DOE perspective on SBT-prioritization task** *J. Russell Dyer, DOE*

Our study was initiated to help DOE refocus near-term testing on early detection of any unsuitable conditions

- **The DOE Secretary's review of the OCRWM program produced a directive to refocus near-term site testing**
- **DOE reported its plan to Congress in Nov. '89**

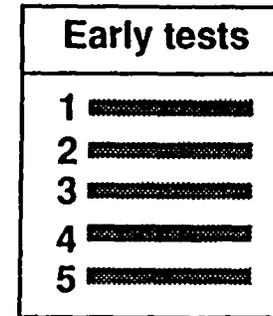
“DOE has decided to focus its near-term scientific investigations ... specifically at evaluating whether the site has any feature that would indicate that it is not suitable as a potential repository site.”

Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program

DOE established three primary goals for this effort

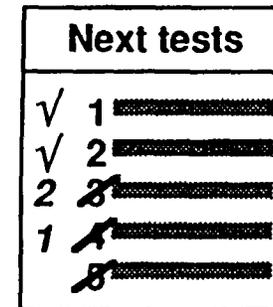
1. Develop an explicit decision analysis method to prioritize surface-based testing in the initial phase of site investigation

Ensure early investigation of potentially adverse conditions and EEI, NRC, and State of Nevada concerns



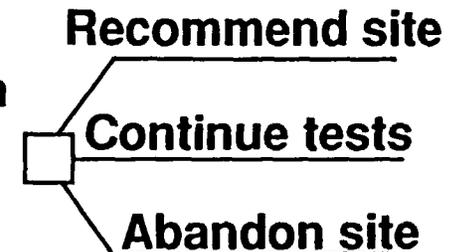
2. Recommend methods to re-prioritize testing at any point during site characterization

Include a method for deciding when to stop testing



3. Recommend a draft method to assess site suitability at any point during site characterization

The method should be consistent with Goals 1&2



We assembled a core team to conduct analyses and make recommendations to management

Core Team

Steven Mattson (SAIC, team lead)
Bruce Judd (Decision Analysis Co.)
William E. Wilson (USGS)
Martha Pendleton (SAIC)

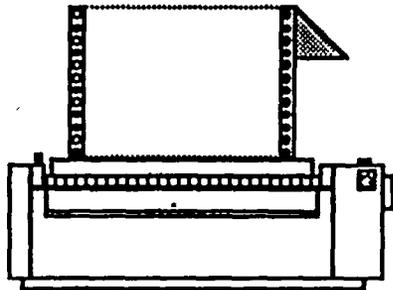
Scott Sinnock (SNL)
Robert Gamble (Weston)
August Matthusen (SAIC)

DOE Oversight and Management

J. Russell Dyer (YMP)
Jeffrey Kimball (HQ)
William Haslebacher (Weston)

Jeremy Boak (YMP)
Scott Van Camp (HQ)

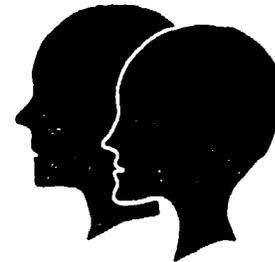
Quantitative inputs to the analysis are based on prior site data and expert judgments



Existing site data
Data bases
Prior studies

Expert judgments from technical experts

LANL, LBL, LLNL, ORNL, PNL
SAIC, SNL, UCB, USGS, Weston
consultants, etc.
DOE (oversight—HQ, YMP)

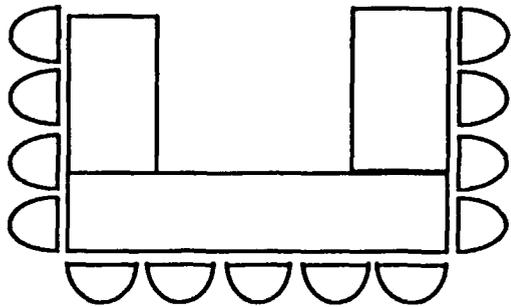


Over 60 technical experts have participated to date

Current Schedule of Activities and Deliverables

Jan 24	Project initiation
Feb 8	Workshop to identify critical concerns
Feb–Apr	Prioritization method development
Apr–Jun	Initial data assessment workshops
Jul–Aug	Prioritization model development Suitability method development
Aug–Sep	Data refinement and analysis
Sep 28	Draft report on prioritization
Oct 19	Final report (priorities plus recommended suitability methods)

The core team is conducting a series of workshops to gather information for the analysis



- | | |
|------------------|---|
| Feb 8 | Identify critical concerns and uncertainties |
| Apr 19–20 | Performance assessment panel |
| Apr 26 | Unsaturated-zone site panel |
| May 4 | Saturated-zone site panel |
| May 25 | Migration panel |
| June 7-8 | Container panel |
| June 22 | Gas panel |

Further schedule to be determined

We will now discuss our analytic framework for SBT prioritization

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**PRESENTATION TO
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**SUBJECT: DOE PERSPECTIVE ON
SURFACE-BASED TEST
PRIORITIZATION TASK**

PRESENTER: DR. J. RUSSELL DYER

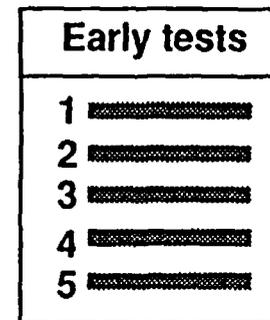
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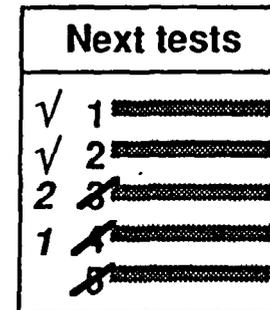
The task force is developing a unified framework for meeting three program goals

1. Develop an explicit decision analysis method to prioritize surface-based testing in the initial phase of site investigation



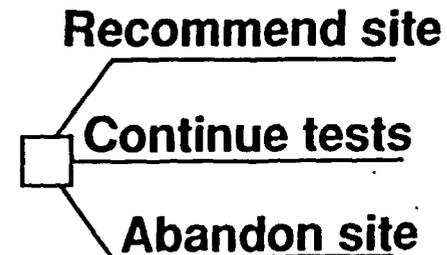
2. Recommend methods to re-prioritize testing at any point during site characterization

This includes a method for deciding when to stop testing



3. Recommend a draft method to assess site suitability at any point during site characterization

The method is consistent with Goals 1&2 and incorporates the prioritization methodology



Summary

- **The test-prioritization approach quantifies the current level of uncertainty and how well it can be resolved through testing**
- **The site-suitability approach can address broad criteria and quantitative performance measures such as**
 - **Cumulative curies released**
 - **Ground-water travel time**
 - **Preclosure radiological safety**
 - **Others**
- **These approaches can produce significant insights**
 - **The justification for tests**
 - **The sensitivity of decisions to technical and value judgments**
- **Together, the two approaches provide *defensible* methods for**
 - **Determining the value of tests**
 - **Deciding whether or not to continue testing**
 - **Deciding whether or not to recommend the site**