NRC'S VIEWS ON DOE'S PRELIMINARY WORK ON THE TSPA-VA

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NRC PERSPECTIVE ON THE VIABILITY ASSESSMENT

- VA is a DOE Decision-Making Document that will Guide the Course of Future Repository Investigations and Licensing
- There is No Currently Defined Statutory Responsibility for NRC Review of the VA
- NRC is Preparing for an Anticipated Congressional Request for Commentary on the VA
- NRC Review of the VA will be in the Context of Progress Towards and Additional Needs for Licensing

NRC STRATEGY FOR VIABILITY ASSESSMENT REVIEW

- Provide Timely Regulatory Guidance -
  - Develop Site Specific High-Level Waste Disposal Rule (07/99)
  - Develop Acceptance Criteria for TSPA Methodology (IRSR Rev. 0 - 04/98)
  - Ensure Continuity between Issue Resolution Status Reports, Review Plan, and Rule

- Conduct Pre-VA, VA, Pre-LA, and LA Reviews from a Common Basis
  - NRC Total System Performance Assessment (TPA) Code as Principal Postclosure Review Tool

- Facilitate Sound and Timely Decision Making:
  - Focus on Resolution of Technical Issues at the Staff Level
  - Document Technical Differences and Uncertainties in Knowledge

- Focus on Total System Performance:
  - Use a Single Overall Performance Measure
  - Use TPA Code to Evaluate Issues and Subissues Important To Performance
  - Assess Contribution of Individual Barriers or Barrier Components to Defense-in-Depth
  - Use Results to Evaluate the Need for Additional Site and Design Information

- Use the VA Review to Assess DOE Progress in Preparing for the License Application

NRC'S PRELIMINARY COMMENTS ON DOE'S TSPA-VA

- NRC's Views Derived from the Three Technical Exchanges on the TSPA-VA Held over the last Year and Insights from Past Reviews of DOE's TSPAs (Recent Changes have been Made by DOE to Approaches Described in Technical Exchanges)
- DOE has made Significant Progress to Date in Completing an Imposing Task and has demonstrated Flexibility in Modifying Approaches in Response to NRC Concerns
- NRC's Independent Analysis, to date, has Identified a Number Positive Attributes of DOE's Approach and a Number of Questions About Aspects of the TSPA-VA.

POSITIVE ASPECTS OF DOE'S TSPA-VA

- NRC Staff believes DOE is Effectively Using its TSPAs to Focus Site Characterization Work on those Aspects of the Site and Design Most Important to Performance.
  - Use of Niche Test Results to Estimate Seepage Fraction

- DOE's List of Proposed Sensitivity Studies Demonstrates that it is Evaluating Areas of Potential Vulnerability in the Analysis.

- DOE's Approach to the Consideration of Fracture vs. Matrix Flow in the Unsaturated Zone is similar to NRC's and Consistent with Existing Data.

- Substantial Progress has been Made over the Last Several Months in Addressing the Near-Field Aspects of the TSPA.

- DOE Appears to Recognize that Characterizing the Corrosion Potential of C-22 Will be a Key Factor in Building Confidence in the Results of the Analysis.

- DOE's Approach to Identifying the Reference Biosphere and Critical Group Appears Consistent with NRC's

NRC STAFF QUESTIONS ON DOE'S TSPA-VA
(Derived from Technical Exchanges)

Natural Barrier:

- How and to what Extent is Matrix Diffusion being Incorporated into the Analysis? The Credit Taken for Matrix Diffusion Could Significantly Impact the Outcome.

- Is there Sufficient Technical Basis to Support DOE's Saturated Zone Flow and Transport Models that are Used to Predict Maximum Concentration Levels of Radionuclides at Receptor Locations?

- What is the Technical Basis for Alluvium K_ds Used in the Analysis?

Engineered Barrier:

- With the Use of C-22 as a Corrosion Resistant Material, Rockfall from Repeated Seismic Events and Juvenile Failures Should be Considered in Estimating Repository Performance. How will DOE Incorporate these Factors into its Analysis?

- Is there Sufficient Technical Basis for Estimating the Performance of C-22? Has Stress Corrosion Cracking been Adequately Considered? Are the Probabilities for Corrosion Potential Values Assigned to C-22 Adequately Supported?

- Is the Assumption that the Invert Does Not Degrade Appropriate? How Much Does it Contribute to the Performance of the Engineered Barrier?

Integration and Transparency of Analysis:

- Is DOE's Approach to Considering Alternative Conceptual Models Sufficiently Transparent?

- Are the Results of the Expert Elicitations Being Properly Updated When New Information is Received and are Results Being Properly Incorporated into the TSPA?

WE ARE PROVIDING EARLY FEEDBACK TO DOE ON SYSTEM PERFORMANCE VIA REVIEWS OF TSPA-VA PLANS, TSPA-VA, AND DRAFT LA

- Review TSPA-VA plans and Other Information to Evaluate TSPA-VA Models, Input Parameters, and results;
- Will Use TPA 3.2 Code to Review and Independently Evaluate DOE's Results
- Report Results of the Independent Evaluations in IRSR's (e.g. IRSR on Abstraction) and Other Commenting Activities (e.g., Technical Exchanges)