EPRI / EEI HLW METHODOLOGY DEVELOPMENT PROJECT


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EPRI HLW Project Objectives

- To develop an integrated methodology for early site performance assessment and to identify and prioritize crucial issues

- To involve DOE in this methodology development and its implementation
Methodology Development Team
Meetings

- 7/24-25/89: Brainstorming
- 11/28/89: Qualification check
- 12/19-20/89: Problem definition
- 1/15-17/90: Model formulation
- 4/24-26/90: Model presentation
- 7/30-8/1/90: Model completion
Figure 9-1. Example logic tree.
### END BRANCH

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**Figure 9-2.** Illustration of use of logic tree parameters to form CCDF of cumulative chemical concentration released.
Figure 9.3. Master logic tree for demonstration calculations.
Technical Issues

- Keeping in mind that the MDT results are illustrative, the following are found to be more influential on site performance:

  - Hydrology
    - Infiltration (recharge) from precipitation
    - Water flow pathways
      - Influenced by extent of rock fracture and porosity
    - Significant rise in water table

  - Geochemistry
    - Uranium solubility, as influenced by dissolution chemistry and temperature
    - Chemical retardation of released radioisotopes

Conclusions

The use of multi-disciplinary scientific and engineering expertise to conduct a risk-based evaluation of a HLW repository is achievable with current knowledge and technology.

- A structured approach is required; the workshop format is suited to this approach.
- The use of logic trees is a convenient and credible format.
- Results of the methodology should be obtained during the process of model development, i.e., the process should be iterative.

A methodology of this type can be applied on a larger scale, in which a larger body of expertise participates. This application will lead to realistic (rather than simple demonstrative) results.
Near-Term Plans

• Prepare working version of Methodology Development Team performance assessment model and report (9/90)

• Phase 2: Join with DOE in sponsorship of workshops on performance assessment methodologies to identify crucial technical topics for workshops

• Phase 3: Support DOE in conducting expert workshops on crucial technical topics identified in Phase 2

Phase 2

• Series of workshops on performance assessment methodologies
  — Participants
    - DOE YMPO contractors
    - DOE HQ Contractor, Golder Associates
    - NRC
    - EPRI/UWASTE’s Methodology Development Team
  — Objectives
    - Exchange detailed explanations of each P/A methodology
    - Revise methodologies where appropriate
    - Obtain consensus on highest priority technical areas
  — Schedule
    - Series of 3 workshops starting in late '90 with completion in '91
Phase 3

- Series of workshops on highest priority technical areas identified in Phase 2
  - Sponsored by DOE
  - Used by EPRI to update and revise P/A methodology
  - One to three workshops per year
  - Significant independent technical expert input to DOE

Roles of Respective Parties in Performance Assessment Methodology

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