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102

WM Project 11
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'84 MAY 29 P4:5

SUGGESTED TOPICS FOR NNWSI-NRC WORKSHOP ON CONCEPTUAL DESIGN

JULY 17-19, 1984

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GENERAL

- Overview of the Repository Design Framework - DOE/SAI.

  - DOE requirements and orders;
  - NWPA;
  - NRC and EPA regulations; and
  - other regulations;

- Overview of the Repository Design Process - SNL.

  - Licensing Aspects, i.e., SCP, SCP updates, LA, LRW, RC;
  - Design Sequence, i.e., CD, Title I; Title II; and
  - Relationship Between the Above.

- NNWSI Approach to the Repository Design - SNL.

  (i) Relationship Between Repository Design and Performance.

  - Impact of Facility Construction and Operation on Containment and Isolation Capabilities of the Disposal System;
  - Role of Engineered Systems in the Overall Performance of the Repository; and
  - Approach to Development of Design Procedures and Concepts.

  (ii) Design Concepts, Design Basis and Design Criteria.

  - Surface Facilities;
  - Underground Facilities;
  - Sealing of Underground Openings;
  - Equipment;
  - Retrievability; and
  - Emplacement Mode and Emplacement Borehole Stability.

  (iii) Design Data Base.

  - Requirements, i.e., Properties and Boundary Conditions;
  - In-Situ Test Plan;
  - Numerical Simulations; and
  - Integration of Natural and Engineered Systems in Order to Evaluate the Overall Performance of the Repository.

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- Regulatory Requirements with Regard to the Repository Design - Construction Process - NRC.

  (i) Identification of Main Elements of the Repository Design.

  - Design Concepts, Parameters, and Materials Having Bearing on the Long Term Performance of the Repository, e.g., emplacement mode, waste package, thermal loading, retrievability, vibratory ground motion, sealing, construction methods, etc; and
  - Design Concepts, Parameters, and Materials Related to Radiological Safety During Operational Period of the Repository, e.g., vibratory ground motion, stability of underground openings, ventilation, etc.

  (ii) Compliance/Performance Constraints.

  - Identification;
  - When Should They be Specified?;
  - How Should They be Defined?; and
  - Review Process.

  (iii) Demonstration of Design Adequacy and Regulatory Compliance.

  - General Overview of the Regulatory Framework;
  - Role of Numerical Simulations;
  - Coupled Effects and Their In-Situ and Numerical Evaluations; and
  - Review Process.

- Discussion - NRC/DOE/SNL/others.

REPOSITORY CONCEPTUAL DESIGN CONSIDERATIONS IN THE NNWSI EA

- Framework - SNL.

  - What determined content of the report with regard to the conceptual design;
  - Composition of the report; and
  - Role of the conceptual design.

- Data Base Utilized in the EA Report - SNL.

  - Properties and boundary conditions;
  - Design concepts;
  - Origin of the data base; and
  - Assumptions and uncertainties.

- Data Analysis - SNL.

  - Data synthesis;
  - Data integration;
  - Numerical evaluations; and
  - Assumptions and uncertainties.

- Conclusions - SNL.

- Questions and Discussion - NRC/DOE/SNL/others.

REPOSITORY CONCEPTUAL DESIGN CONSIDERATIONS IN THE NNWSI SCP.

- Framework - SNL.

  - 4.17;
  - NWPA;
  - Interaction with NRC; and
  - Problem areas, i.e., compliance measures, uncertainties with regard to requirements for Chapter 8, relationship between conceptual design process and the in-situ test plan, coupled effects, etc.

- Current NNWSI Approach to the SCP - SNL/LANL.

  - Format of the submission, i.e., first submission and SCP updates, test plans, test procedures;
  - Content of the SCP and its evolution with time, i.e., data, data analysis, data utilization in developing and finalizing design concepts and parameters;
  - Compliance measures;
  - Sensitivity analyses and numerical simulations;
  - Content of the SCP with respect to the exploratory shaft; and
  - Assumptions and uncertainties regarding design concepts and parameters.

- NRC's Expectations with Regard to the Depth of Conceptual Design Considerations in the SCP - NRC.

- Discussion - NRC/DOE/SNL/LANL/others.

GENERAL INFORMATION TOPICS

- Disturbed Zone.

  - Status - NRC;
  - Relationship to isolation - containment - NRC;
  - Impact on design considerations - NRC; and
  - Discussion - DOE/NRC/SNL/others.

- Coupled Effects;

  - Status - NRC;
  - Approach to assessment, i.e., numerical modeling, in-situ testing - NRC;
  - Utilization of understanding and data base related to coupled effects in design and licensing processes - NRC; and
  - Needs related to the topic of coupled effects - NRC; and
  - Discussion - DOE/NRC/SNL/LANL/others.

- Vibratory Ground Motion and Faulting Considerations in the Repository Design Process.

  - Current thinking and approach - SNL;
  - Problem areas - SNL; and
  - Plans - SNL.
  - Discussion - NRC/DOE/SNL/others.