Exploratory Studies Facility (in-situ testing) required by NRC in 10 CFR 60

Purpose of ESF

- In-situ testing to characterize phenomena and processes
- Exploration to obtain representative data and characterize large-scale structural features related to evaluation of site suitability and support licensing
- Exploration and testing to obtain information for design

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

Original ESF concept in SCP

- 2 relatively small shafts and limited exploratory drifting and test area on TS level
- Commitment to evaluate need for additional exploration and testing at the CH level

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

ESF Alternatives Study and Calico Hills Risk Benefit Analysis

- Comprehensive evaluations of alternative ESF concepts and construction methods, and of the alternatives for characterizing the CH - prompted in part by NRC and NWTRB concerns
- Considered widest possible range of factors to provide documented basis for DOE decision

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

ESF Alternatives Study and Calico Hills Risk Benefits Analysis

- Considerations included:
  - Regulatory requirements from 10 CFR 60
    - -- need to minimize potential impact on waste isolation
    - -- need to consider design criteria applicable to repository
    - -- need to coordinate ESF and repository designs
    - -- need to apply QA controls to design, construction, testing
  - Regulatory requirements related to occupational safety
  - Regulatory requirements related to environmental protection and permitting

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

ESF Alternatives Study and Calico Hills Risk Benefits Analysis

- Considerations included:
  - Comments from NRC related to:
    - -- obtaining representative data
    - -- exploration of southern portion of repository block
    - -- characterization of CH
    - -- QA and design control
    - -- consideration of alternative design features and potential impacts on waste isolation

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

ESF Alternatives Study and Calico Hills Risk Benefits Analysis

- **Considerations included:**
  - **Comments from NWTRB related to:**
    - -- extent of exploratory drifting - additional intersections of Ghost Dance Fault and drifting to Solitario Canyon - extensive drifting recommended
    - -- use of mechanical mining methods
    - -- use of ramp for access
    - -- construction and testing efficiency
  - **Testing and exploration needed to:**
    - -- evaluate site suitability (CH and TS levels)
    - -- support evaluations for licensing (CH and TS levels)
    - -- support design (primarily TS level)

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

ESF Alternatives Study and Calico Hills Risk Benefits Analysis

- **Considerations included:**
  - **Cost and schedule factors - need to achieve program**
    - **-- objectives in timely and cost effective manner consistent with meeting requirements to protect public and worker health and safety and the environment**

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

Conclusions of ESFAS and CHRBA - decision on ESF concept

- Preferred option selected provides for extensive drifting on both the TS and CH levels with access via 2 ramps
- Primary considerations in selection
  - Maximize opportunity to obtain representative information on both TS and CH levels
  - Maximize responsiveness to NRC and NWTRB concerns

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

Evolution of ESF design

- Revised Title I design summary report prepared to reflect modification of preferred ESFAS option (MTL moved from S to N end of block, optional shaft included)
- Design process and construction to proceed in phases to accommodate funding and schedule constraints and permit maximum flexibility
- Title II design for package 1A completed to reflect modified pad and portal with TBM launch chamber for N ramp

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

Evolution of ESF design

- Ramp sizing study conducted to provide basis for TBM selection
  - Considerations included:
    - -- worker safety - 2-way traffic, conveyor location
    - -- ventilation requirements
    - -- flexibility to work multiple headings, support testing
    - -- coordination with repository design - minimization of impacts
    - -- overall cost and schedule factors

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

Readiness to proceed

- Title II design for pad and portal complete
- Ready to proceed with selection of ESF construction contractor
- Ready to proceed with RFP for TBM
- QA program in place - design control objection lifted by NRC
- ESAAB meeting scheduled for November 16 for approval of start of ESF construction
- FY93 funding less than requested but adequate to support balanced program and start of ESF construction

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

Decisions and constraints

- Need to maintain balanced program of surface-based and underground testing to support site suitability and licensing evaluations

- Construction sequence and testing priorities
  - CH versus TS access, construction sequence on each level
  - Early start of testing in ramp for long duration tests

- Funding limitations and their effect on
  - Design and construction progress
  - Availability of 2nd TBM
  - Trade-offs between surface and underground testing

ESF(in situ testing) required by NRC in 10 CFR 60

(Continued)

Objectives

- Focus on site suitability
- Maintain flexible program
- Demonstrate progress to ensure continued congressional support