NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING

SUBJECT: REVIEW OF PRELIMINARY TEST
PLANNING AND STATUS OF TESTING
IN THE EXPLORATORY STUDIES
FACILITY

PRESENTER: NED Z. ELKINS

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Principal Elements of Exploratory Studies Facility (ESF) Test Program Development

1. Initial (preliminary) definition of test program activities

2. Consolidation and prioritization of tests

3. Incorporation of high-level test criteria and requirements into facility designs and construction plans

4. Detailed test planning, sequencing, and field preparation

5. Field implementation and iteration
Preliminary Definition of Exporatory Studies Facility (ESF) Testing Program

- Following completion of ESF Alternatives Study (1989-1990), the Yucca Mountain Site Characterization Project Office developed preliminary ESF Test Planning Document, TPP 91-5, “Planned Exploratory Studies Facility Tests”
  - Lead coordination provided by ESF Test Coordination Office (TCO)
  - Input developed and verified by ESF test organizations
    -- U. S. Geological Survey
    -- Sandia National Laboratories
    -- Lawrence Livermore National Laboratory
    -- Los Alamos National Laboratory

- Initiation of various evaluations to streamline and sequence subsurface test program

- Complete revision of high-level facility design requirements (ESFDR, Appendix B)
Review of Preliminary Planning

• Initial test planning (TPP 91-5) defined 42 ESF test activities ranging from design verification and excavation monitoring, through sampling and small-scale test activities, to large-scale *in situ* testing.

• Results of initial ESF test planning is fully consistent with and represented by current Site Characterization Program Baseline (SCPB).

• ESF test program objectives and scope were provided to the NRC in Semiannual Progress Report #4.
Current ESF Testing Status

Five test programs are currently fielded in the ESF (SCP Activities 8.3.1.4.2.2.4; 8.3.1.2.2.4.7; 8.3.1.3.2.1 and .2; 8.3.1.15.1.8.1 and .2; 8.3.4.2.4.4)

- Geologic mapping
- Perched water (contingency)
- Consolidated sampling
- Construction monitoring
- Fran Ridge large block experiment
Current ESF Testing Status
(Continued)

Two *in situ* test activities are fully planned and ready to implement in ESF North Ramp Alcove #1 (SCP Activities 8.3.1.2.2.4.4; 8.3.1.2.2.4.8)

- Hydrochemistry testing
- Radial borehole testing (anisotropy)

Three construction-phase tests first appearing in north ramp either at or beyond the Bow Ridge Fault are scheduled for planning completion by Fall 1993 (Package 2C) (SCP Activities 8.3.1.2.2.4.10; 8.3.1.15.1.1, .2, .3 and .4; 8.3.1.15.1.5.1)

- Hydrologic properties of major faults
- Laboratory thermal properties
- Excavation investigations
Prioritization and Sequencing of ESF Tests

Tests are sequenced to support Yucca Mountain Site Characterization Project strategies for issue resolution and program prioritization

- Integrated test evaluation (site) program
- Long-range characterization program planning
- YMP annual planning (near-term prioritization and resource planning)

Final prioritization based on ability to defer tests

- Irretrievable data
- Determination of site suitability
- Specific test and monitoring durations
North Ramp Explosion and Package Implementation
North Ramp and TBM Setup: Profile View

EXILE HILL

APPROX 450 ft

LEGEND

FAULT ZONE
RAMP CONFIGURATION
EXISTING GROUND

COMMENT:

NORTH PORTAL: BOX CUT FACE AT CS 0+00
ALCOVE IS APPROXIMATELY LOCATED AT CS 1+40

THE THOUSAND FEET GRID COORDINATE SYSTEMS ARE BASED ON THE NEVADA STATE COORDINATE SYSTEM CENTRAL ZONE.

ELEVATIONS AND ELEVATIONS ARE SHOWN IN FEET. FEET ARE SHOWN IN BOX BEING PLANS; WHERE NEEDED, UP-ELEVATIONS AND ELEVATIONS ARE SHOWN DUE TO Mounding.

STANDARD TUNNEL CONFIGURATION AND AZIMUTH FOR THE FIRST STATION BEGINS AT IS BASED ON TITLE II PACKAGE IN DESIGN DRAWINGS.

TOPOGRAPHY PROJECTION IS AN ESTIMATION.

CROSS SECTION TOPOGRAPHY TAKEN AT EACH CENTER LINE.

FAULT TRACES LOCATIONS EXCEPT FOR THE HILTON HILL FAULT ARE APPROXIMATIONS BASED ON AT-EARTH PROJECTIONS OF INFORMATION FROM GEOS AS IN TITLE II PACK.

THE MINIMUM TUNNEL CROSS-SECTION SIZE IS 10' X 10'. THE MINIMUM TUNNEL CROSS-SECTION SIZE IS 10' X 10'.

TBM CONFIGURATION

A - CUTTER HEAD

CAR B: FUNCTION/CONTENTS

1. TRANSFORMERS, SPARE CUTTER RACK
2. LUNCH ROOM, TOILET, FIRST AID ROOM
3. SHOP AREA

B - MAPPING PLATFORM ON TRAILING FLOOR SECTIONS

4. CABLE STORAGE, VENTLINE CARTRIDGE, CONVEYOR TAILPIECE
5. ROCK BOLT, AND MISCELLANEOUS STORAGE

ESTIMATED TOTAL LENGTH = 450 ft.

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Test Alcove #1: Proposed Layout Plan and Section