U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING

SUBJECT: FUTURE TESTING IN THE EXPLORATORY STUDIES FACILITY

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Near-term Exploratory Studies Facilities (ESF) Milestones Important to ESF Testing

Construction of Alcove 1	Ongoing
Initial Hydrologic Testing	October '93 - June '94
Start of TBM Excavation	August '94
Entry into block at TSw2 Horizon	March '95
TBM Daylight (South Ramp)	May '96
Initial Construction of Core Test Area (CTA) (MTL)	June '96

Detailed Test Planning

- Planning sequence generally follows implementation sequence
- Elements of detailed Planning:
  - Test and facility design requirements
  - Test performance criteria
  - Interference and site performance impact analyses
  - Procedures development
  - Procurement planning
  - Schedules, integrated networks, cost estimation
- Emphasis on flexibility and data management

Tests Planned in ESF Ramps and Drifts

Geologic/geohydrologic tests

- Underground geologic mapping
- Consolidated sampling
- Intact-fractures
- Percolation*
- Radial boreholes*
- Hydrochemistry*
- Hydrologic properties of major faults*
- Diffusion*
- Tomography/VSP
- Perched water

* Tests requiring alcoves

Tests Planned in ESF Ramps and Drifts

(Continued)

Geomechanical and engineering tests

- Consolidated sampling
- Excavation effects*
- Demonstration breakout room (TSw1 heater test)*
- Plate loading*
- Excavation investigations (convergence, monitoring, stability, ventilation)
- Overcore stress*
- *In situ* seal components testing*

* Tests requiring alcoves

Tests Planned for Main Test Level (MTL) Core Test Area (CTA)

Thermal and Waste Package Environment Tests
The CTA will support a consolidated program of tests meeting the information needs of the following activities:

- Consolidated sampling
- Canister-scale heater test
- Heated block
- Thermal stress
- Heated room
- Repository horizon near-field hydrologic environment
- Geomechanical attributes of the waste package environment

Tests Planned for Main Test Level (MTL) Core Test Area (CTA)

(Continued)

Geologic/Geohydrologic Tests

- Underground geologic mapping
- Consolidated sampling
- Percolation
- Radial boreholes
- Diffusion
- Hydrochemistry
- Tomography/VSP

Geomechanical and Engineering Tests

- Consolidated sampling
- Plate loading
- Rock mass strength
- Sequential drift mining
- Excavation investigations (convergence, monitoring, stability, ventilation)
- Overcore stress

ESF Construction Phase (Non-Deferrable) Tests

North Ramp Pad Area Construction

- Geological mapping of surface exposures

North Ramp Starter Tunnel

- Geologic mapping (drill/blast)
- Limited consolidated sampling
  - Mineralogy/petrology
  - Chloride/Chlorine-36
  - Matrix hydrologic properties
- Perched water (contingency)
- Construction monitoring/design verification

ESF Construction Phase (Non-Deferrable) Tests

(Continued)

North Ramp and TSw2 Main Drift (TBM Excavation)

- Geologic mapping
- Consolidated sampling
- Perched water (contingency)
- Construction monitoring/design verification
- Radial boreholes (anisotropy and contact)
- Hydrochemistry
- Hydrologic properties of major faults (initial geothermal phase)

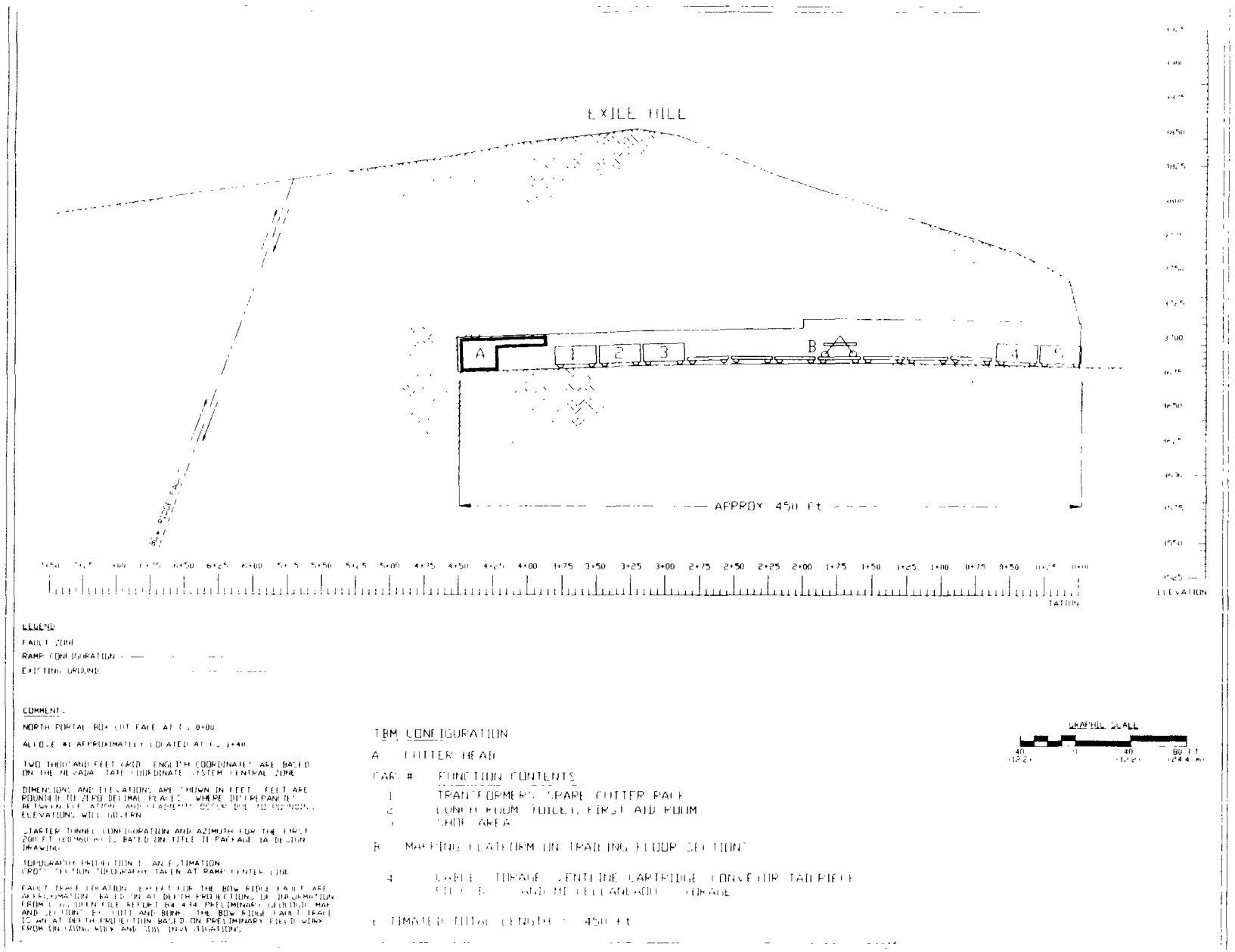
ESF Test Program Consolidation

Groups of tests are being consolidated, where feasible, to minimize construction impact and to streamline date acquisition

Areas of consolidation

1. Nine ESF sampling activities combined into a "consolidated sampling program" supported in the field by the underground geologic mapping activity
2. Six thermal/waste package environment activities consolidated into a single test program with initial and long-term (confirmation) phases
3. Excavation effects and sequential drift mining tests combined as a single test program performed in conjunction with drift development for large-scale thermal/waste package environment testing
4. Consolidation of bulk permeability tests and radial borehole tests into single test program with common methodology
5. Consolidation of five excavation monitoring test activities into single program integrated with construction program and supported by construction contractors

North Ramp and TBM Setup - Profile View



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