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

NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING

SUBJECT: EXPLORATORY STUDIES FACILITY UPDATE

PRESENTER: RICHARD L. CRAUN

PRESENTER'S TITLE AND ORGANIZATION: ASSISTANT MANAGER FOR ENGINEERING AND FIELD OPERATIONS
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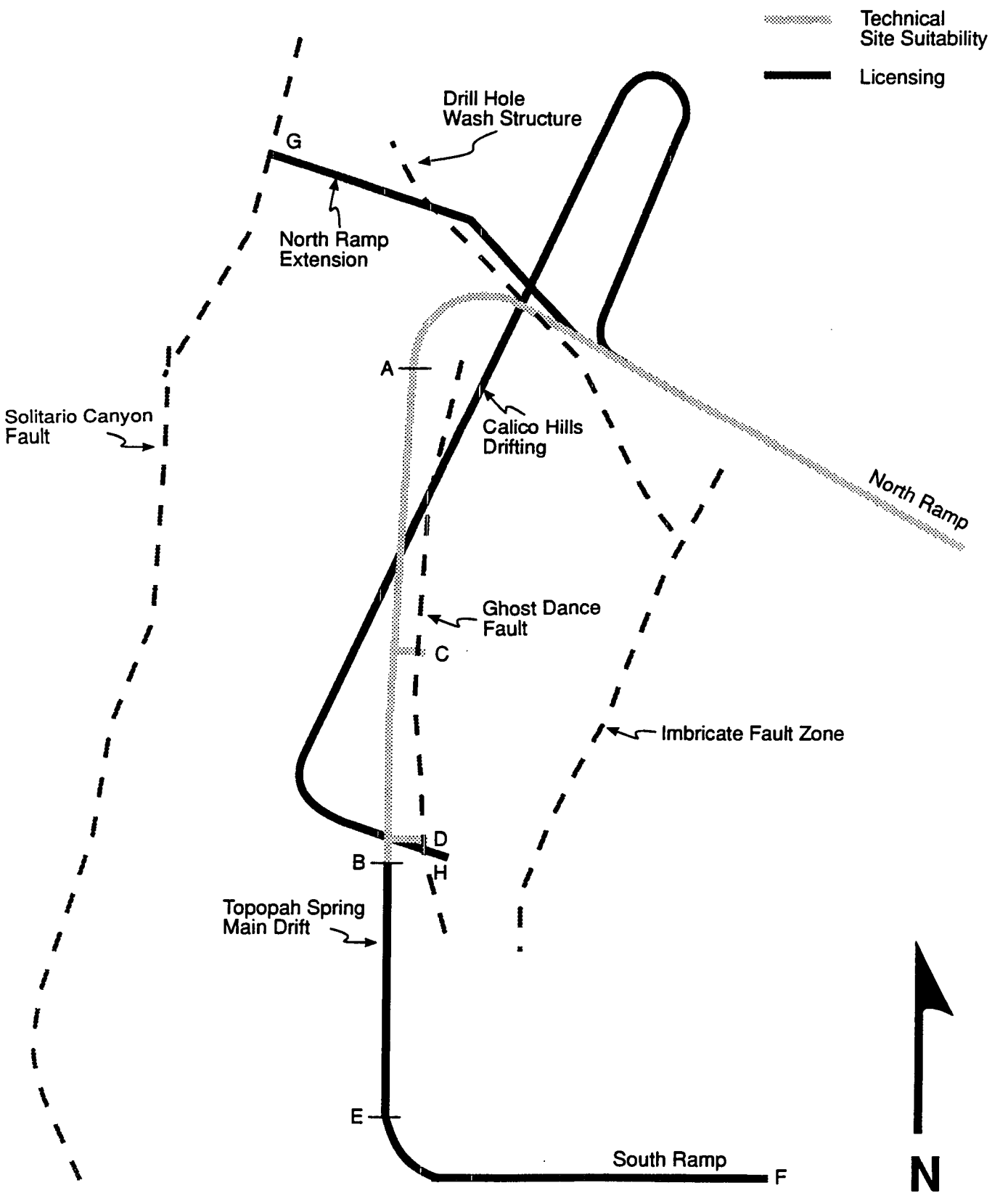
BEATTY, NEVADA
JANUARY 11, 1995

Update on Exploratory Studies Facility (ESF) Construction Activities

- Current ESF configuration and construction schedule for site suitability and licensing
- Detailed (6th level) fiscal year 1995 ESF budget (WBS 1.2.6)
- Planned production profile (i.e. usage) for the tunnel boring machine (TBM), and the rationale for limiting fiscal year 1995 production to only 1280m (4200 ft)
- Disposition and daily standby costs of TBM crews (3 shifts/day) during TBM shutdown for alcove construction (4 weeks for each alcove)
- Assuming that all alcove construction and exploratory drifting (other than that done by the large TBM) is to be by drill-and-blast, how is the introduction of water into the geology to be rationalized given the "to be minimized" mandate of 10 CFR Part 60? Will 10,000 gal/ft of excavation be used as in the starter tunnel?

What is the Current ESF Configuration and Construction Schedule for Site Suitability? For Licensing?

Exploratory Studies Facility Layout



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ESF Elements that Support Technical Site Suitability

- Topopah Spring Level (TSL) north ramp (2800m)
  - Complete by March 1996 - Point A
- Approximately 2/3 of the TSL main drift (2200m)
  - Complete by September 1996 - Point B
- Five alcoves along the TSL north ramp
  - Complete by March 1996
- Two Drifts off the TSL main drift to Ghost Dance Fault
  - Complete first drift by July 1996 - Point C
  - Complete second drift by November 1996 - Point D

Reference: Civilian Radioactive Waste Management Program Plan

ESF Elements that Support Licensing

- Remainder of TSL main drift (1000m)
  - Complete by December 1996 - Point E
- TSL south ramp (1900m)
  - Complete by May 1996 - Point F
- North ramp extension (1600 - 1800m)
  - Start by June 1998
  - Complete by January 1999 - Point G
- Calico Hills excavation (4300m)
  - Start by February 1999
  - Complete by December 1999 - Point H
- 20 to 30 additional alcoves at TSL

FY95 Exploratory Studies Facilities Budget

WBS	TITLE	CRWMS M&O	REECo	LANL	OTHER	TOTAL
1.2.6	ESF	$18,827K	$78,586K	$2,423K	$45K	$99,901K
1.2.6.1	MANAGEMENT & INTEGRATION	13,614K	3,883K	2,026K	45K	19,568K
1.2.6.1.1	COORDINATION, PLANNING & TECHNICAL ASSESSMENT	5,885K	1,707K	743K		8,335K
1.2.6.1.2	QUALITY ASSURANCE	1,067K	1,830K	60K		2,957K
1.2.6.1.3	SAFETY ANALYSIS		76K	101K		177K
1.2.6.1.4	TITLE III	4,076K				4,076K
1.2.6.1.5	TECHNICAL ENGINEERING MANAGEMENT	2,586K				2,586K
1.2.6.1.6	TEST MANAGEMENT		270K	1,122K		1,392K
1.2.6.2	SITE PREP & UTILITIES	1,173K	7,978K			9,151K
1.2.6.2.1.4	GENERAL ROADS & DRAINAGE		506K			506K
1.2.6.2.2.1	FIRST ACCESS - UTILITIES	1,173K	1,310K			2,483K
1.2.6.2.2.4	OTHER LOCATIONS - UTILITIES		3,142K			3,142K
1.2.6.2.2.5	69kV POWER SYSTEM		3,020K			3,020K
1.2.6.3	SURFACE FACILITIES	224K	3,563K			3,787K

ESFUPDA.WB5.125.NWTRB/1-11-95

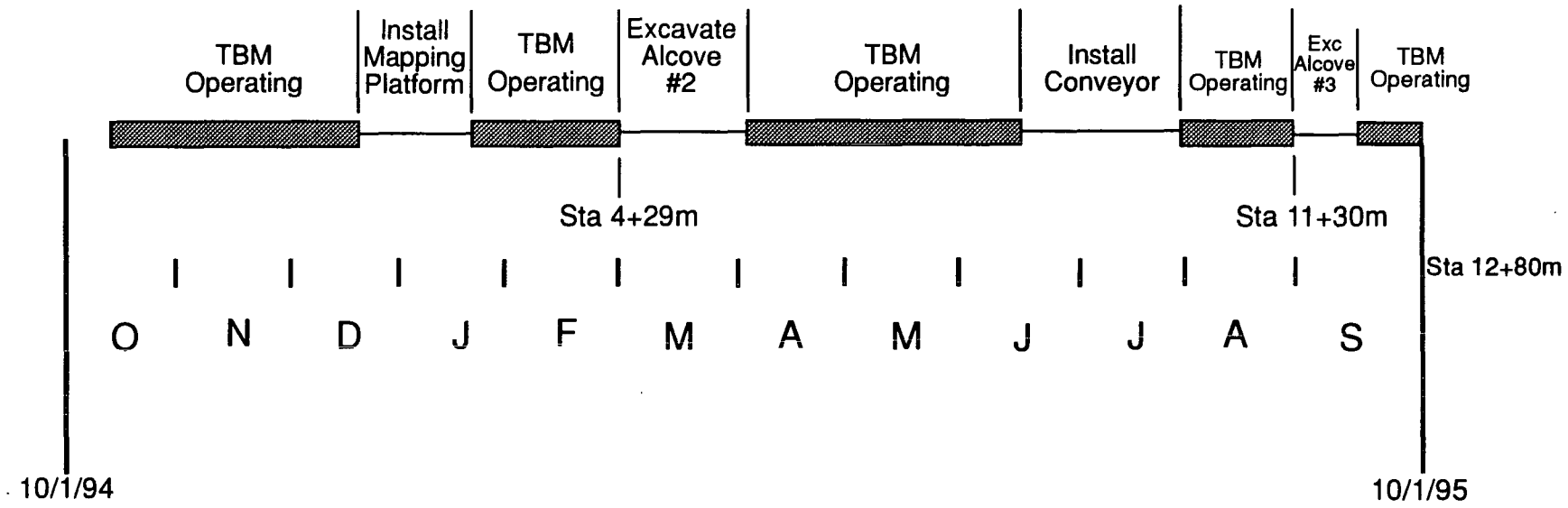
FY95 Exploratory Studies Facilities Budget

(continued)

1.2.6.3.1.1	FIRST ACCESS - SURFACE FACILITIES	224K	3,563K			3,787K
1.2.6.4	FIRST ACCESS- SUBSURFACE	252K	44,242K			42,306K
1.2.6.4.1	PORTRAL/COLLAR		475K			475K
1.2.6.4.2	NORTH RAMP	252K	41,579K			41,831K
1.2.6.4.4	TEST SUPPORT		2,188K			2,188K
1.2.6.6	UNDERGROUND EXCAVATIONS	2,938K				2,938K
1.2.6.6.1.2	TOPOPAH SPRING LEVEL	2,938K				2,938K
1.2.6.8	OPERATIONS	436K	9,154K	397K		9,987K
1.2.6.8.1	MAINTENANCE		853K			853K
1.2.6.8.2	OPERATIONS		6,787K			6,787K
1.2.6.8.3	ES&H		314K			314K
1.2.6.8.4	INTEGRATED DATA & CONTROL SYSTEM	436K	1,200K	397K		2,033K
1.2.6.11	SUBSURFACE UTILITIES		3,957K			3,957K
1.2.6.12	COMMON EQUIPMENT	190K	5,809K			5,999K

What is the planned production profile (i.e. usage) for the TBM and the rationale for limiting FY95 production to only 1280m?

FY95 Excavation Schedule



- **FY 1995 Plan 5 days/week and 3 shifts/day**
- **30-week TBM operation**
- **Average advance approximately 9 meters/day**
- **67% TBM availability**
- **50-60% utilization**

TBM Downtime

- Three weeks downtime for installation of the mapping platform
- Four weeks downtime for excavation of Alcove #2 using drill-and-blast method
- Five weeks downtime for installation of the subsurface conveyor
- Four weeks downtime for excavation of Alcove #3 using drill-and-blast method

TBM Operating Time

- FY 1995 plan is 5 days/week with 3 shifts/day
- FY 1995 schedule rate with muck cars = 8m/day
- FY 1995 schedule rate with conveyor = 12.5m/day

Efforts to Reduce Cost and Improve Schedule

- Evaluate alcove excavation techniques to reduce TBM downtime
- Evaluate specifications and requirements of the ground support systems to improve fabrication and installation time
- Reevaluate the conveyor installation sequence based on lessons learned from mapping platform installation to reduce TBM downtime
- Review procurement of consumables needed to support excavation to ensure maximum advance rate

During TBM shutdown of four weeks for construction of each alcove, what becomes of the crews used to operate the TBM (3 shifts/day)? What is the daily standby costs of these crews?

- TBM crews will be used to excavate the alcoves and to perform TBM maintenance and modifications, as necessary
- Standby cost (3 shifts/day) = $20k/day

Assuming that all alcove construction and exploratory drifting (other than that done by large TBM) is to be done by drill-and-blast, how is the introduction of water into the geology to be rationalized given the "to be minimized" mandate of 10CFR Part 60? Will 10,000 gal/ft of excavation be used, as in the starter tunnel?

Water Usage

- The use of mechanical excavators is still being studied for use in excavating alcoves and exploratory drifts
- The north ramp extension and Calico Hills drifting will be done using a TBM (approximately 18ft diameter)
- The waste isolation evaluations for the excavation of the north ramp indicate an acceptable water use of 7.3 cum/m (590 gal/ft) of tunnel
- The total amount of water used to excavate the starter tunnel and Alcove #1 was 500,000 gallons, or about 2000 gal/ft of excavation