

**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 CRAUN

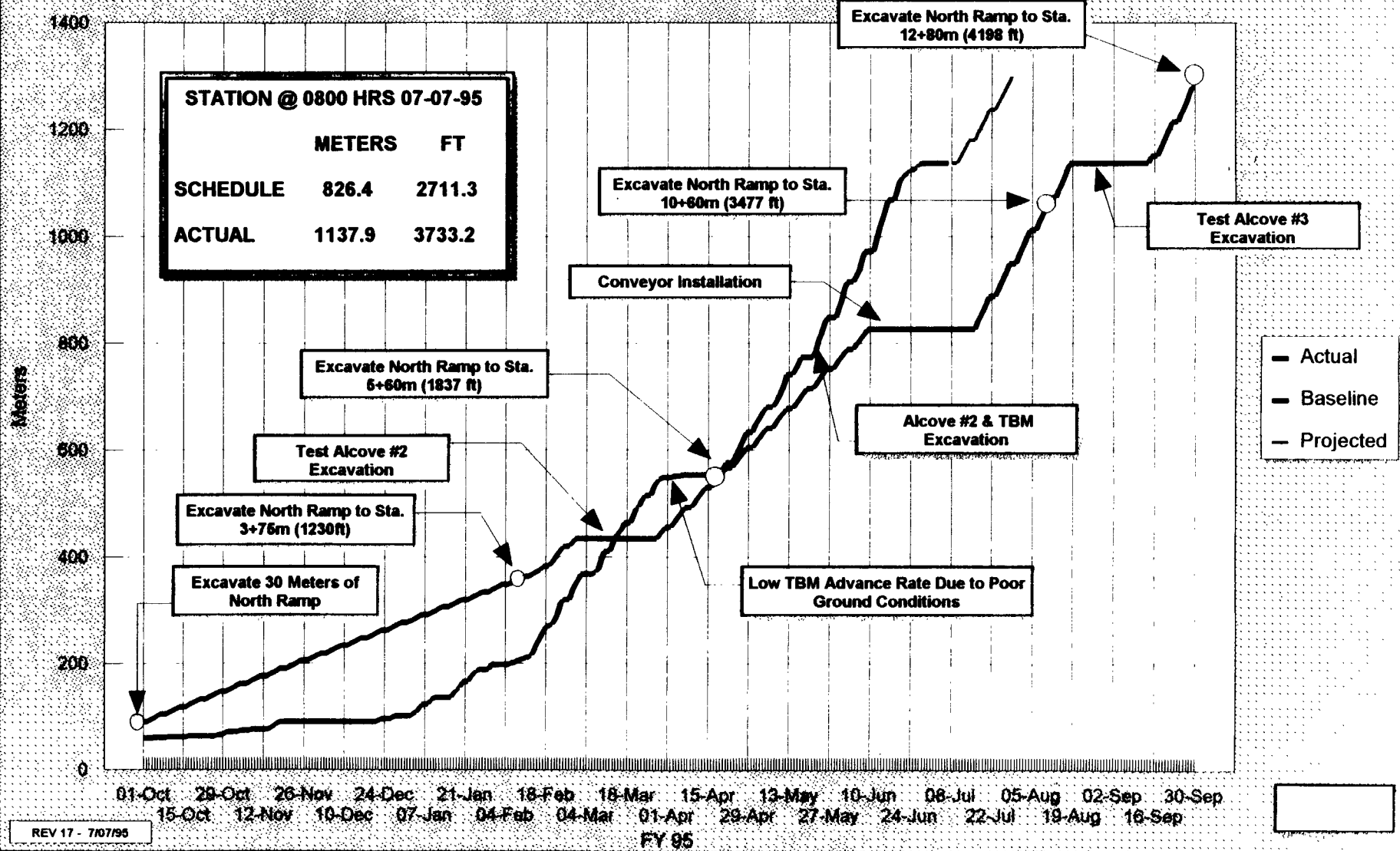
**PRESENTER'S TITLE
AND ORGANIZATION: ASSISTANT MANAGER, ENGINEERING & FIELD OPERATIONS
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE**

TELEPHONE NUMBER: (702) 794-7787

**SALT LAKE CITY, UTAH
JULY 11-12, 1995**

TBM Progress

Baseline vs Actual



Photos

Tunneling Advance

- **Advance by segment**
 - **3.8 meters/day average (up to station 3+75 meters)**
 - **6.2 meters/day average (station 3+75 to 5+60 meters)**
 - **11.9 meters/day average (station 5+60 to 10+60 meters)**
 - **Highest day rate: 23.6 meters / 77.5 feet**
 - **Highest weekly rate: 96.1 meters/ 315.2 feet**

Subsurface Accomplishments

- **Accomplishments**
 - **TBM Start - September 20, 1994 (Six weeks late)**
 - **Station 3+75 meters - March 8, 1995 (20 days late)**
 - **Station 5+60 meters - April 19, 1995 (1 day ahead of schedule)**
 - **Station 10+60 meters - June 16, 1995 (55 days ahead of schedule)**

Subsurface Projections

- **Projections**
 - **Station 12+80 - 2 months earlier than plan**
 - **Alcove #2 - July 24, 1995**
 - **Alcove #3 - Start August 18, 1995 - Ahead of schedule using generic alcove design**
 - **Subsurface Conveyor startup - July 17, 1995 - Additional conveyor sections on order**

Continued Enhancements to Performance

Coordination and communications between engineering and construction personnel

- **Actions Taken:**
 - **Title III Engineering in the field has been empowered to make decisions locally**
 - **Improved communications between all elements via weekly meetings (Design/Construction/DOE)**

Continued Enhancements to Performance

(Continued)

Approach to procurement

- **Actions Taken:**

- **Continuous use or blanket orders are in place for most tunneling consumables. Purchase options are exercised expeditiously**
- **The implementation procedure for procurements are being revised to reduce the number of required steps for procurment actions**

Continued Enhancements to Performance

(Continued)

Quality Assurance Practices

- **Actions Taken:**
 - **QA practices were reviewed and found to be appropriate, as required by design specifications**
 - **Designs specifications are being reviewed and modified to focus the technical requirements**

Continued Enhancements to Performance

(Continued)

TBM production in faulted ground

- **Actions Taken:**
 - **Steel lagging design changed for ease of installation**
 - **Wire mesh in place of steel lagging, when suitable**
 - **Super Swellex rockbolts authorized in addition to Williams rockbolts**
 - **Use of channel sections with rockbolts**

Continued Enhancements to Performance

(Continued)

TBM production in faulted ground (Continued)

- **Actions Taken:**
 - **Completed TBM Modifications**
 - » **Hydraulic pumps and piping has been modified**
 - » **Gripper cycle time has been reduced**

Continued Enhancements to Performance

(Continued)

TBM production in faulted ground (Continued)

- **Actions Planned:**
 - **TBM Modifications**
 - » **Shuffle shoe booster for more effective forward movement**
 - » **Thrust modifications to allow push off from inverts**
 - » **Moveable flaps to allow gap between grippers to be closed**
 - » **Grippers modified to allow wider range of movement and extension**
 - » **Three grip mode**
 - **Ground Support Design**
 - » **Lighter steel sets being investigated**
 - » **Investigating steel set spacing (4' to 6')**

Continued Enhancements to Performance

(Continued)

Outage Management

- **Actions Taken:**

- **Developed concurrent operations to allow the TBM to continue advance during alcove excavation**
- **Constructor has developed an approach to safely permit installation of conveyor during TBM operations**
- **Underground utilities are shielded during blasting operations to eliminate need of removal and reinstallation**

YMP Board of Consultants for Tunneling and Underground Construction

- **Board of Consultants**
 - **Chairperson**
 - **3 Board Members**
- **Technical Services Pool**
- **Board Charter**
 - **Provide recommendations for cost-effective tunneling, safety and design adequacy**
 - **Meet at two-month intervals**

Board of Consultants

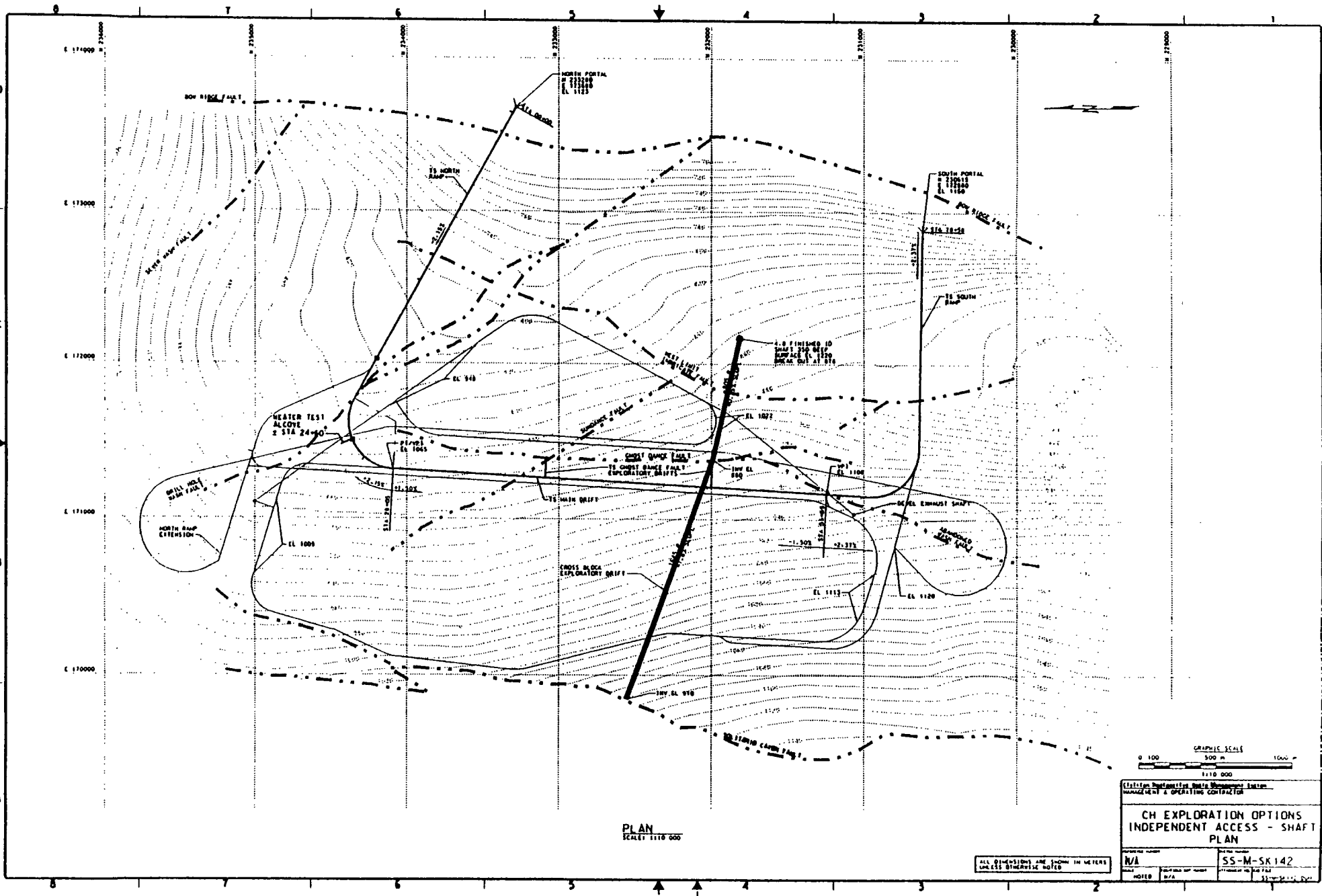
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- **Board Expertise**
 - **Geotechnical engineering**
 - **Construction management**
 - **Project management**
 - **TBM design and modifications**

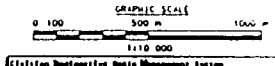
- **Status**
 - **Chairperson selection in process**
 - **Candidate board members identified**
 - **Technical pool identified**

Calico Hills Access Option

- **YMP is reviewing a baseline change to the Program Plan to bring Calico Hills access forward from FY97 to FY95**
- **Drill-and-blast shaft access to Calico Hills level with east-west roadheader drift intersecting the Ghost Dance Fault and terminating at the Solitario Canyon Fault**
- **Option is decoupled from the main ESF loop and is not intrusive in the potential repository emplacement zone**
- **Funding limitations may impact implementation of option**



PLAN
SCALE: 1:110 000



Client: **CH Exploration Options - Independent Access - Shaft Plan**
Management & Operating Contractor

CH EXPLORATION OPTIONS
INDEPENDENT ACCESS - SHAFT
PLAN

Project Number	N/A	Sheet Number	SS-M-SK142
Notes	N/A	Scale	1:110 000

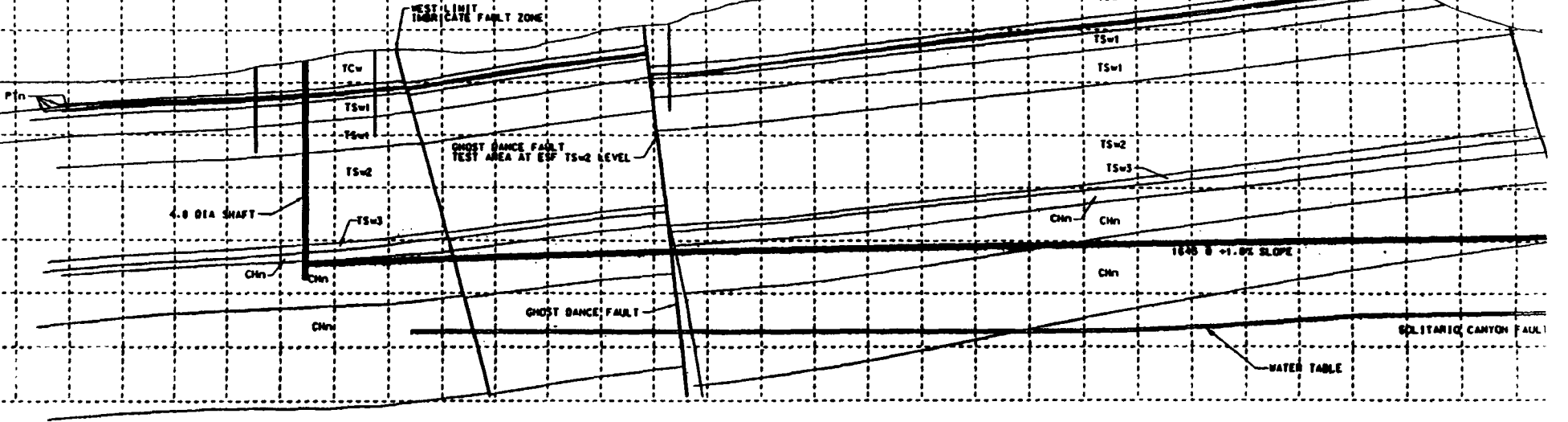
ALL DIMENSIONS ARE SHOWN IN METERS UNLESS OTHERWISE NOTED

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3



PROFILE
 SCALE: 1:5000

Basis for Considering Calico Hills Option as Defined

- **Lowest cost**
- **Best schedule**
- **Small capital investment**
- **Option lends itself to apply commercial standards to design and construction**

ESF Summary

- **ESF surface construction**
 - All essential support to tunneling is working
 - Change house is behind schedule
- **ESF subsurface construction**
 - Meeting milestones
 - Ahead of schedule
 - Applied lessons learned effectively
 - Good safety record