

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

**NUCLEAR WASTE TECHNICAL REVIEW BOARD
SG&G PANEL MEETING:
SCENARIO A AND ESF DESIGN/CONSTRUCTION**

SUBJECT: ESF UPDATE

PRESENTER: DR. WILLIAM SIMECKA

**PRESENTER'S TITLE
AND ORGANIZATION: ASSISTANT MANAGER
ENGINEERING AND FIELD OPERATIONS**

**PRESENTER'S
TELEPHONE NUMBER: (702) 794-7933**

**JUNE 13-14, 1994
LAS VEGAS, NEVADA**

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Agenda

- **Construction Management Status**
- **ESF Design / Review Schedule**
- **Schedule for North Ramp Construction**
- **ESF Strategy Within the PPA (“Scenario A”)**

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Construction Management Changes

The Construction Management Organization (CMO) has recently been modified to allow more effective Owner-CMO-Constructor interactions.

- **The roles of the primary participants have been more clearly defined**
- **The CMO has been empowered to operate more in the manner of the classic Construction Manager**

Roles of Primary Parties

DOE - As the Owner has the following functions

- **Defines requirements**
- **Sets milestones and goals**
- **Allocates funding**
- **Oversees the Construction Management Organization (CMO)**
- **Accepts constructed configuration items and approves Job Packages and planning and scheduling activities**

Roles of Primary Parties

(CONTINUED)

CMO - As the Construction Manager, CMO:

- **Provides Construction Management (CM) for the ESF, Surface Based Testing (SBT), and General Site Facilities (GSF)**
- **Provides technical direction to the Constructor**
- **Provides “Notices to Proceed”**
- **Provides design interpretation for REECo**
- **May direct REECo to “Stop Work” under certain conditions**
- **Reviews and maintains status of REECo Costs & Schedules**
- **Reconciles cost estimates of A/E and constructor**

Roles of Primary Parties

(CONTINUED)

REECo supported by Kiewit/PB - As Constructor:

- **Develops the facility in accordance with design, budget and schedule**
- **Provides the personnel for maintenance and operation**
- **Provides design constructability input and review**
- **Provides materials and equipment**
- **Provides for first line QC and safety program**

Current CMO Status/Near Term Schedule

- **M&O has assumed full responsibility for construction oversight effective April 15, 1994**
- **Additional CMO personnel hiring began April 30, 1994**
- **Construction Management Plan revised/approved by June 27, 1994**
- **CMO administrative areas (scheduling, cost tracking, etc.) will phase in April 30 - July 1 as personnel come on board**

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ESF Design Schedule (FY 1994-1995)

Package 1D - North Portal Surface Facilities

- **90% Review - June 20, 1994**

Package 2C - North Ramp (to station 28+00 meters)

- **90% Review - May 2, 1994**
- **Release for Construction expected August 1, 1994**

ESF Design Schedule (FY 1994-1995)

(CONTINUED)

Package 8A - Main Topopah Spring Level (TSL) Drift

- **50% Review - September 26, 1994**
- **90% Review - February 1, 1995**

Package 8B - North Ramp Extension

- **50% Review - February 1, 1995**
- **90% Review - July 1, 1995**

ESF Design Schedule (FY 1994-1995)

(CONTINUED)

*** Package 3A - South Portal Pad & Access Road**

- **50% Review - February 1, 1995**
- **90% Review - June 1, 1995**

*** Package 4 - South Ramp, Surface to TSL**

- **50% Review - March 15, 1995**
- **90% Review - July 1, 1995**

**** Subject to Funding***

Other Near-Term ESF Design Activities

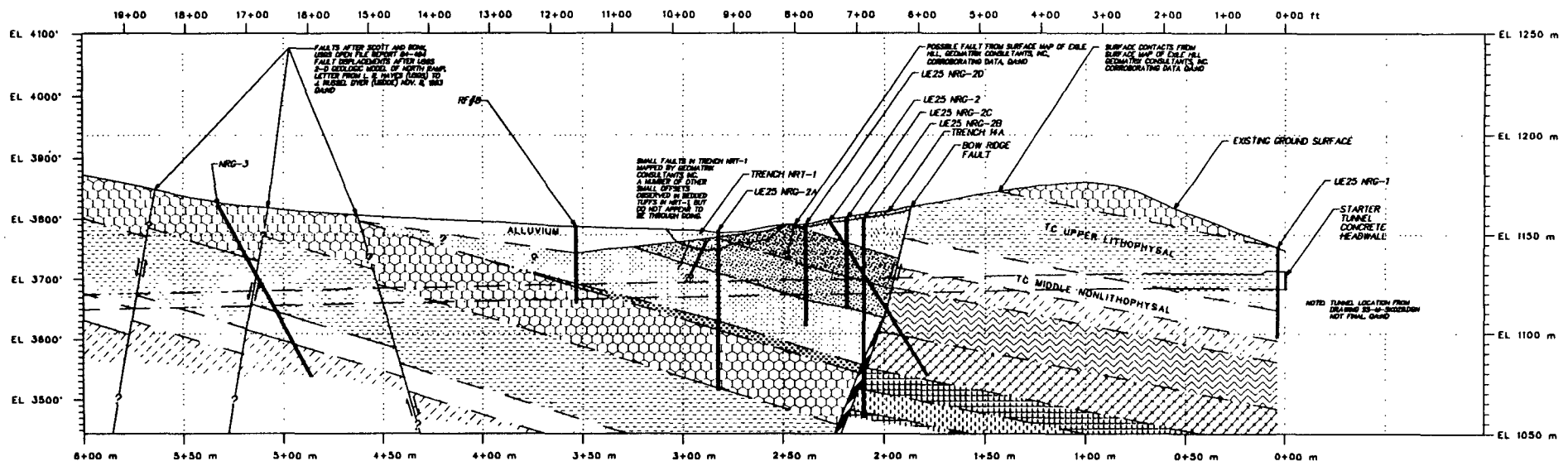
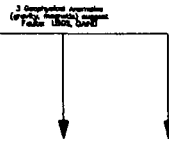
- **Integrated Data Control System (IDCS)**
 - **50% Review - June 7, 1994**
- **Alcove design - (North Ramp test alcoves, Ghost Dance Drifts, Heater Test Drifts)**
 - **50% Review - 8/1/95**
- **Mechanical Excavation Methods Study**
 - **Recommendation by end of FY1994**
- **Calico Hills Access Alternatives Study**
 - **Early FY1995 Start**

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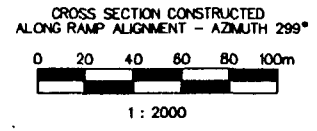
North Ramp Construction Schedule

- **TBM operations are expected to begin August 8, 1994**
- **Initial operations can be characterized as a “Startup Testing Phase followed by a Shakedown Phase”**
- **Advance rate will be low during this period due to:**
 - **Training of operational personnel**
 - **Startup testing of the TBM systems**
 - **Encounter with Bow Ridge Fault at approximately 1+90 meters**
 - **Negotiation of “Rainier Mesa” material from Bow Ridge to approximately Station 2+70**
 - **Rail haulage of muck until conveyor installation in early to mid-1995**
 - **Completion of North Ramp (to 28+00) - Early FY1996**



FORMATION	MEMBER	MAJOR ZONES	CORRELATIVE SUBZONES	FURTHER DESCRIPTION
TAMBER MOUNTAIN TUFF	RAINIER MESA			LITHIFIED, NONWELDED
				NONLITHIFIED, TUFF AND FALLOUT
		?		PRE-RAINIER MESA BEDDED TUFF
				TUFF UNIT "X"
				NONLITHIFIED, REWORKED PYROCLASTIC FLOW AND FALLOUT
PAINTBRUSH TUFF	TVA CANYON	UPPER NONLITHOPHYSAL	CAPROCK	NONWELDED TO DENSELY WELDED
		UPPER LITHOPHYSAL	UPPER CLIFF	DENSELY WELDED
		MIDDLE NONLITHOPHYSAL		DENSELY WELDED
		LOWER LITHOPHYSAL		DENSELY WELDED
		HACKLY		DENSELY WELDED
		COLUMNAR		DENSELY WELDED
PAH CANYON				BEDDED TUFF
				NONWELDED
				BEDDED TUFF

LEGEND	
---	LITHOLOGIC CONTACT, SOLID LINE WHERE APPROXIMATE, DASHED LINE WHERE UNCERTAIN
▨	FAULT ZONE
-	FAULT, P-ATTITUDE UNCERTAIN
---	PROPOSED TUNNEL OUTLINE



Borehole	Projected to Section along Azimuth	Ground Elevation (m)	Distance to Section (m)
UE25 NRG-1	NP	1144.05	0.0
UE25 NRG-2	182°	1157.23	15.20
UE25 NRG-2A	2°	1152.31	30.85
UE25 NRG-2B	182°	1158.87	24.05
UE25 NRG-2C	182°	1158.80	22.14
UE25 NRG-2D	182°	1155.82	28.88
UE25 NRG-3	211°	1185.35	20.20
RF#8	2°	1154.35	86.52

Note: Boreholes projected into cross section along strike of rock units
 NP - Not projected

ESF NORTH RAMP
 YUCCA MOUNTAIN SITE
 CHARACTERIZATION PROJECT
 CROSS SECTION THROUGH EXILE HILL
 NORTH RAMP 0+00 TO 6+00m

Sandia National Laboratories

DRAWN ALL CHECKED: [Signature]

SCALE: AS SHOWN
 VERT. SCALE: AS SHOWN

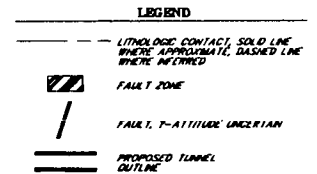
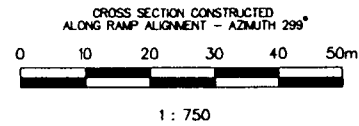
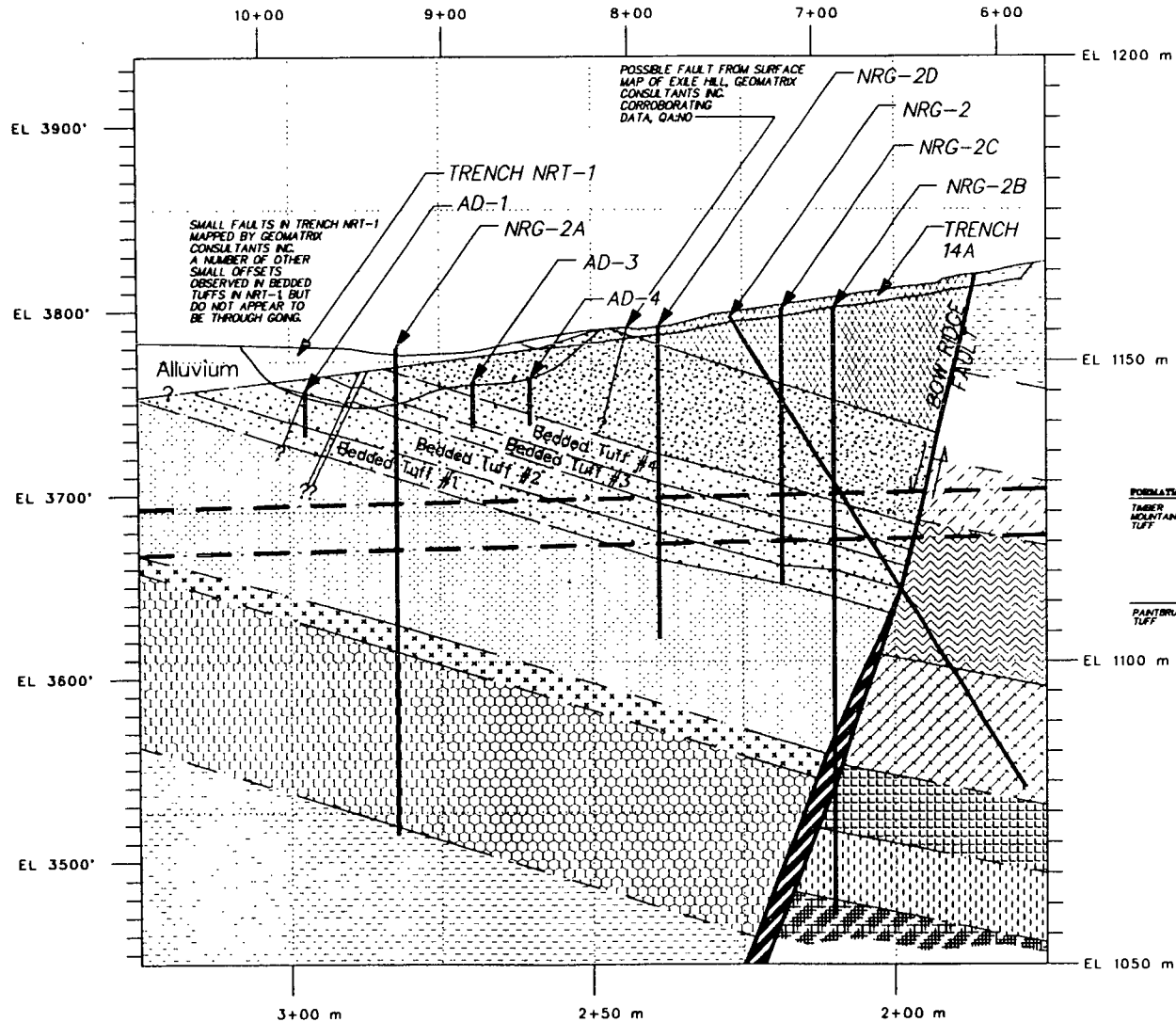
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 SHEET 1 OF 1

REVISIONS

NO.	DATE	BY	REVISION
3			
2			
1			

QA:QA

STRATIGRAPHIC NOMENCLATURE IN DEVELOPMENT BY USGS



FORMATION	MEMBER	MAJOR SECTION	CORRELATIVE UNIT/UNIT	UNIT/UNIT DESCRIPTION
TANAGER MOUNTAIN TUFF	RAINIER MESA			UNIT/UNIT UNKNOWN UNIDENTIFIED TUFF AND FALL OUT
				UNIDENTIFIED TUFF AND FALL OUT UNITS SEPARATED BY UNLASSIFIED PYROCLASTIC FLOW AND FALL OUT RECORDED PYROCLASTIC FLOW AND FALL OUT
ANTHROPUS TUFF				UNIDENTIFIED TO HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED
				HEAVILY BELIEVED

STRATIGRAPHIC NOMENCLATURE IN DEVELOPMENT BY USGS

North Ramp Stations

3				
2				
1				
REV. NO.	DATE	BY	VERSION	SUPERSEDES
REVISIONS				
QA:QA				

ESF NORTH RAMP
YUCCA MOUNTAIN SITE
CHARACTERIZATION PROJECT
CROSS SECTION THROUGH BOW RIDGE FAULT
NORTH RAMP 1+75 TO 3+25m

Sandia National Laboratories

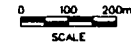
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CHECKED: OEB

HOR. SCALE: AS SHOWN
VERT. SCALE: AS SHOWN

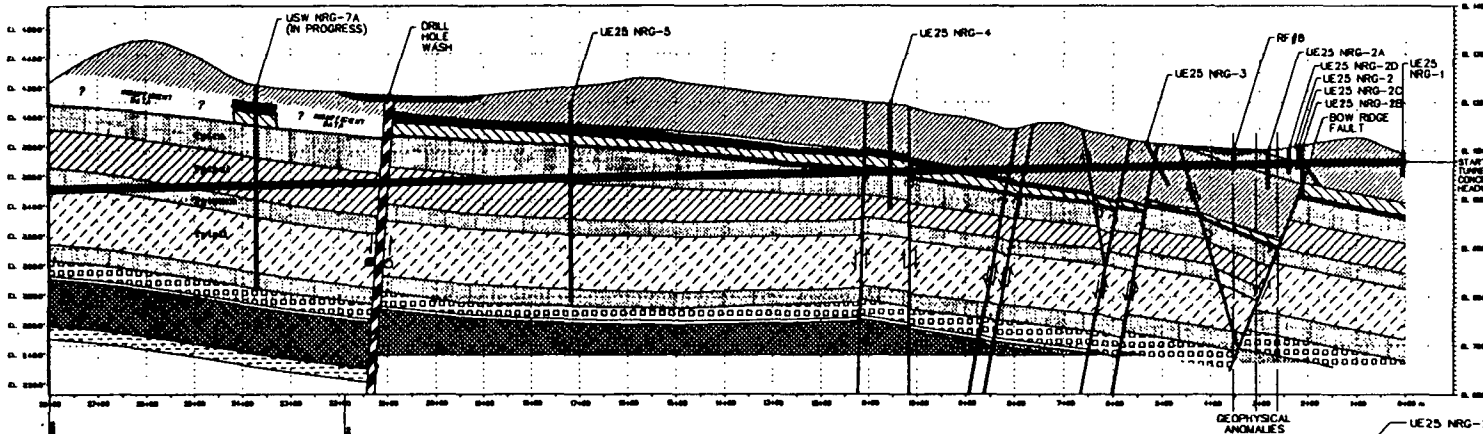
A. F. Y. ADPITO & ASSOC., INC.
DRAND APERTON, COLORADO, USA

DRAWING NO.: EX-01AL
VERSION: 0A1
SHEET 1 OF 1

SECTION VIEW

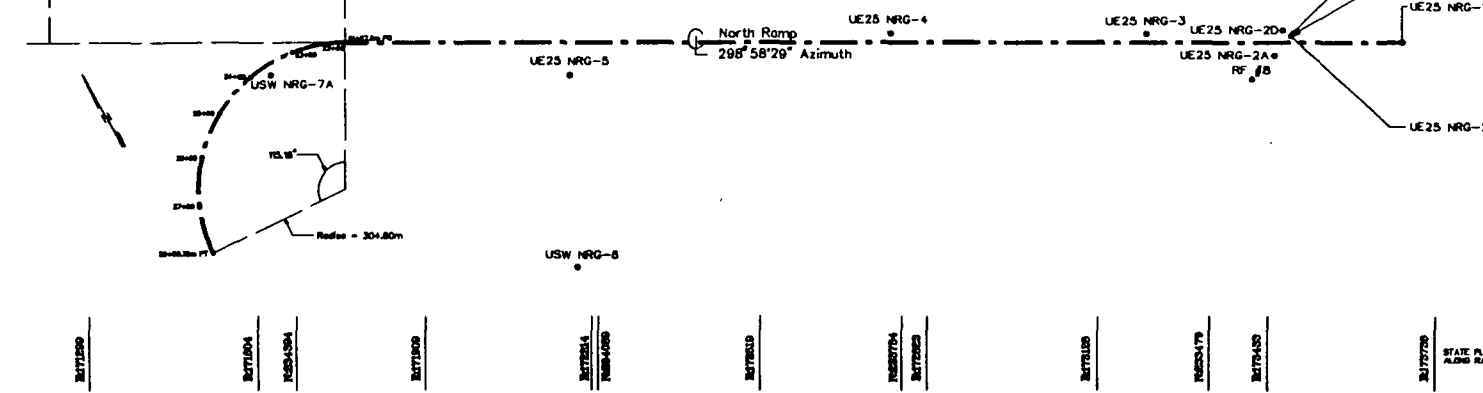


SYMBOLS



UNIT	PERMEABILITY	DEFORMATION	TERRAIN-GEOMORPHOLOGICAL UNIT
TAMER MOUNTAIN TUFF	?	Trmt: pre-Rainier Mesa Tuff bedded tuff	UD
STARTER TUFFS		Tpst: tuff with "X"	
CONCRETE HEADWALL		Tpob3: pre-tuff unit "X" bedded tuff	
TIVA CANYON		Tpct: Tiva Canyon Tuff	TC
YUCCA MTA		Tpbt4: pre-Tiva Canyon Tuff bedded tuff	
PAN CANYON		Tpct3: pre-Yucca Mountain Tuff bedded tuff	PC
PAINTERFLUSH TUFF		Tpct2: pre-Pan Canyon Tuff bedded tuff	
TOPPOPH SPRING		Tpctm: Crystal-rich norththophyid crystal-rich vitric zone	TSat
		Tpctk: Upper Lithophysid crystal-rich and crystal-poor parts	
		Tpctpx: Middle norththophyid crystal-poor	TSad
		Tpctl: Lower Lithophysid crystal-poor	
		Tpctv: Vitric vitrophyre and non welded subzone	TSad
CALICO HILLS		Tpctt: pre-Topopoh Spring Tuff bedded tuff	
CRATER FLAT TUFF		Tact: Calico Hills bedded tuff	
		Tcp: Pre-Pan Tuff	

PLAN VIEW



STRATIGRAPHIC NOMENCLATURE DEVELOPED BY USGS

- DRILL HOLE WASH FAULT ZONE, LOCATION AND ALTITUDE UNCERTAIN
- FAULT, ? - ALTITUDE UNCERTAIN
- PROPOSED NORTH RAMP ALIGNMENT
- APPROXIMATE
- STRIKE-SLIP SEPARATION INTO PAGE
- STRIKE-SLIP SEPARATION OUT OF PAGE

PRELIMINARY RAMP DATA
QA:QA

Station (m)	Grade	State Plane Coordinates (m)	Distance (m)
0+00 (Start)		112478.0	0.00
0+10		112488.0	10.00
0+20		112498.0	20.00
0+30		112508.0	30.00
0+40		112518.0	40.00
0+50		112528.0	50.00
0+60		112538.0	60.00
0+70		112548.0	70.00
0+80		112558.0	80.00
0+90		112568.0	90.00
1+00		112578.0	100.00

BOREHOLE PROJECTIONS
QA:QA

Borehole	Projected to Station along Alignment	Projected Distance (m)	Offset from Alignment (m)
UE25 NRG-1	100	100.00	0.00
UE25 NRG-2	150	150.00	0.00
UE25 NRG-3	200	200.00	0.00
UE25 NRG-4	250	250.00	0.00
UE25 NRG-5	300	300.00	0.00
USW NRG-7A	10	10.00	0.00

Note: Boreholes projected into cross section along station of north ramp.
SP - not projected

Reference: Map 88-10-2025000 and verbal communication from 8-21 October, 1988.

REV. NO.	DATE	BY	REVISIONS	SUPPONENTS
5	4-21-89	QMS	QMS	
4	3-28-89	QMS	QMS	
3	2-2-89	QMS	QMS	
2	1-1-89	QMS	QMS	
1	1-1-89	QMS	QMS	

ESF NORTH RAMP
YUCCA MOUNTAIN SITE
CHARACTERIZATION PROJECT
CROSS SECTION ALONG RAMP FROM
0+00 TO 28+00.38m (P1)

Sandia National Laboratories

DATE DRAWN: USGS 8-2-83
REVISIONS: QMS 1-3-84
CHECKED BY: MPAVLA

3-D MODEL OF NORTH RAMP LETTER FROM R. HANLEY (USGS) TO T. A. HERRILL (ORNL) (AUGUST 1988) (S-88-001)

SCALE: AS SHOWN
VERT. SCALE AS SHOWN

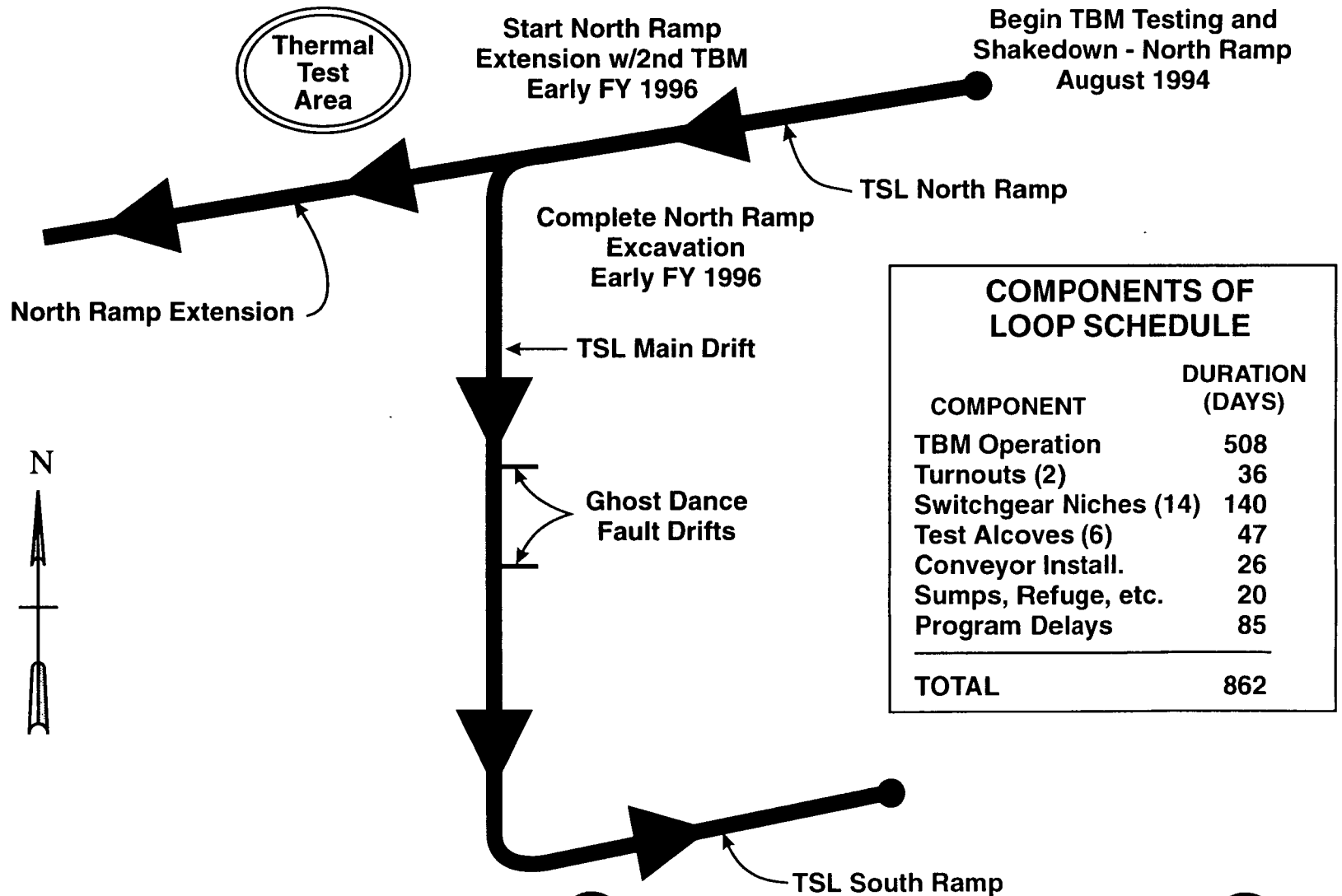
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SHEET 1 OF 1

QA:QA

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Exploratory Studies Facility Topopah Spring Level



Excavation Sequence

- **Complete North Ramp with 7.62 meter TBM (TBM #1)
Alcoves 1 (existing), 2, 3, 4 and 5 concurrent with TBM ops.**
- **Acquire second TBM (lease or buy, new or used) (TBM #2)
during FY 95**
- **Begin excavation of North Ramp Extension (NRE) with TBM
#2 early FY1996**
- **TBM #1 proceeds with TSL Main Drift excavation in parallel
with NRE excavation**

Excavation Sequence

(CONTINUED)

- **When TBM #1 clears Ghost Dance Fault (GDF) Drift locations, excavate GDF drifts (approximately 150-200 meters each)(Alcoves 6 & 7)**
- **TBM #1 resumes TSL Main Drift and proceeds toward daylight at South Portal**
- **TBM #2 completes NRE, goes to Calico Hills excavation (if needed)**
- **Heater Test drifting is done off the north side of the NRE when drift sites are cleared by TBM #2**