

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

**NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING**

**SUBJECT: YUCCA MOUNTAIN PROJECT OFFICE
UPDATE**

PRESENTER: CARL P. GERTZ

**PRESENTER'S TITLE
AND ORGANIZATION: PROJECT MANAGER
DEPARTMENT OF ENERGY
LAS VEGAS, NEVADA**

**PRESENTER'S
TELEPHONE NUMBER: (702) 794-7920**

DENVER, COLORADO
JULY 13-14, 1993

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

**NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING**

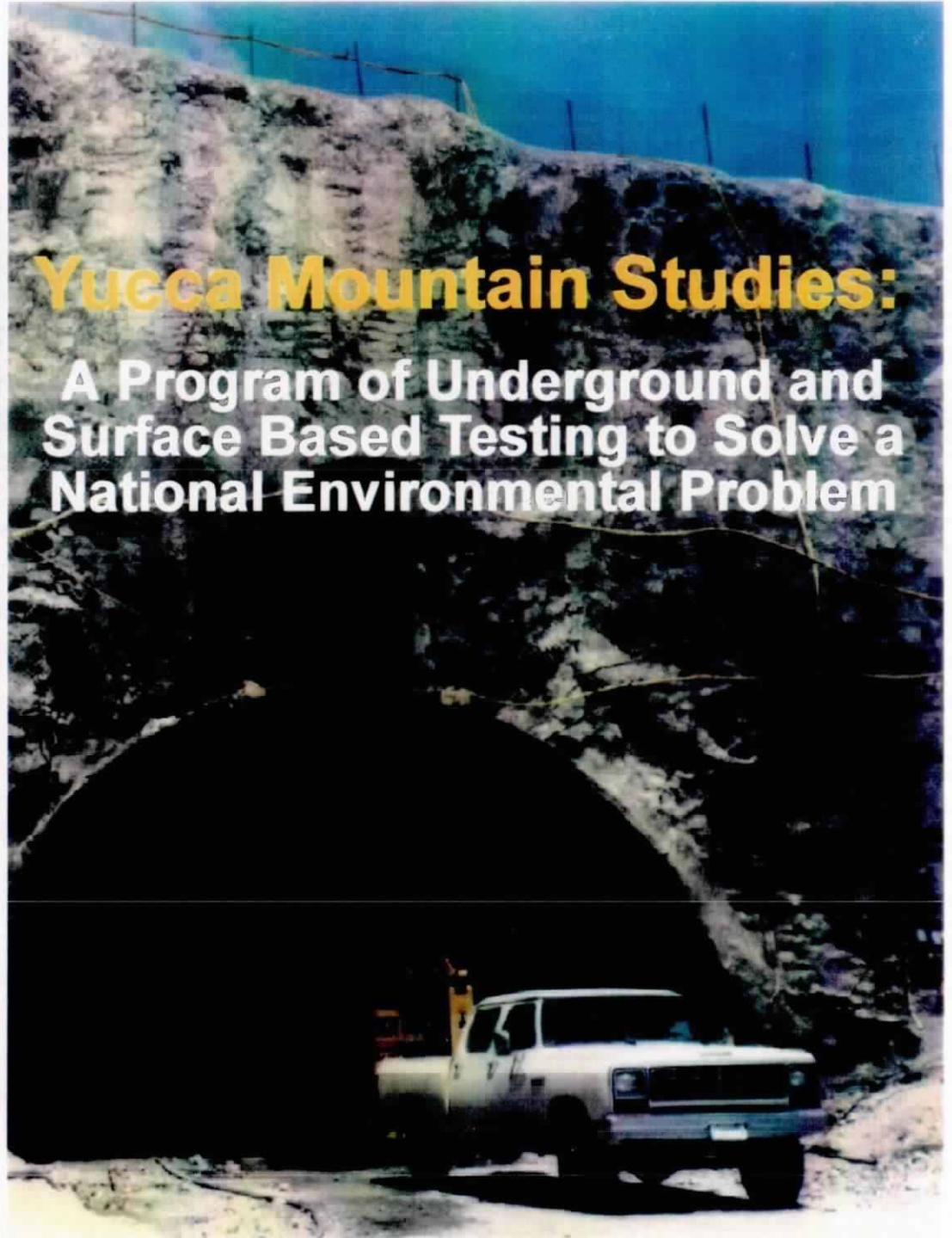
**SUBJECT: YUCCA MOUNTAIN PROJECT OFFICE
UPDATE**

PRESENTER: CARL P. GERTZ

**PRESENTER'S TITLE
AND ORGANIZATION: PROJECT MANAGER
DEPARTMENT OF ENERGY
LAS VEGAS, NEVADA**

**PRESENTER'S
TELEPHONE NUMBER: (702) 794-7920**

**DENVER, COLORADO
JULY 13-14, 1993**



Yucca Mountain Studies:

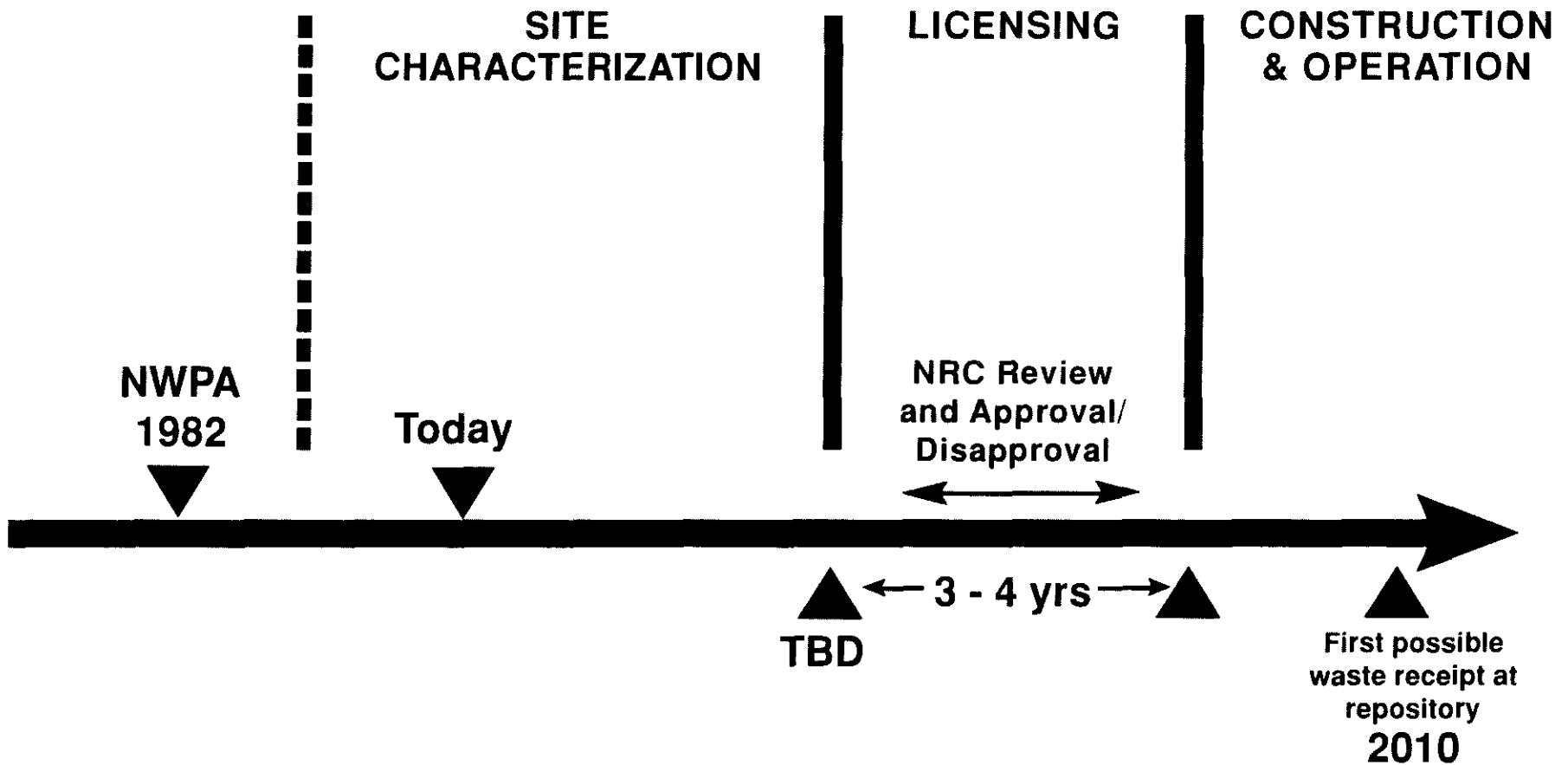
A Program of Underground and Surface Based Testing to Solve a National Environmental Problem

SCIENTIFIC STUDIES FROM THE SURFACE AND UNDERGROUND ARE NEEDED TO DETERMINE SITE SUITABILITY

Major Elements of the Site Characterization Program

- **Surface Based**
 - **Borehole coverage:**
 - **Systematic drilling program – examine site and surrounding area (phenomena, characteristics, trends and variability representativeness)**
 - **Feature sampling program – investigate special features**
 - **Other activities:**
 - **Mapping, geophysical surveys, trenching, monitoring, meteorology, laboratory testing, etc.**
- **Underground**
 - **Systematic mapping and sampling**
 - **ESF tests to characterize processes and conditions**
 - **Exploratory drifting**

SCIENTIFIC STUDIES WILL DETERMINE IF YUCCA MOUNTAIN CAN BE RECOMMENDED AS A REPOSITORY



WORK UNDERWAY AT SEVERAL LOCATIONS

Summary

- **ESF TBM starter tunnel 138 feet (42.1 meters) as of 7/2/93**
- **Initiated ESF testing with geologic mapping of the box cut and starter tunnel**
- **USW UZ-14 drilling began 4/15/93; 941 ft depth as of 7/2/93**
- **Drilling at borehole UZ-16 completed 3/11/93 at 1686 ft; water table was reached at a depth of 1604 ft, downhole testing currently underway**
- **23 neutron access boreholes of the 24 borehole program completed for natural infiltration studies; final program borehole approval in process**
- **6 trenches excavated and 4 pavements cleared for Quaternary fault studies; detailed trench logging and pavement studies continuing**
- **Fran Ridge pavement studies continue**

BOREHOLE PROGRAM

<u>Borehole Identifier</u>	<u>Depth (Ft.)</u>	<u>Completion Date</u>
<i>Neutron Borehole:</i>		
USW UZN-62	60.00	10 Mar 93
<i>North Ramp Geologic Boreholes:</i>		
UE-25 NRG-2	294.06	27 Jan 93
UE-25 NRG-2A	265.64	21 May 93
UE-25 NRG-3	333.00	30 Mar 93
UE-25 NRG-4	571.39*	08 Jul 93
UE-25 NRG-5	1350.00	09 Jun 93
UE-25 NRG-6	1100.10	03 Mar 93

* In progress

BOREHOLE PROGRAM

(CONTINUED)

<u>Borehole Identifier</u>	<u>Depth (Ft.)</u>	<u>Completion Date</u>
<i>Unsaturated Zone Boreholes:</i>		
USW UZ-14	954.04*	08 Jul 93
USW UZ-16	1686.16	10 Mar 93
<i>Miscellaneous:</i>		
USW H-5	Replaced USGS packers	25 Mar 93
USW WT-7	Removed a blockage from the hole (workover)	09 Apr 93

* In progress

UNSATURATED ZONE (UZ) PROGRAM DRILLING COMPARISON

- **Present status for UZ-14**
 - 950 ft. in 58 shifts = 16.38 ft/shift
- **UZ-16 experience**
 - 950 ft. in 106 shifts = 8.94 ft/shift
 - Avg. to total depth (1686') = 9.26 ft/shift

SURFACE-BASED TESTING SUPPORTS RESOLUTION OF ISSUES INCLUDING REGIONAL HYDROLOGY AND FLOW RATES, SEISMIC HAZARD ANALYSIS, AND VOLCANISM

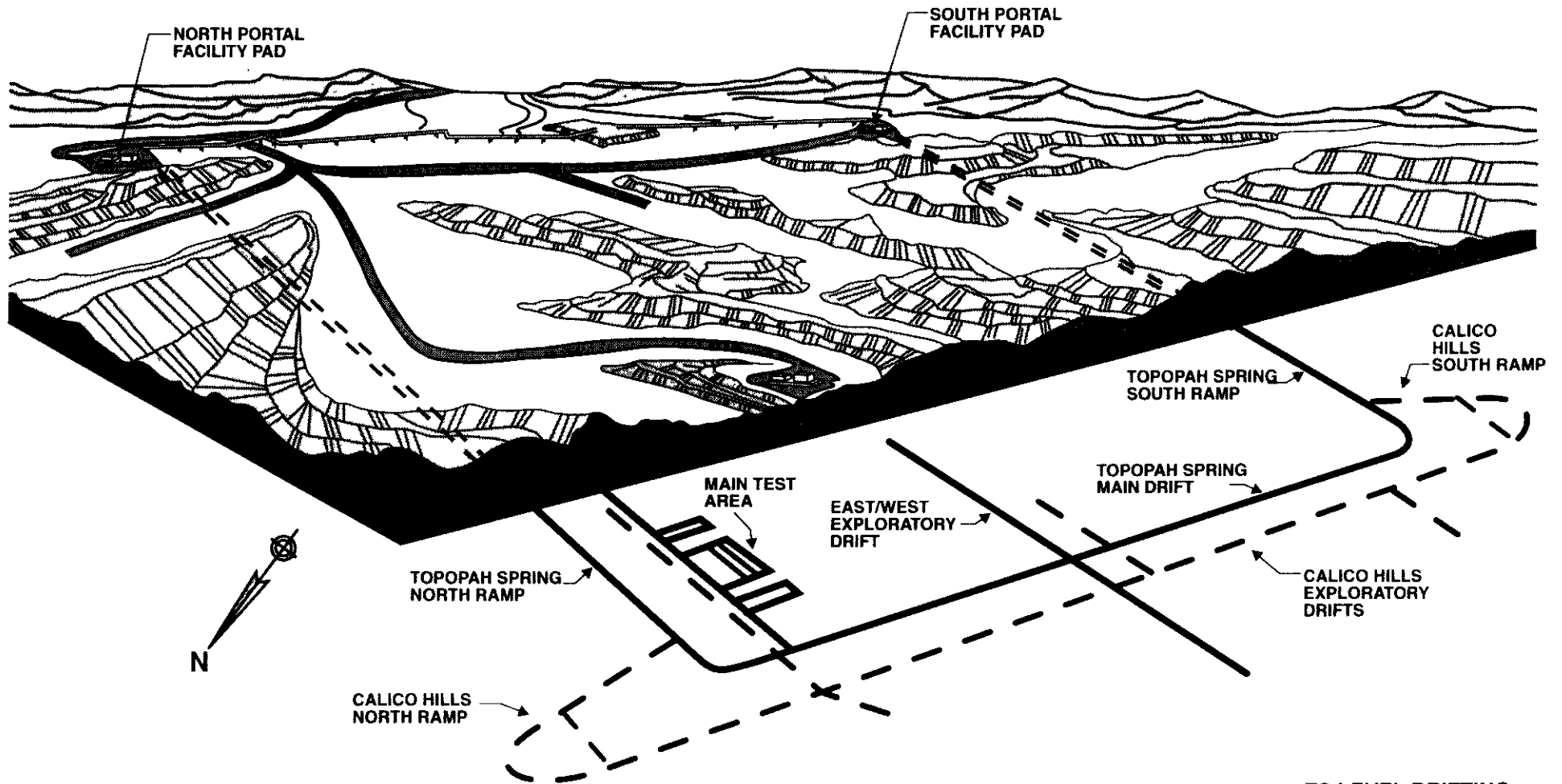
	Prior to 1987	1991- June '93	July '93- 2001
Boreholes	199	31	78¹ 58²
Trenches	95	22	27
Soil pits	0	106	40-50³

¹ 50 ft deep and greater

² 50 ft deep or less

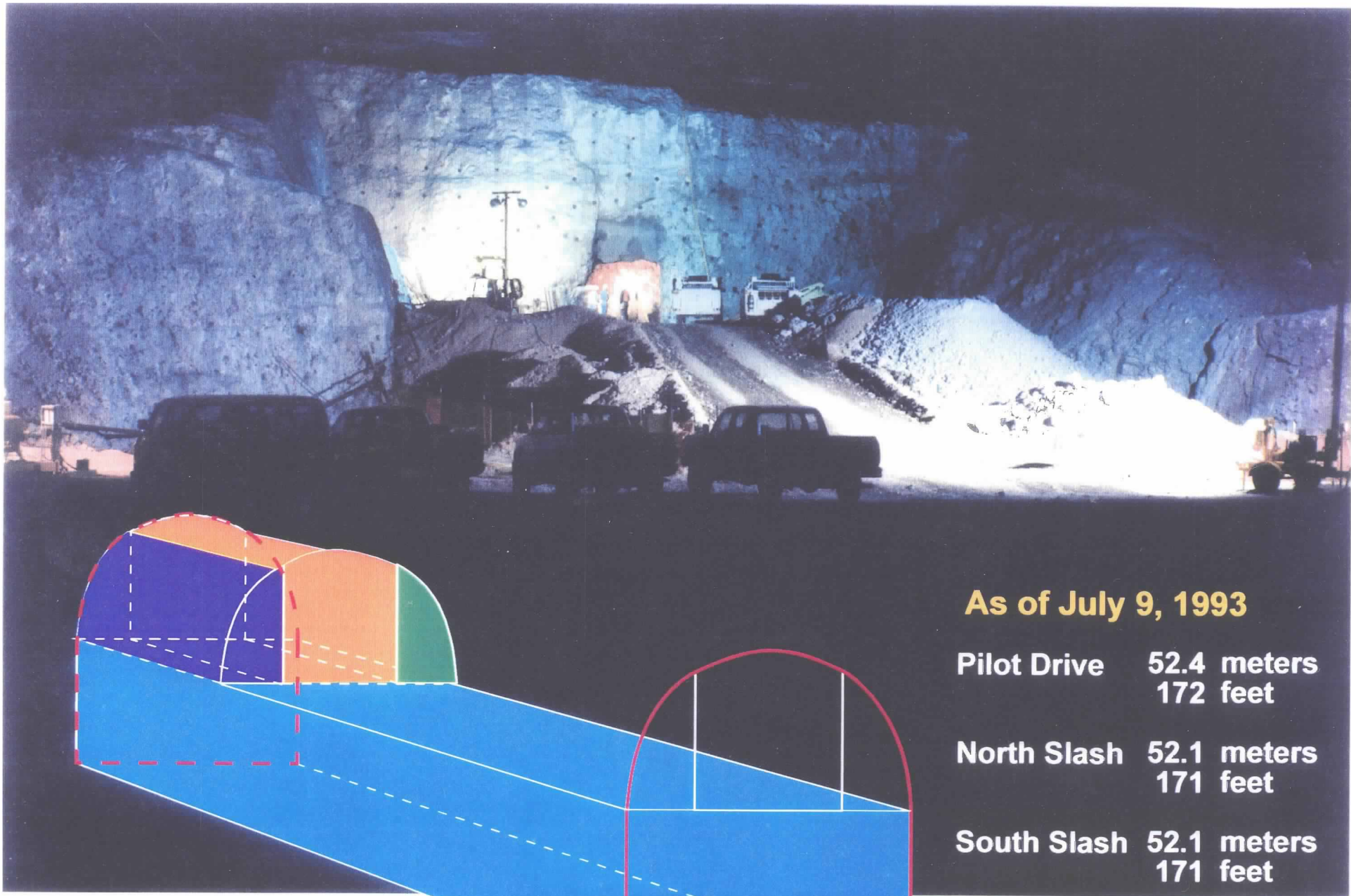
³ as req'd based on 20 facilities

PRELIMINARY DESIGN



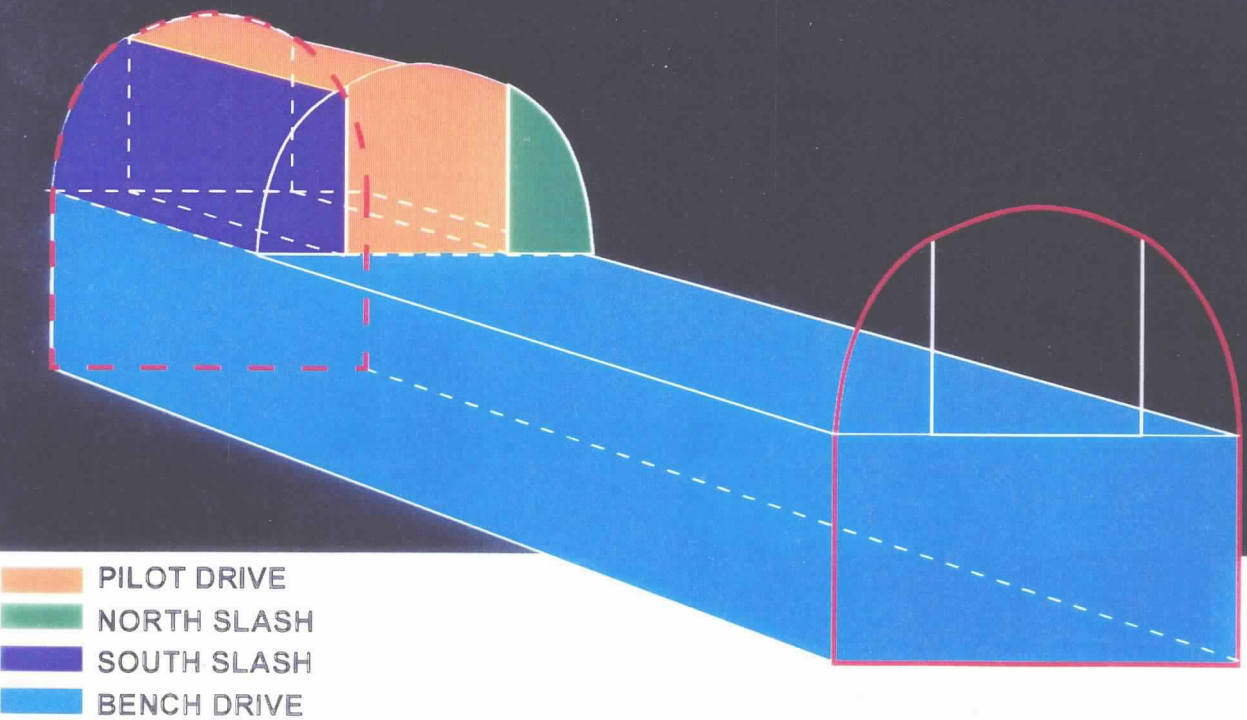
—— TS LEVEL DRIFTING
- - - CH LEVEL DRIFTING

(CH IS APPROX. 170 METERS BELOW TS)



As of July 9, 1993

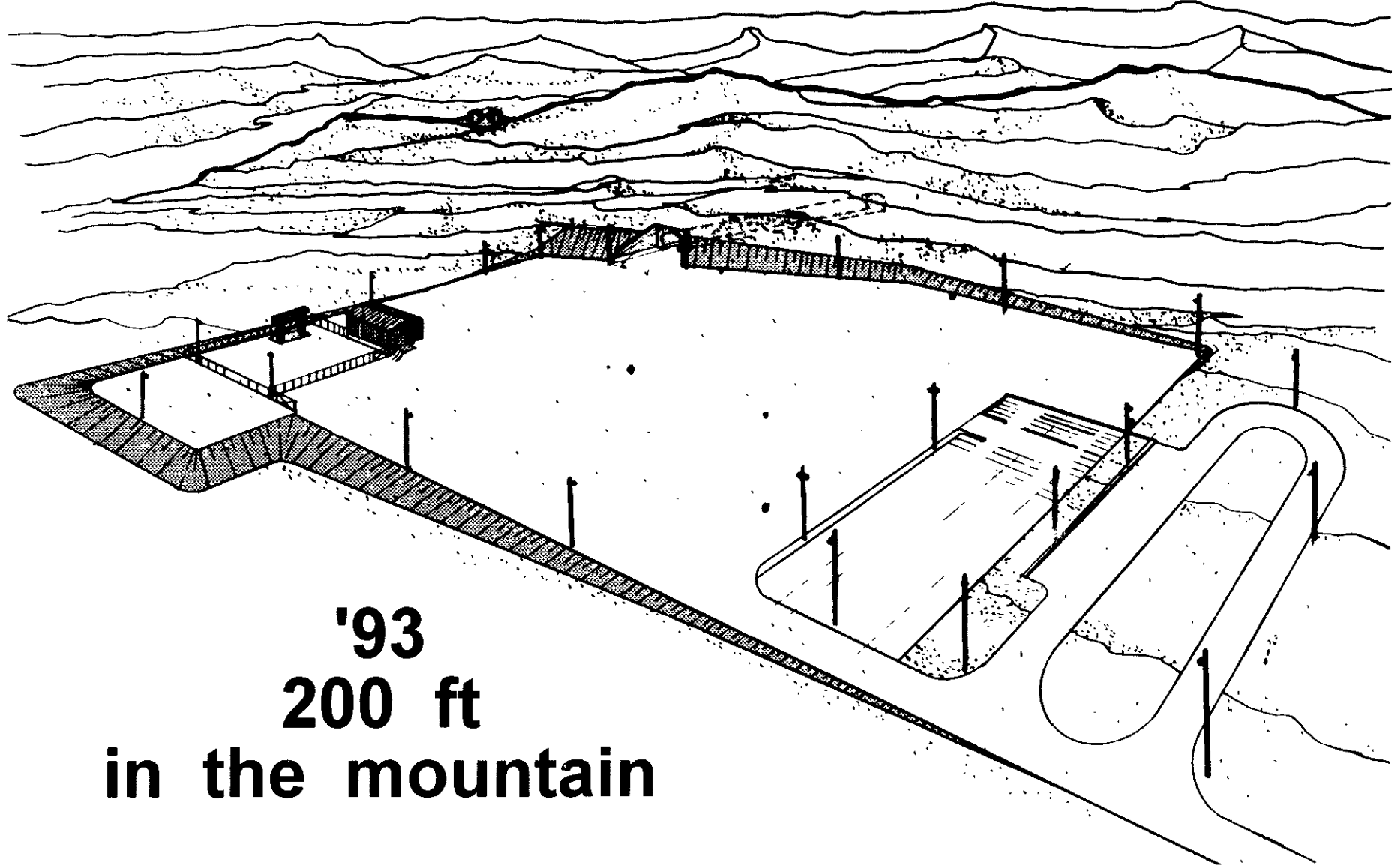
Pilot Drive	52.4 meters
	172 feet
North Slash	52.1 meters
	171 feet
South Slash	52.1 meters
	171 feet



- PILOT DRIVE
- NORTH SLASH
- SOUTH SLASH
- BENCH DRIVE



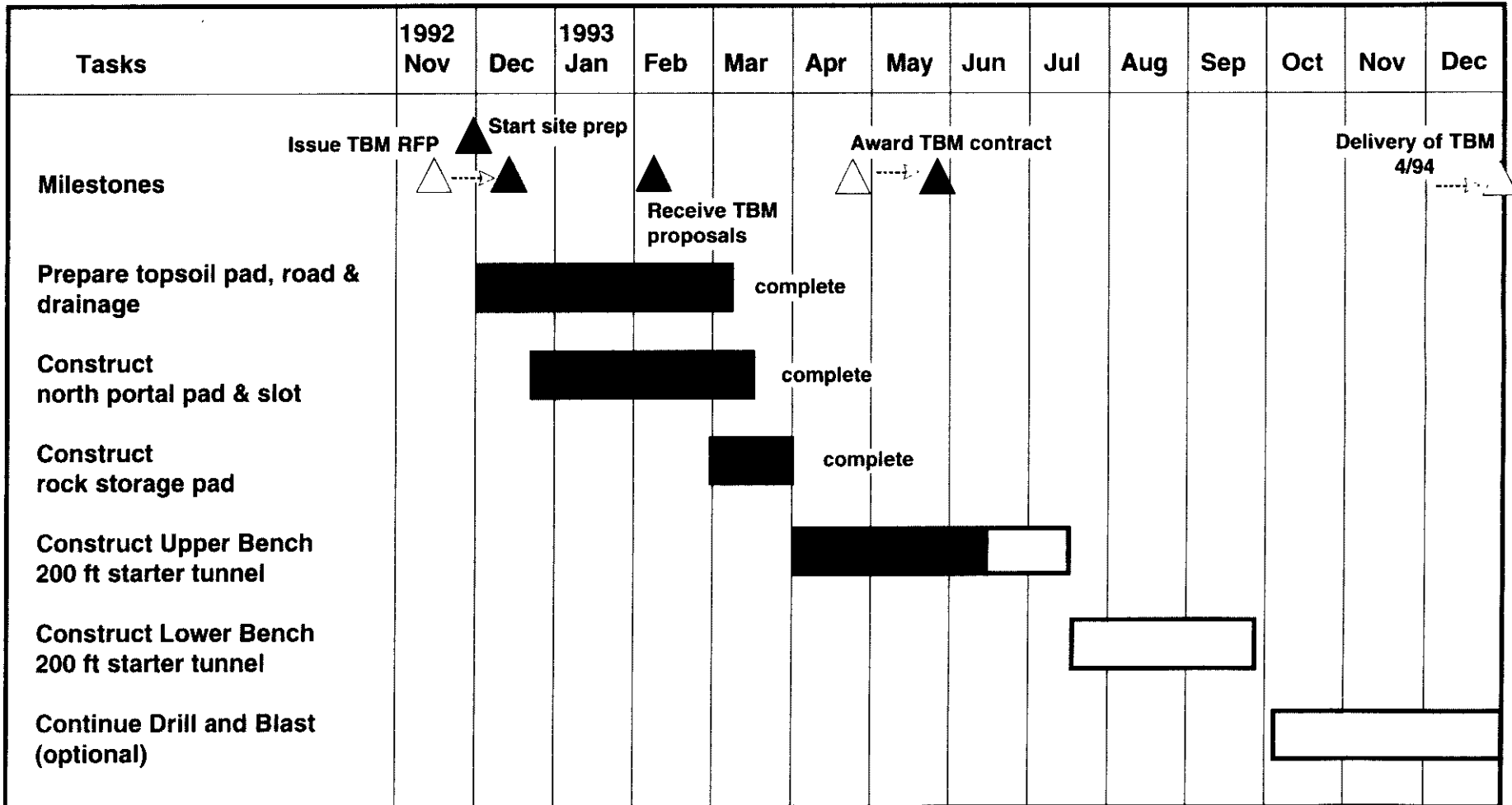
ESF NORTH PORTAL DESIGN PACKAGE 1A



'93
200 ft
in the mountain

NEAR-TERM CONSTRUCTION SUMMARY SCHEDULE

As of 7-9-93



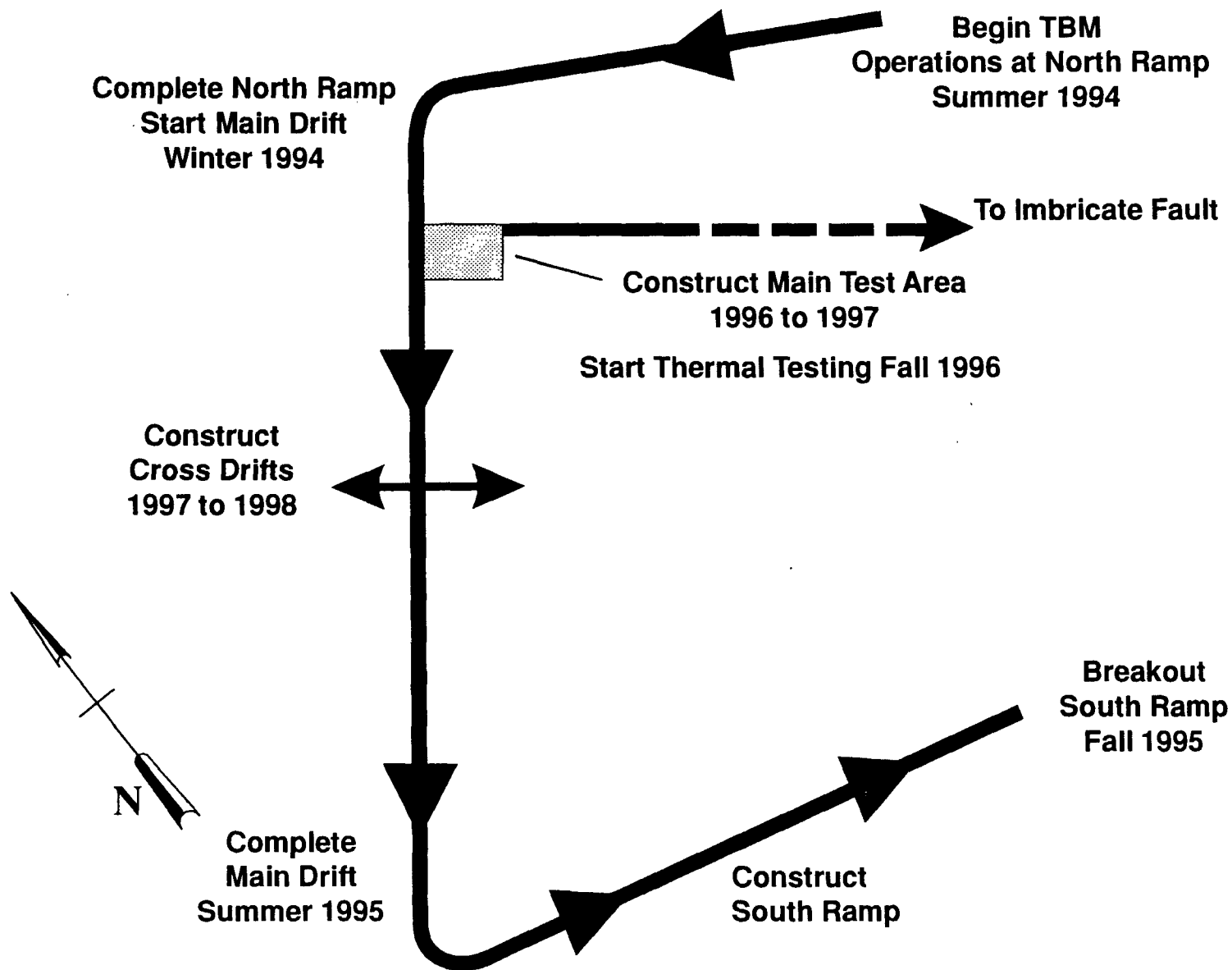
CONSTRUCTION TUNNELING SERVICES, INC. (CTS) PROGRESS ON TBM THROUGH JULY 8, 1993

- **\$12 million contract**
 - 720 tons
 - 3,800 horse power
 - 220 feet long (including machine and trailing gear)
 - 25 feet in diameter (7.6 meters)
- **Cutterhead preliminary design complete**
- **Main bearing and seal design 95%, ready for detailing**
- **Main cylinders ready to release for quote**
- **Long lead items on order:**
 - 2 main bearings
 - 12 main drive motors
 - 12 air clutches
 - 1 inching gear unit
 - 2 main thrust pumps
- **We have CTS schedule; we are monitoring their performance to that schedule**
- **FOB delivery (70 truckloads) to ESF pad prior to April 5, 1994**

'94
MAJOR TBM
OPERATIONS

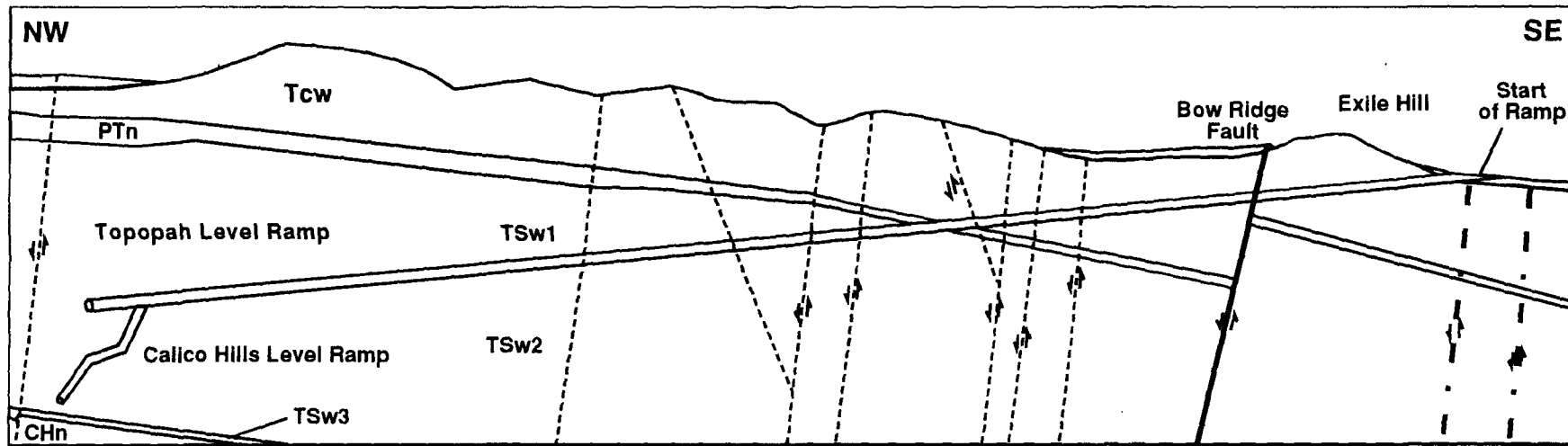


INITIAL 5-MILE RAMP/DRIFT LOOP WILL PROVIDE EARLY SITE SUITABILITY INFORMATION



Plan View

NORTH RAMP DESIGN WILL INCLUDE AREAS OF GEOLOGIC INTEREST TO BE STUDIED



Thermal/Mechanical Units

Tcw	<input type="checkbox"/>	Tiva Canyon Member
PTn *	<input type="checkbox"/>	Yucca Mountain Member Pah Canyon Member and Bedded Tuff
TSw1 TSw2	<input type="checkbox"/>	Topopah Spring Member
TSw3	<input type="checkbox"/>	Topopah Spring Member
CHn	<input type="checkbox"/>	Tuffaceous Beds of Calico Hills

*Conceptual Illustration
Not To Scale*

* Not differentiated

CONSTRUCTION MONITORING IN CONJUNCTION WITH GEOLOGIC SITE CHARACTERIZATION MAPPING IS PROVIDING DATA TO REFINE FUTURE DESIGN PACKAGES AND TO IMPROVE OPERATIONAL HEALTH & SAFETY

- **Geologic mapping**
 - Map highwall
 - Map tunnel
- **Monitor highwall**
 - Survey stations on to detect rock wall deformation
 - Load cells on to detect any major ground/rock mass movement
- **Geomechanical monitoring of tunnel**
 - Load cells
 - Closure pins on back and floor
 - Closure pins on lattice girders
- **Blast monitoring**
 - Each of the production blasts is being monitored
- **Rock support monitoring**
 - Pull test to determine their anchorage capacity
 - Grout use has been tested for strength

ESF - SUBSURFACE DESIGN PROPOSED CHANGE IN STRATEGY PACKAGE 2

Split Package 2 into three parts:

**Start 90%
Design Review**

- **Package 2A - Continue drill and blast from starter tunnel to Bow Ridge fault. Surface and subsurface conveyor specification. Elect equipment specification for TBM operation. Transportation study** **7/19/93**
- **Package 2B - Excavation, ventilation and muck storage studies. Concrete and structural steel for Surface and subsurface conveyor. Specification for ventilation, rail haulage system and mapping platform procurement** **9/20/93**
- **Package 2C - Complete remainder of north ramp design to Topopah Spring Level, including utilities, systems and equipment** **1/10/94**

COMPARISON OF FY 1993 ENACTED AND FY 1994 PLANNED BUDGET SPLITS

WBS	FY93 M\$	FY94 M\$
1.2.1 Systems Engineering	5.5	4.8
1.2.2 Waste Package	8.8	10.8
1.2.3 Site Investigations	48.3	54.3
1.2.4 Repository	4.4	5.0
1.2.5 Regulatory	25.1	22.2
1.2.6 Exploratory Studies Facility	48.8	54.6
1.2.7 Test Facilities	9.5	10.5
1.2.8 Reserved	0.0	0.0
1.2.9 Project Management	16.0	16.8
1.2.10 Financial Assistance	17.6	19.6
1.2.11 Quality Assurance	10.1	10.0
1.2.12 Information Management	11.6	10.0
1.2.13 Environment, Safety and Health	13.9	14.4
1.2.14 Institutional	3.5	4.0
1.2.15 Support Services	18.2	18.5
M&O Records Management, ADP & QA Support	3.4	3.4
Management Reserve		3.0
TOTAL	244.7	261.9

IMPACTS OF \$261.9M IN FY 1994

- **Defer procurement of additional LM-300 and 2 additional lease type drill rigs**
- **Delay purchase of small diameter TBM & additional underground excavation equipment**
- **Defer some seismic hazards studies**
- **Defer 138kv power supply system procurement**
- **Defer additional scientific studies, (saturated zone, unsaturated zone and geologic studies) associated with the additional boreholes**
- **Minimize ACD for subsurface, surface and offsite facility**
- **Reduced drill rig activity-3 shifts to two shifts**
- **Minimize repository design for ESF interface in main test area**
- **Defer completion of Total System Performance Assessment model**

Life of desert tortoise worth \$100,000

" The death of one of the reptiles at a construction site results in a fine and a donation to the county. "

Representatives with Silver State Leasing Inc., charged in federal court "the taking of a threatened desert tortoise," entered a plea agreement that resulted Friday in a \$25,000 court fine and a \$75,000 donation to the county.

The tortoise died during grading work at the Pebble Creek subdivision. Silver State Leasing, according to the charges, began work prior to submitting to a permitting process through the U.S. Fish and Wildlife Service, which would have conducted surveys to determine if tortoises were in the area.

Friday's plea before U.S. District Judge Lloyd George came with some difficulty. The company had agreed to enter an Alford plea, in which defendants don't admit guilt, only that the prosecution can prove its case.

However, when defense counsel Arthur Evry was asked by George if that was his position, he suggested that the plea was more a matter of legal strategy. "It could be much less expensive for us," Evry said, adding later a jury verdict of guilty was "a possibility we don't want to risk." He later said the government could make a "prima facie case."

Assistant U.S. Attorney Daniel Schiess, appearing unsatisfied with the statement, pressed the issue and Evry eventually acknowledged "there is a substantial risk we could lose."

"But we could win, who knows what a jury's going to do," Evry said moments later, adding the company didn't want to spend \$500,000 litigating the misdemeanor charge.

George eventually accepted the plea.

The \$75,000 is expected to go toward the county's desert tortoise conservation fund,

which studies issues related to species such as respiratory

Betty Burge, chairwoman of the advocacy group, said she was "in the substance of the money going to

"To be honest, I don't know how able in these types of cases,

lot of research out there is pretty good. I know they certainly need the money."

According to the agreement, tortoises are to be removed from potential construction sites after the surveys, and mitigation fees paid to the county prior to construction work.

Following the tortoise's death, an employee of Cherokee Construction, a subcontractor involved in the Pebble Creek project, contacted U.S. Fish and Wildlife authorities and related the circumstances surrounding the incident.

The employee, Arthur Payne, was fired from his job.

Schiess said the plea does not preclude the government from investigating Payne's dismissal. He said authorities, if they chose to do so, would have to determine whether the dismissal came under federal jurisdiction.

Schiess said the defense represented Payne was fired for "just cause" and not for any

" The government also released Silver State Leasing from an order stopping work at the Pebble Creek project. "

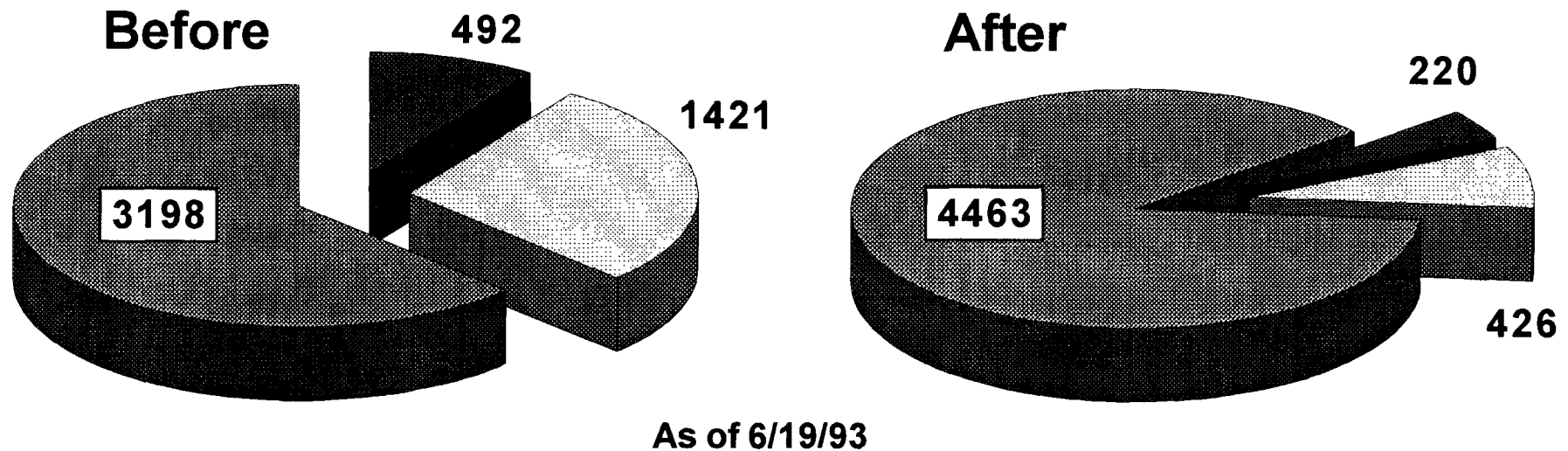
MANAGING CHANGES TO YMP SITE CHARACTERIZATION BASELINE

FY 1993 (OCTOBER 1992 THRU MAY 1993)

- **Processing changes to YMP Baseline**
 - **Field change requests processed** **205**
 - **Cost/schedule change requests** **324**
 - Total Change Requests Processed** **529**

- **Revisions to Project Documents**
 - **Administrative procedures** **66**
 - **Branch technical procedures** **8**
 - **Implementing line procedures** **4**
 - **Quality Management procedures** **10**
 - Total Approved YMP Procedures** **88**

POST-TOUR SURVEYS REVEALED 88% OF PUBLIC TOUR ATTENDEES FAVOR THE STUDY OF YUCCA MOUNTAIN



64% Completely or somewhat in favor of the study
 26% Undecided
 10% Completely or somewhat opposed to the study

88% Completely or somewhat in favor of the study
 8% Undecided
 4% Completely or somewhat opposed to the study