



## NNWSI HOLE HISTORIES

- UE-25a #1
- UE-25a #3
- UE-25a #4
- UE-25a #5
- UE-25a #6
- UE-25a #7

NOVEMBER 1986

FENIX & SCISSON, INC.  
1401 S. BOULDER  
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**UE-25a #1**

**UE-25a #3**

**UE-25a #4**

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**UE-25a #6**

**UE-25a #7**

**BY**

**FENIX & SCISSON, INC.**

**PREPARED FOR  
U. S. DEPARTMENT OF ENERGY  
NEVADA OPERATIONS OFFICE  
UNDER CONTRACT DE-AC08-84NV10322**

**NOVEMBER, 1986**

Prepared by Nevada Nuclear Waste Storage Investigations (NNWSI) Project Participants as part of the Civilian Radioactive Waste Management Program. The NNWSI Project is managed by the Waste Management Project Office of the U. S. Department of Energy, Nevada Operations Office. NNWSI Project work is sponsored by the U. S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington D.C.

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**NNWSI  
HOLE HISTORIES**

**UE-25a #1  
UE-25a #3  
UE-25a #4  
UE-25a #5  
UE-25a #6  
UE-25a #7**

**by**

**Reports and CEP Section**

**Abstract**

This report is a compilation of data from six geologic exploratory core holes drilled to help identify the area geology. The six bore holes were drilled between June 1978 and October 1980 under the guidance of the U.S. Geological Survey in Area 25, Nevada Test Site. Data presented in the hole histories include all locations, daily activities, coring records, review of hole conditions, and geophysical log lists and microfiche copies of the geophysical logs run by F&S subcontractor.

**FENIX & SCISSON, INC.  
HOLE HISTORY DATA  
NNWSI**

Approved: *James Dell Cornington*  
Date: *Jan 6, 1986*

Hole No.: UE-25a #1 | Type Hole: Exploratory  
 User: USGS | Area: 25 | Site Prep. W.O. #: None  
 Location: NTS | County: Nye | W.O. #: 3402-107  
 Surface Coordinates: N 764,900.15' E 566,349.98'  
 Ground Elev.: 3932.8' | Pad Elev.: | Top Casing Elev.:  
 Bottom Hole Coord: N764,829.32' E566,227.62' @ 2477.37' | Ref: Sperry Sun, 8-26-78  
 Rig On Location: 06-24-78 | Spudded: 06-25-78 | Completed: 09-02-78  
 Circulating Media: Mud  
 Main Rig & Contractor: Longyear/REECO  
 No. Of Compressors & Capacity:

Bore Hole Record				Casing Record				
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	28'	17-1/2"	12.615"	54.50#	.38"	0'	28'	50
28'	54'	10-5/8"	6.969"	26.40#	.328"	0'	54'	
54'	86'	6-1/4"	4"	11.3#	1/4"	0'	86'	
86'	1297'	3.875"						
1297'	2501'	2.98"	2-3/8" O.D. Tubing			0'	2450'	

Total Depth: 2501' | Plugs: None  
 Junk: HQ rods, core barrel and bit 1264.5' to 1297'; USGS fluid probe below 2495'.  
 Logging Data: Caliper (3), density, fluid density (1-10 runs), temperature (2) electric, gamma ray-neutron (2), 3-D velocity (2), vibroseis, and magnetometer

**Rigs Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85128	CP	IV	0.91		1.48	2.39
501836	Longyear 44	IX	35.64			35.64
85133	Failing 1500 *	XI	2.90	0.40	1.00	4.30

Remarks: \* Rig used to recover junk in hole.  
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Prepared By: LLF:ps | Time Breakdown on Next Page



**UE-25a #1**  
**HOLE HISTORY**

- 06-24-78 Moved CP rig #85128 and Longyear rig to Area 25.
- 06-25-78 Moved in CP rig and rigged up. Drilled 17-1/2" hole from 0' to 21'. Hole caved with top of fill at 18-1/2'.
- 06-26-78 Drilled on boulders from 18' to 21' and drilled 7-1/2" hole to 28'. Ran 1 joint of 13-3/8" O.D., 54.50# casing set at 28'. Rigged down and moved out CP rig. Hole suspended 06-26-78.
- 06-27-78 Rigged up cement mixer and hand poured in annulus 50 ft<sup>3</sup> of Gyp-Seal in 2 stages from 28' to 4'. Hole suspended.
- 07-29-78 Hole was suspended from 06-27-78 to 07-29-78. Moved in CP rig #85128. Rigged up. Drilled 10-5/8" hole from 28' to 47'. Rig broke down. Moved out CP rig. Moved in Longyear 44 rig #501836 and started rigging up.
- 07-30-78 Attempted to clean out hole at 30'. Hole caving. Cleaned out fill to 47' using ASP drilling fluid. Drilled 10-5/8" hole from 47' to 54'. Set 7-5/8" O.D. casing at 54'. Set 4-1/2" O.D. casing at 54'.
- 07-31-78 Repaired rig. Cored 3.875" cores #1 thru #5 from 54' to 81'.
- 08-01-78 Cored 3.875" cores #6 and #7 from 81' to 96'. Hole bridging. Cored 3.875" cores #8 and #9 from 96' to 97.5'. Hole bridging. Cored 3.875" cores #10 thru #13 from 97.5' to 132'. Washed from 70' to 127'. Cleaned out fill from 127' to 132'. Cored 3.875" cores #14 thru #22 from 132' to 185'.
- 08-02-78 Cored 3.875" cores #23 thru #38 from 185' to 292.5', hole caving. Pulled out to change core bit, stuck at 84'(worked free and pulled out of hole). Started in hole. Drilled bridge at 55' and washed to 292.5'. Cored 3.875" cores #39 thru #41 from 292.5' to 305'.
- 08-03-78 Cored 3.875" cores #42 thru #56 from 305' to 393.5'. Changed core bit. Drilled fill at 55' and washed to 393.5'. Cored 3.875" cores #57 thru #60 from 393.5' to 411.5'.
- 08-04-78 Cored 3.875" cores #61 thru #70 from 411.5' to 447.5'. Repaired plugged core drill. Drilled out bridges at 305' and 360'. Cleaned out 7' of fill of 447.5'. Cored 3.875" cores #71 thru #87 from 447.5' to 529'.
- 08-05-78 Cored 3.875" cores #88 thru #110 from 529' to 645'.
- 08-06-78 Pulled 4-1/2" O.D. casing out of hole. Opened 3.875" hole to 6-1/4" from 54' to 86'. Rig broke down at 1230 hours.
- 08-07-78 Installed rig transmission at 2000 hours. Set 4-1/2" O.D., HW casing at 86'.

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Hole History  
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- 08-08-78 Reamed and washed 3.875" core hole from 86' to 445'. Added lost circulation material to drilling mud. Reamed and washed core hole to 645'. Hit bridges at 290', 440', 460', 480', and 510'. Added lost circulation material. Cored 3.875" cores #111 thru #114 from 645' to 670'.
- 08-09-78 Cored 3.875" cores #115 thru #128 from 670' to 768'.
- 08-10-78 Cored 3.875" cores #129 thru #146 from 768' to 905'. Partial returns at 804', 833' and 836'.
- 08-11-78 Cored 3.875" cores #147 thru #152 from 905' to 934'. Lost circulation. Added lost circulation material. Cored 3.875" cores #153 thru #165 from 934' to 1024'. Lost circulation at 974' and 1024'. Added lost circulation material.
- 08-12-78 Cored 3.875" cores #166 thru #177 from 1024' to 1079'. Core barrel sanded up on core #174, no circulation.
- 08-13-78 Washed hole from 1049' to 1079'. Cored 3.875" cores #178 thru #193 from 1079' to 1157.5'. Conditioned hole at 1145.5'. Hole caving at 1151.5'.
- 08-14-78 Cored 3.875" cores #194 thru #201 from 1157.5' to 1194'. Made trip to change core bit. Washed hole on trip in. Hit bridges at 894', 994' and 1014'. Cleaned fill from 1164' to 1194'. Cored 3.875" core #202 from 1194' to 1202'.
- 08-15-78 Cored 3.875" cores #203 thru #216 from 1202' to 1285'. 90' of fluid at 1214'.
- 08-16-78 Cored 3.875" cores #217 thru #219 from 1285' to 1297'. 3-1/2" O.D. (3-1/16" I.D.) HQ drill rods stuck at 1297'. Attempted to jar drill rods loose. Attempted to retrieve inner core barrel using NQ (2.98") drill rods and overshot.
- 08-17-78 Fished out inner barrel with NQ drill rods. Unable to pull HQ drill rods. Ran NQ core bit and drill rods inside of HQ drill rods and drilled out 3.875" core bit. Cored 2.98" cores #220 thru #226 from 1297' to 1356'.
- 08-18-78 Cored 2.98" cores #227 thru #237 from 1356' to 1466'.
- 08-19-78 Cored 2.98" cores #238 thru #257 from 1466' to 1674'.
- 08-20-78 Cored 2.98" cores #258 thru #277 from 1674' to 1872'.

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Hole History  
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08-21-78 Cored 2.98" cores #278 thru #295 from 1872' to 2043'.

08-22-78 Cored 2.98" cores #296 thru #309 from 2043' to 2182'.

08-23-78 Cored 2.98" cores #310 thru #326 from 2182' to 2341'.

08-24-78 Cored 2.98" cores #327 thru #342 from 2341' to 2501'. Prepared to run Sperry-Sun survey.

08-25-78 Ran Birdwell fluid density log, checked fluid level at 1542'. Ran Sperry-Sun survey.

08-26-78 Ran fluid density log, checked fluid level at 1546'. Pumped 185 barrels of fluid in the hole. Logged fluid level at 1372'. Ran wet hole electric log, gamma ray-neutron, density and caliper logs to 2499'. Ran 3-D velocity log to 2426'.

08-27-78 Ran temperature log to 2500'. Ran vibroseis survey. Ran Sperry-Sun survey on 50' stations.

08-28-78 Ran USGS electric, density, gamma-neutron, magnetic susceptibility, magnetometer, deviation logs. Checked fluid at 1538'. Added 60 barrels of mud to hole. Ran electric log. Attempted to free stuck HQ drill rods. Made trip in hole with pipe cutter on NQ drill rods to 1291'.

08-29-78 Cut off HQ drill rods on second attempt at 1264.5'. 19.5' of HQ drill rods, 13' HQ core barrel and core bit left in hole. Pulled out HQ rods. Cleaned out bridges and hole to 1258'. Ran USGS gamma ray-neutron, magnetic susceptibility and density logs. Made trip and cleaned out hole to 1260'. Ran drill rods in hole to 883'.

08-30-78 Ran USGS gamma ray-neutron and magnetic susceptibility logs. Ran Birdwell vibroseis. Hole was bridging badly.

08-31-78 Completed running vibroseis. Cleaned out bridges and hole to 1253'. Ran caliper and gamma ray-neutron logs. Laid down HQ drill rods. Made trip in hole with NQ drill rods, core barrel and bit. Cleaned out bridges and hole to 1259'.

09-01-78 Cleaned out and conditioned NQ hole to 2200'. Made trip out for plugged core barrel. Made trip in hole with casing shoe on bottom of NQ rods. Cleaned out and conditioned hole to 2501'. Landed NQ rods and shoe at 2450'. Started rigging down.

09-02-78 Rigged down. Hole completed 09-02-78.

03-16-81 Ran USGS temperature survey to 2488'.

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Hole History  
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- 07-16-82 Moved in Failing 1500, rig #85133 and rigged up. Pulled on cable of USGS fluid probe stuck in the hole at 1500' on previous USGS test. Recovered all of cable at 1000# pull, left probe in the hole. Drove fluid probe to 2495' using a sinker bar on a wireline.
- 07-17-82 Tagged bottom of hole at 2496'. Started moving out equipment.
- 07-18-82 Continued moving out equipment and cleaning location.
- 07-19-82 Continued moving out equipment and cleaning area. Ran Birdwell caliper log to 2400' and collar locator log to 2400' to check possible perforations in NQ rods.
- 07-20-82 Cleaned location and moved out rig.

UE-25a #1  
REVIEW OF HOLE CONDITIONS

445 mm (17-1/2") hole was drilled to 8.5 m (28') and 340 mm (13-3/8") casing was set at 8.5 m (28'). The annulus was cemented to 1.2 m (4') below surface with 1.42 m<sup>3</sup> (50 ft<sup>3</sup>) of Gyp-Seal, 06-27-78. Calculated annular volume was 0.48 m<sup>3</sup> (17 ft<sup>3</sup>). 270 mm (10-5/8") hole was drilled to 16.5 m (54'). 194 mm (7-5/8") and 114 mm (4-1/2") casings were set at 16.5 m (54'), not cemented. 98 mm (3.875") hole was cored to 196.6 m (645') then opened to 159 mm (6-1/4") to 26.2 m (86'). The 114 mm (4-1/2") casing was reset at 26.2 m (86'), not cemented. 98 mm (3.875") hole was cored to 395.3 m (1297') then 76 mm (2.98") hole was cored to a total depth of 762.3 m (2501') using mud as the circulating medium. HQ rods, core barrel and bit were left in the hole between 385.4 m (1264.5') and 395.3 m (1297'). Caliper, density, fluid density, temperature, electric, gamma ray - neutron, 3-D velocity, magnetometer logs and a vibroseis survey were run. 60 mm (2-3/8") casing was set at 746.8 m (2450'), not cemented, 09-01-78. Temperature survey was run 03-16-81. Recovered fluid probe cable lost in hole during previous USGS test and drove probe to 760.5 m (2495'), 07-16-82. Caliper and collar locator logs were run 07-19-82.

**FENIX & SCISSON, INC.  
HOLE HISTORY DATA  
NNWSI**

Approved: *John A. Covington*  
Date: *Nov 6, 1986*

Hole No.: UE-25a #3 | Type Hole: Exploratory (Calico Hills)  
 User: USGS | Area: 25 | Site Prep. W.O. #: None  
 Location: NTS | County: Nye | W.O. #: 3402-110  
 Surface Coordinates: N 769,321.1' E 602,938.8'  
 Ground Elev.: 4545.8' | Pad Elev.: | Top Casing Elev.: 4546.8'  
 Bottom Hole Coord: N 769,416.42' E 602,835.50' @ 2455'M.D. | Ref: Gyro, 10-11-78  
 Rig On Location: 08-11-78 | Spudded: 08-11-78 | Completed: 10-10-78  
 Circulating Media: Mud | Instrumented: 01-16-80  
 Main Rig & Contractor: Longyear HC-44\*\*, Longyear 44\*\*\* - REECO  
 No. Of Compressors & Capacity: None

Bore Hole Record				Casing Record				
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	80'	17"	12.615"	54.5#	.38"	0'	77'	250
80'	82'	10-5/8"	6.969"	26.4#	.328"	0'	82'	-
82'	100'	5-7/8"						
100'	1963.5'	3.900"	4"	11.3#	1/4"	0'	190'	-
1963.5'	2530'	3.032"						

Total Depth: 2530' | Plugs: Instrument stemmed to 981' +/- with sand, 01-16-80  
 Junk: 4" X 5" X 3" slip between 4-1/2" and 7-5/8" casing, 09-15-78;\*  
 Logging Data: Fluid density (2), 3D velocity, electric (2), caliper (4),  
 density (4), gamma ray-neutron (4), vibroseis survey, gyroscopic survey

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85128	CP	IV	1.91		1.42	3.33
	Longyear HC-44 **	IX	44.80		1.68	46.48
501836	Longyear 44 ***	IX	9.87	0.29	6.17	16.33

Remarks: \* approximately 950' of core line with sinker bar below 1170'.  
 \*\* Contract rig supervised by REECO.  
 \*\*\* Rig for instrumenting hole.

Prepared By: LLF:ps

Time Breakdown on Next Page



**UE-25a #3**  
**HOLE HISTORY**

08-11-78 Moved in CP rig #85128. Rigged up. Drilled 17" hole from 0' to 80' using mud. Set 3 joints of 13-3/8" O.D., 54.50# casing at 77'.

08-12-78 Cemented annulus in 2 stages using Dowell with 20 barrels of water ahead of 250 ft<sup>3</sup> of neat cement + 2% CaCl<sub>2</sub> from 77' to 0'. CIP at 1430 hours. Calculated annular volume was 54 ft<sup>3</sup>.

08-13-78 Cleaned out cement from 49' to 77'. Cleaned out hole from 77' to 80'. Drilled 10-5/8" hole from 80' to 82'.

08-14-78 Cleaned out 10-5/8" hole to 82'. Set 7-5/8" O.D. casing at 82'. Rigged down. Hole suspended.

08-26-78 Hole suspended from 8-14-78 to 0700 hours, 8-26-78. Moved in Longyear HC-44 contract rig and rigged up. Drilled 5-7/8" hole from 82' to 100' using mud. Cored 3.900" cores #1 thru core #4 from 100' to 116'. Set 4-1/2" O.D., HW casing at 110'.

08-27-78 Cored 3.900" cores #5 thru core #16 from 116' to 206.5'.

08-28-78 Cored 3.900" cores #17 thru core #32 from 206.5' to 323'.

08-29-78 Cored 3.900" cores #33 thru core #47 from 323' to 440'.

08-30-78 Cored 3.900" cores #48 thru core #63 from 440' to 546.6'.

08-31-78 Cored 3.900" cores #64 thru core #66 from 546.6' to 569'. Made trip out of hole. Rig secured from 0615 hours to 0745 hours. Made trip in hole. Cored 3.900" cores #67 thru core #73 from 569' to 634.9'. Rig secured at 1845 hours for repairs.

09-01-78 Cored 3.900" cores #74 thru core #84 from 634.9' to 744'.

09-02-78 Cored 3.900" cores #85 thru core #100 from 744' to 889'.

09-03-78 Cored 3.900" cores #100 thru core #105 from 889' to 944'. 4-1/2" casing dropped to 140'. Screwed onto 4-1/2" casing and reamed from 140' to 150'. Cored 3.900" cores #106 thru core #108 from 944' to 961.5'.

09-04-78 Cored 3.900" cores #109 thru core #120 from 961.5' to 1067.3'.

09-05-78 Cored 3.900" cores #121 thru core #123 from 1067.3' to 1106.5'.

09-06-78 Cored 3.900" cores #124 thru core #138 from 1106.5' to 1255.1'.

09-07-78 Cored 3.900" cores #139 thru core #156 from 1255.1' to 1436.6'. Partial circulation from 1326' to 1346'.

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- 09-08-78 Cored 3.900" cores #157 thru core #167 from 1436.6' to 1544.5'. Reset 4-1/2" casing from 150' to 190'. Cleaned out bridge at 220' and hole to 1544.5'. Cored 3.900" core #168 from 1544.5' to 1549.5'.
- 09-09-78 Cored 3.900" cores #169 thru core #177 from 1544.5' to 1625.6'.
- 09-10-78 Cored 3.900" cores #178 thru core #185 from 1625.6' to 1691'.
- 09-11-78 Cored 3.900" cores #186 thru core #202 from 1691' to 1849.5'.
- 09-12-78 Cored 3.900" cores #203 thru core #212 from 1849.5' to 1910.6'. Lost circulation at 1899.6'.
- 09-13-78 Cored 3.900" cores #213 thru core #220 from 1910.6' to 1963.5'.
- 09-14-78 Unable to core due to hole caving. Stuck rods at 1958'. Made trip out of the hole. Left 3.900" core bit, barrel, retrieving tool and wire line in the hole, bottom at 1958'. Total length of fish was 18' 8-1/2". Reamed and washed from 890' to 1205'.
- 09-15-78 Cleaned out and washed hole from 1205' to 1450'. Lost a 4" x 5" x 3" slip between the 7-5/8" and 4-1/2" casing. Fabricated a fishing tool out of an NQ rod and made 4 runs in the hole. Retrieved portions of wire line on each run.
- 09-16-78 Made 3 runs with the fishing tool and left a 7' piece of tool in the hole at 1350'. Made up new tool and continued fishing down to 1490'; hole bridged at 1450'.
- 09-17-78 Continued fishing with HQ compression tool. Made trip for NQ bit and cleaned out hole to 1475'. Made trip with compression tool and recovered 3' of NQ fishing tool at 1500'. Made trip with HQ core bit and barrel and cleaned out bridge to 1515'. Recovered 2- 1/2' piece of steel and balled wire line. Made trip with spear and hit bridge. Made trip with HQ core bit and barrel and cored on junk from 1522' to 1530', poor returns.
- 09-18-78 Cleaned out hole to 1530' and retrieved balled up wire line in core barrel. Made 3 trips in with spear and retrieved 410' of wire line to 1890'. Made trip in with inside compression tool, reamed and washed hole to 1945'. Retrieved all of wire line and started fishing for over shot and core barrel.
- 09-19-78 Retrieved overshot and inner barrel with compression tool. Fished core barrel with NQ swage but lost fish on trip out. Made trip in with modified NQ swage, hooked onto core barrel and attempted to free fish.

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Hole History  
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- 09-20-78 Made 3 attempts to fish out core barrel and bit, no recovery.
- 09-21-78 Ran in HQ rods to 1952' to case the hole. Made trip in with NQ core bit and started drilling through HQ core bit.
- 09-22-78 NQ drilled through 3.900" core bit. Cored 3.032" cores #221 thru core #227 from 1963.5' to 1992.5'.
- 09-23-78 Cored 3.032" cores #228 thru core #239 from 1992.5' to 2085.7'. Had partial circulation while coring.
- 09-24-78 Cored 3.032" cores #240 thru core #245 from 2085.7' to 2129.4' with no mud returns.
- 09-25-78 Cored 3.032" cores #246 thru core #258 from 2129.4' to 2241.4'. Continued losing mud in hole.
- 09-26-78 Cored 3.032" cores #259 thru core #268 from 2241.4' to 2301.8'. Continued losing mud.
- 09-27-78 Cored 3.032" cores #269 thru core #276 from 2301.8' to 2382'. Continued losing mud.
- 09-28-78 Cored 3.032" cores #277 thru core #283 from 2382' to 2443'. Continued losing mud.
- 09-29-78 Cored 3.032" core #284 and core #285 from 2443' to 2444.3' and lost bit edge. Retrieved junk while taking next core. Cored 3.032" core #286 and core #287 from 2444.3' to 2453.2'. Continued losing mud.
- 09-30-78 Cored 3.032" cores #288 thru core #293 from 2453.2' to 2501'. Continued losing mud.
- 10-01-78 Pulled out HQ casing. Fished out 3.900" core barrel. Ran in HQ casing to 1963'. Made trip in with NQ rods, core barrel and 3.032" core bit. Started cleaning out bridge at 1990'. Made trip for sanded inner tube. Cleaned out bridges at 1990' and 2450'. Continued losing mud.
- 10-02-78 Cleaned out bridges at 2470' and 2490'. Cored 3.032" cores #294 thru core #296 from 2501' to 2530.1'. Pulled rods up in HQ casing and repaired wire line hoist. Started to bottom and cleaned out bridges at 2210' and 2410'. Continued losing mud.
- 10-03-78 Cleaned out bridge at 2480' and washed hole to 2530.1'. Made trip for sanded inner barrel. Attempted to recover circulation with diesel gel pumped in the hole from 2190' to 1963'. Cleaned out the hole to 2250'.

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Hole History  
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- 10-04-78 Cleaned out hole to 2530'. Ran NQ rods in the hole to 2520', hole was tight and pulled rods back to 2510'. Ran Sperry-Sun gyroscopic survey on 50' stations using Birdwell equipment. Ran fluid density log, checked fluid level at 2105'. Cleaned out hole to 2530' and made trip out of the hole. Ran 3D logs to 2530' and electric log to 2530'.
- 10-05-78 Ran caliper log to 2530'. Ran formation density log to 2522' and gamma ray-neutron log to 2525'.
- 10-06-78 Raised HQ casing to 998'. Ran gamma-ray-neutron and caliper logs to 2110'. Ran vibroseis to 2515', surveyed from 2500' to 2000' on 100' stations and from 2000' to 1050' on 50' stations.
- 10-07-78 Ran formation density log to 2500'. Laid down HQ casing. Ran caliper, formation density and gamma ray-neutron logs. Ran vibroseis survey from 1050' to 1000' on 50' stations and from 1000' to 200' on 25' stations. Ran fluid density log to 2498', checked fluid level in the hole at 2104'.
- 10-08-78 Ran USGS induced polarization log.
- 10-09-78 Made trip with NQ rods and conditioned hole. Ran electric log to 2450', induced polarization log to 2453', gamma ray-neutron log to 2437', magnetic susceptibility log to 2440', magnetometer to 2435', density and caliper logs to 1950'. Started laying down NQ rods.
- 10-10-78 Laid down NQ rods. Set 2-3/8" O.D., Hydril tubing at 2455'. Tagged fill at 2460'. Rig released at 1900 hours. Hole completed 10-10-78..
- 10-11-78 Ran Sperry-Sun gyroscopic survey in and out on 50' stations.
- 01-07-80 Moved in Longyear 44, rig #501836 and rigged up.
- 01-08-80 Pulled 2-3/8" Hydril tubing up to 1815' and circulated the hole using air. Poured 17 ft<sup>3</sup> of crystal amber sand down the tubing.
- 01-09-80 Pressured up tubing with air, tubing plugged. Lowered tubing to 2455'. Pulled out 64 joints to sand fill, approximately 500' of sand in the tubing. Sand fell out of the tubing on the 65th joint.
- 01-10-80 Laid down tubing. Ran 1-5/8" O.D. x 8' sinker bar with 2-1/2" O.D. x 1' core catcher built up in 3 spots to 2-7/8" O.D. in the hole, stopped at 2164'. Pulled out and added 5 ft<sup>3</sup> of sand down the hole. Ran sinker bar and core catcher in the hole, tagged fill at 2314'. Started out, tool stuck at 2160'. Worked tool up to 2157'.

UE-25a #3  
Hole History  
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- 01-11-80 Rigged up a weight indicator and installed a clamp on the core line. Pulled 35' of core line out of the hole and line parted at the clamp at 2700# tension. Left approximately 2150' of 3/16" line in the hole with the sinker bar at approximately 2122'.
- 01-14-80 Rig secured from 01-11-80 to 0800 hours, 01-14-80. Made up fabricated spear on NQ rods and made trip in to 950'.
- 01-15-80 Made trip in to 1170'. Made trip out and recovered approximately 1200' of core line. Made trip in with NQ rods open-ended, rods stopped at 1135'. Pulled up to 1080' and ran sinker bar to 1170'. Poured 4 ft<sup>3</sup> of sand down the rods. Tagged fill at 1122' with sinker bar. Pulled up rods to 1050'. Poured 5 ft<sup>3</sup> of sand down the rods and tagged fill at 1122'. Poured 3 ft<sup>3</sup> of sand down the rods and tagged fill at 1094' with sinker bar.
- 01-16-80 Tagged fill at 1100' with sinker bar. Poured 1 ft<sup>3</sup> of sand down the rods. Tagged fill at 1055'. Laid down rods. Tagged fill at 1094'. Lowered seismometer on conductor cable to 1080'. Poured 10 ft<sup>3</sup> of sand down the hole, top of fill at approximately 981'. Clamped off cable at surface. Rigged down and moved out. Instrumented 01-16-80.

**UE-25a #3**  
**REVIEW OF HOLE CONDITIONS**

432 mm (17") hole was drilled to 24.4 m (80') and 340 mm (13-3/8") casing was set at 23.5 m (77'). The annulus was cemented to surface with 7.08 m<sup>3</sup> (250 ft<sup>3</sup>) of neat cement + 2% CaCl<sub>2</sub>, 08-12-78. Calculated annular volume was 1.53 m<sup>3</sup> (54 ft<sup>3</sup>). 270 mm (10-5/8") hole was drilled to 25.0 m (82') and 194 mm (7-5/8") casing was hung at 25.0 m (82'), not cemented. 99 mm (3.900") hole was cored to 35.4 m (116'), and 114 mm (4-1/2") casing was hung at 33.5 m (110'). 99 mm (3.900") hole was then cored to 470.8 m (1544.5'). The 114 mm (4-1/2") casing was reset at 57.9 m (190'), not cemented. 99 mm (3.900") hole was cored to 598.5 m (1963.5') then 77 mm (3.032") hole was cored to a total depth of 771.1 m (2530') using mud as the circulating medium. Fluid density, 3D velocity, electric, caliper, density, gamma ray-neutron logs, vibroseis and gyroscopic surveys were run. 60 mm (2-3/8") tubing was hung at 748.3 m (2455'), not cemented. A gyroscopic survey was run, 10-11-78. Pulled 60 mm (2-3/8") tubing 01-10-80. Sinker bar and core catcher were run in hole and stuck at 658.4 m (2160') on trip out. Approximately 365.8 m (1200') of 5 mm (3/16") core line was recovered from a total of 655.3 m (2150') left in hole. Hole was stage stemmed with 0.99 m<sup>3</sup> (35 ft<sup>3</sup>) of sand 01-08-80 to 01-16-80. Top of stemming was tagged at 333.5 m (1094') using a Halliburton wire line. Seismometer was lowered to 329.2 m (1080') on conductor cable and stemmed to approximately 299.0 m (981') with 0.28 m<sup>3</sup> (10 ft<sup>3</sup>) of sand, 01-16-80.

**FENIX & SCISSON, INC.  
HOLE HISTORY DATA  
NNWSI**

Approved: Jerry Nell Cornington  
Date: Nov 16 1986

Hole No.: UE-25a #4	Type Hole: Exploratory
User: USGS	Area: 25
Location: NTS	County: Nye
Surface Coordinates: N 767,971.92' E 564,471.64'	W.O. #: 3404-106
Ground Elev.: 4100.7'	Pad Elev.: _____
Bottom Hole Coord: Not surveyed	Top Casing Elev.: 4101.07'
Rig On Location: 07-02-79	Spudded: 07-02-79
Circulating Media: Air Foam-Bentonite	Completed: 07-20-79
Main Rig & Contractor: Boyles #2/REECO	Instrumented: 07-03-82
No. Of Compressors & Capacity: None	

Bore Hole Record				Casing Record				
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	8'	15"	12.615"	54.50#		0'	8'	
8'	122'	12-1/4"	7.625"	8.06#	1/2"	0'	119'	108
122'	500'	6-1/8"	(core hole)					

Total Depth: 500' Plugs: Cemented instruments to 113.7' with \*

Junk: None

Logging Data: Electric (2), Caliper (4), 3-D velocity (4), Gamma ray (2), Density (2), Epithermal neutron (2), Induction (2), Fluid density (1), Vibroseis (2), USGS-Neutron, Gamma ray, Density, Resistivity, Induced \*\*

**Rigs Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85128	CP	IV	2.01		4.66	6.67
85160	Boyles #2	VI	8.33			8.33
85156	Boyles #1 ***	VI	1.50			1.50
85133	Failing 1500 ****	XI	1.80	1.35		3.15

Remarks: \* 703 Ft<sup>3</sup> Cal-Seal and stemmed to surface with 17 sacks sand, 11 sacks bentonite gel, and 25 Ft<sup>3</sup> dry Cal-Seal, 07-02-82.

\*\* Polarization, Magnetic Susceptibility

\*\*\* Rig used to run 2-3/8" Hydril tubing, 10-07-80 to 10-09-80.

\*\*\*\* Rig used to pull 2-3/8" Hydril tubing and to instrument hole, 06-12-82 to 07-03-82.

Prepared By: LLF:ps Time Breakdown on Next Page



**UE-25a #4**  
**HOLE HISTORY**

- 07-02-79 Moved in CP rig #85128 and rigged up. Drilled 15" hole from 0' to 8' using air foam. Waited on 13-3/8" casing.
- 07-03-79 Set 13-3/8" O.D., 54.50# casing at 8'. Drilled 12-1/4" hole from 8' to 82'. Made trip out.
- 07-05-79 Rig secured from 07-03-79 to 0800 hours, 07-05-79. Made trip in and cleaned out 10' of fill. Drilled 12-1/4" hole from 82' to 92'. Soap pump broke down. Made trip out.
- 07-06-79 Filled soap tank, made trip in and cleaned out 10' of fill. Drilled 12-1/4" hole from 92' to 122'. Made trip out and filled the hole with mud. Ran Birdwell electric, caliper, two 3-D velocity and gamma ray logs to 120'.
- 07-07-79 Ran Birdwell density, epithermal neutron and induction logs to 120'. Rig secured at 1445 hours.
- 07-09-79 Rig secured from 07-07-79 to 0800 hours, 07-09-79. Made trip and blew fluid out of the hole. Ran 2 joints of 8-5/8" O.D., 1/2" wall plastic pipe in the hole to 40'. Rigged down and moved out. Hole suspended at 1600 hours.
- 07-10-79 Hole suspended from 07-09-79 to 2000 hours, 07-10-79. Moved in Boyles #2, rig #85160 and rigged up to set plastic pipe.
- 07-11-79 Set 8-5/8" plastic pipe at 119'. Ran 1.6" O.D. Hydril tubing down the annulus. Cemented the annulus using Dowell as follows:

<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
1	119' - 108'	10 Gyp-Seal	8.82	0930 Hours
2	108' - 53'	25 " "	23.94	1010 "
3	53' - 0'	<u>73</u> " "	<u>21.87</u>	1100 "
TOTALS		108 Ft <sup>3</sup>	54.63 Ft <sup>3</sup>	

Drilled out 10' of cement in the pipe. Made trip out. Rigged up core barrel and 6-1/8" core bit. Made trip in and cleaned out hole and cut core #1 from 121' to 128' using bentonite mud.

- 07-12-79 Cut cores #2 thru core #7 from 128' to 261'.
- 07-13-79 Cut cores #8 thru core #12 from 261' to 323'. Lost returns at 317'.
- 07-14-79 Cut cores #13 thru core #15 from 323' to 357'.

UE-25a #4  
Hole History  
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- 07-15-79 Cut cores #15 thru core #17 from 357' to 373'. Made trip out and left crown of 6-1/8" core bit in the hole.
- 07-16-79 Made trip with 6" flat bottom mill bit. Cleaned out 2' of fill and milled on junk at 375'. Made trip with open ended drill pipe, unable to recover fish. Made trip for 6" mill bit, reamed hole from 320' to 375' and milled on junk from 375' to 380'. Made trip for core barrel and 6-1/8" drag bit, reamed hole from 305' to 380' and cored on junk from 380' to 383'. Made trip out.
- 07-17-79 Made trip in with core barrel and 6-1/8" core bit and reamed the hole from 336' to 383'. Cut core #18 on junk from 383' to 390'. Cut cores #19 thru core #21 from 390' to 457.5'.
- 07-18-79 Cut cores #22 thru core #23 from 457.5' to 500'. Made trip out, laid down core barrel. Made trip with open ended drill pipe, tagged bottom at 500'. Pumped lost circulation material and mud in the hole, no returns.
- 07-19-79 Laid down drill pipe. Rigged down and moved out. Hole suspended from 0400 hours to 1200 hours. Ran Birdwell fluid density log to 500', checked fluid level at 352'. Ran Birdwell caliper, gamma ray, induction, density and epithermal neutron logs to 500'.
- 07-20-79 Ran 3-D logs on 6' and 9' spacing to 500' and electric log to 499'. Hole completed 07-20-79.
- 09-11-79 Ran USGS neutron, gamma ray and density logs.
- 09-13-79 Ran USGS resistivity and induced polarization logs.
- 09-14-79 Ran USGS magnetic susceptibility log.
- 09-15-79 Continued running resistivity logs.
- 10-24-79 Ran Birdwell vibroseis survey to 459' T.D., logged from 425' to 25' on 25' stations.
- 11-05-79 Ran Birdwell vibroseis survey to 459' T.D., logged from 430' to 81' on 25' stations.
- 10-07-80 Moved in Boyles #1, rig #85156 and started rigging up.
- 10-08-80 Rigged up. Ran in with 5-1/8" bit on HCQ rods. Cleaned out tight spot at 122', washed and conditioned hole to 500' using polymer mud. Made trip out. Replaced broken tubing tongs. Started in with 2-3/8" Hydril tubing with plate welded on bottom joint.
- 10-09-80 Set 2-3/8" Hydril tubing at 496.07'. Filled tubing with water, rigged down and moved out.
- 03-17-81 Ran USGS temperature survey to 493'.

UE-25a #4  
Hole History  
Page 3

- 06-12-82 Moved in Failing 1500, rig #85133 and rigged up. Pulled and laid down 2-3/8" tubing (496.07'). Rigged down and moved out.
- 06-30-82 Ran Birdwell caliper log to 498' T.D. Moved in Failing 1500, rig #85133 and rigged up. Made trip in with 6-1/8" bit on 3" drill pipe. Cleaned out hole from 498' to 500' and made trip out. Ran TV camera as directed.
- 07-01-82 Ran Birdwell caliper log to 500' T.D. Crew on standby.
- 07-02-82 Crew on standby to 0800 hours. Rigged up to run 2-1/16" tubing. Poured 18-1/2 sacks of Monterey sand and 1/2 sack bentonite gel down hole. Tagged sand at 397'. Made trip in with 7 piezometers on 7 strings continuous 1/4" plastic tubing and landed piezometers at 400', 351', 313', 181', 169', 150' and 124'. Approximately 1 ft<sup>3</sup> of sand and a small amount of bentonite was used to stem 1' below and 2' above each piezometer. Intervals between piezometers were cemented using National Cementers as follows:

<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
1	397' - 368.5'	43 Cal-Seal	15	1350 Hours
2	368.5' - 353'	24 "	9	1425 "
3	353' -	25 "	-	1525 "
4	- 317'	42 "	20	1710 "
5	317' - 186'	63 "	74	1920 "
6	186' - 173'	17 "	7	1955 "
7	173' - 152.5'	28 "	12	2020 "
8	152.5' - 120'	40 "	18	2110 "
9	120' - 113.7'	25 "	10	2130 "
TOTALS		307 Ft <sup>3</sup>	165 Ft <sup>3</sup>	

Tubing plugged while attempting to tag top of cement on stage #3, made trip to lay down plugged 2-1/16" tubing. Hole was stemmed from 113.7' to surface with 17 sacks of sand, 11 sacks bentonite gel and 25 ft<sup>3</sup> of dry Cal-Seal.

- 07-03-82 Rigged down and moved out. Crew on standby. Hole instrumented 07-03-82.

**UE-25a #4  
CORE RECORD**

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>	<u>ORIENTED CORE</u>
1	121.0 - 128.0	7.0	2.5	36	
2	128.0 - 141.0	13.0	13.0	100	
3	141.0 - 161.0	20.0	20.0	100	
4	161.0 - 191.0	30.0	27.0	90	
5	191.0 - 221.0	30.0	3.0	10	
6	221.0 - 251.0	30.0	26.0	87	
7	251.0 - 261.0	10.0	1.0	10	
8	261.0 - 275.0	14.0	14.0	100	
9	275.0 - 290.0	15.0	15.0	100	
10	290.0 - 310.0	20.0	18.0	90	
11	310.0 - 317.0	7.0	3.5	50	
12	317.0 - 323.0	6.0	6.0	100	X
13	323.0 - 336.0	13.0	13.0	100	
14	336.0 - 345.0	9.0	8.0	89	X
15	345.0 - 357.0	12.0	12.0	100	X
16	357.0 - 365.0	8.0	8.0	100	X
17	365.0 - 373.0	8.0	7.0	88	X
	373.0 - 383.0	cleaning out hole (Mill on junk.)			
18	383.0 - 390.0	7.0	6.7	96	
19	390.0 - 416.0	26.0	26.0	100	
20	416.0 - 445.0	29.0	27.0	93	x
21	445.0 - 457.5	12.5	12.5	100	x
22	457.5 - 487.0	29.5	28.0	95	x
23	487.0 - 500.0	13.0	13.0	100	x

UE-25a #4  
REVIEW OF HOLE CONDITIONS

340 mm (13-3/8") casing was set at 2.4 m (8') in a 381 mm (15") hole drilled to 2.4 m (8'). 311 mm (12-1/4") hole was drilled to 37.2 m (122') using air foam. Electric, caliper, 3-D velocity, gamma ray, density, epithermal neutron and induction logs were run 07-07-79. 219 mm (8-5/8") plastic pipe was set at 36.3 m (119') and the annulus filled to the surface in 3 stages with 3.06 m<sup>3</sup> (108 ft<sup>3</sup>) of Gyp-Seal, 07-11-79. Calculated annular volume was 1.55 m<sup>3</sup> (54.6 ft<sup>3</sup>). 156 mm (6-1/8") cores were cored to a total depth of 152.4 m (500') using bentonite mud. A total of 23 cores were taken of which 9 were oriented cores. Lost circulation material and mud was pumped in the hole with no returns. Fluid density log run 07-19-79 indicated fluid level at 107.3 m (352'). Caliper, gamma ray, induction, density, epithermal neutron, 3-D, and electric logs were run 07-20-79. Neutron, gamma ray, density, resistivity, induced polarization and magnetic susceptibility logs were completed 09-14-79. Vibroseis survey was run 10-24-79 and 11-05-79. 60 mm (2-3/8") tubing with plate welded on bottom was landed at 151.2 m (496') and filled with water 10-09-80. Temperature survey was run 03-17-81. 60 mm (2-3/8") tubing was pulled out 06-12-82. The average curve on caliper log #4 run to 152.4 m (500') T.D. on 07-01-82 indicated a reasonably gauge hole. Seven piezometers on 6 mm (1/4") plastic tubing were landed at 121.9 m (400'), 107.0 m (351'), 95.4 m (313'), 55.2 m (181'), 51.5 m (169'), 45.7 m (150') and 37.8 m (124'). The hole was stemmed to 121.0 m (397') with a sand and bentonite mix. The instruments were grouted to 34.7 m (113.7') in 9 stages with 8.69 m<sup>3</sup> (307 ft<sup>3</sup>) of cement slurry. Calculated annular volume was 4.67 m<sup>3</sup> (165 ft<sup>3</sup>). Each instrument was stemmed from 0.3 m (1') below to 0.6 m (2') above with 0.03 m<sup>3</sup> (1 ft<sup>3</sup>) of sand and bentonite mix during grout operation. The hole was then stemmed to surface with a sand, bentonite and Cal-Seal mix. Hole instrumented 07-03-82.

**FENIX & SCISSON, INC.  
HOLE HISTORY DATA  
NNWSI**

Approved: Jerry Neil Covington  
Date: Nov 6, 1986

Hole No.: UE-25a #5 | Type Hole: Exploratory  
 User: USGS | Area: 25 | Site Prep. W.O. #: None  
 Location: NTS | County: Nye | W.O. #: 3404-106  
 Surface Coordinates: E 766,956.36' E 564,755.11'  
 Ground Elev.: 4056.5' | Pad Elev.: | Top Casing Elev.: 4057.26'  
 Bottom Hole Coord: Not surveyed @ | Ref:  
 Rig On Location: 06-26-79 | Spudded: 06-26-79 | Completed: 07-12-79  
 Circulating Media: Revert mud-Bentonite mud  
 Main Rig & Contractor: Boyles #2/REECO  
 No. Of Compressors & Capacity: None

Bore Hole Record			Casing Record					
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	10'	15"	12.615"	54.50#		0'	10'	
10'	123'	12-1/4"	7.625"	8.06#	1/2"	0'	120'	75
123'	487'	6-1/8"	(core hole)					

Total Depth: 487' | Plugs: None  
 Junk: None  
 Logging Data: Caliper (2), Density (3), Gamma ray (2), Epithermal neutron (2),  
 Induction (2), 3-D Velocity (4), Fluid density (1), Electric (2), \*

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85128	CP	IV	1.06		1.21	2.27
85160	Boyles #2	VI	9.32		1.00	10.32
85156	Boyles #1 **	VI	1.00			1.00
85172	Joy #1 ***	XIII	0.17			0.17
85133	Failing 1500 ****	XI	4.58		1.21	5.79

Remarks: \* Vibroseis (2), USGS-Neutron, Gamma ray, Density, Resistivity,  
 Induced polarization, Magnetic susceptibility, Temperature  
 \*\* Rig used to set 2-3/8" Hydril tubing at 487', 10-07-80.  
 \*\*\* Rig used to pull 2-3/8" Hydril tubing, 06-12-82.  
 \*\*\*\* Rig used to clean and dewater hole, 07-26-82.

Prepared By: LLF:ps

Time Breakdown on Next Page

**TIME BREAKDOWN**

**MAIN HOLE CONSTRUCTION**

Hole No.: UE-25a #5

Drilling Operation Time (DOT)		Other Scheduled Time (OST)		Operational Delay Time (ODT)	
Drill	0.24	Mobe & Demobe	1.40	Rig Repairs	0.45
Trips	0.08	Core		W.O. Equipment	0.19
Dress Drilling		Log	1.94	Fish	0.42
Assembly		Unload Hole	0.08	Clean Out Fill	0.04
Fluid Probe		Run Mandrel		Ream Hole	0.27
Connections		Hydrological		Plug Back	
Open Hole		Tests		Drill Out Plugs	
Core	6.72			Secured W/Crews	
				Lost Circ.	0.46
				Mud	0.79
<b>Main Hole DOT 7.04 Days</b>					
<b>Casing Operation Time (COT)</b>					
Run Casing	0.25				
Run Casing					
Cement Casing	0.11				
Cement Casing					
Drill Out Shoe					
Drill Out Cement	0.17				

**Main Hole COT: 0.53 Days Main Hole OST: 3.42 Days Main Hole ODT: 2.62 Days**

**Total Main Hole Construction Time: 13.61 Days**

Remarks:

**TOTAL ELAPSED TIME**

Log Time - No Rig	3.23 Days	Remarks:
Total Main Hole Construction	10.38 Days	
Secured W/O Crew Site Prep.	Days	
Secured W/O Crew Main Hole Const.	2.21 Days	
Total Suspended Time (No Rig)	Days	
<b>TOTAL ELAPSED TIME</b>	<b>15.82 Days</b>	

**UE-25a #5**  
**HOLE HISTORY**

- 06-26-79 Moved in CP rig #85128 and rigged up. Drilled 15" hole from 0' to 10' using air. Set 13-3/8" O.D., 54.50# casing at 10'. Drilled 12-1/4" hole from 10' to 30'.
- 06-27-79 Drilled 12-1/4" hole from 30' to 90'. Made trip for bit change and reamed hole from 20' to 90'. Made trip out and secured rig at 1900 hours.
- 06-28-79 Rig secured from 06-27-79 to 0800 hours, 06-28-79. Made trip in the hole. Cleaned out bridges at 20', 45', and fill from 75' to 90'. Drilled 12-1/4" hole from 90' to 123'. Pumped 50 barrels of mud in the hole. Made trip out of hole. Rigged down and moved out. Ran Birdwell caliper, density, gamma ray and epithermal neutron logs to 121'. Moved in Boyles #2, rig #85160 and started rigging up.
- 06-29-79 Ran Birdwell induction and 3-D logs to 121'. Continued rigging up.
- 06-30-79 Dropped box end wrench in the hole and recovered it with a 6-1/2" magnet. Made trip to blow fluid out of hole. Laid down drill pipe and dropped 3-1/2" x 4" crossover sub in the hole. Made two attempts to recover sub with 8" magnet. Made trip in hole with 12-1/4" Globe basket, cut 1/2' of core and recovered sub. Set 3 joints of 8-5/8" O.D., 1/2" wall plastic pipe in the hole at 120'. Ran 1.6 O.D. Hydril tubing down the annulus to 120'. Cemented the annulus using Dowell as follows:

	<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
07-01-79	1	120' - 109'	11 Gyp-Seal	10	2344 Hours
	2	109' - 53'	25 " "	25	0300 "
	3	53' - 0'	39 " "	31	0100 "
		TOTALS	75 Ft <sup>3</sup>	66 Ft <sup>3</sup>	

- Made trip to drill out cement to 120' and clean out hole to 123'. Mixed Revert mud. Made trip in with 6-1/8" core bit and core barrel on 4-1/2" drill pipe. Conditioned hole and started coring at 123', lost circulation. Mixed additional Revert polymer mud and cut core #1 from 123' to 128', circulation was improving.
- 07-02-79 Cut core #2 thru #5 from 128' to 174'. Cleaned out mud tank, mixed new Revert mud and conditioned hole at 153'. Continued getting returns.
- 07-03-79 Conditioned hole. Cut core #6 thru #9 from 174' to 210'. Mixed mud at 192'. Secured rig at 2400 hours.
- 07-05-79 Rig secured 07-03-79 to 0 hours, 07-05-79. Cut cores #10 thru #12 from 210' to 245'. Reamed hole from 126' to 228'.

UE-25a #5  
Hole History  
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07-06-79 Cut cores #13 thru #15 from 245' to 288' with no returns. Conditioned and reamed hole from 245' to 268'.

07-07-79 Cut cores #16 thru #17 from 288' to 321.7'.

07-08-79 Reamed hole from 285' to 321.7' and cleaned out 1' of fill. Cut cores #18 thru #20 from 321.7' to 411.7'.

07-09-79 Cut cores #21 thru #23 from 411.7' to 469.7'. Changed from Revert mud to bentonite mud at 464', no returns.

07-10-79 Cut cores #24 and #25 from 469.7' to 487'. Made trip out and laid down core barrel. Made trip in hole with open ended drill pipe, filled hole to surface with lost circulation material and mud. Made trip out of hole, rigged down and moved out. Total cored depth of 487'. Ran Birdwell fluid density log to 488', checked fluid level at 247'.

07-11-79 Ran caliper, gamma ray, epithermal neutron, induction, density and electric logs to 487'. Reran electric log on different spacing. Reran density log to 300'. Ran 3-D log on 6' and 9' spacings to 487'.

07-12-79 Completed running 3-D logs. Hole completed 07-12-79.

09-12-79 Ran USGS neutron, gamma ray and density logs.

09-13-79 Ran USGS resistivity and induced polarization logs.

09-14-79 Ran USGS magnetic susceptibility log.

10-24-79 Ran Birdwell vibroseis survey to 406' T.D., logged from 402' to 25' on 25' stations.

11-04-79 Ran Birdwell vibroseis survey to 408' T.D., logged from 395' to 102' on 25' stations.

10-06-80 Moved in Boyles #1, rig #85156 and started rigging up.

10-07-80 Rigged up. Ran in with 5-1/8" bit on HQ rods. Washed and conditioned hole to 487' using polymer mud. Made trip out. Ran and set 2-3/8" Hydril tubing with welded plate on bottom joint at 487'. Filled the tubing with water, rigged down and moved out.

03-16-81 Ran USGS temperature survey to 492'.

06-12-82 Moved in Joy #1, rig #85172 and rigged up. Pulled and laid down 2-3/8" tubing (487'). Rigged down and moved out.

07-20-82 Moved in Failing 1500, rig #85173 and rigged up.

UE-25a #5  
Hole History  
Page 3

- 07-21-82      Ran Westech TV camera, picture got muddy at 370'. Made trip in and landed 1.9" tubing at 483'. Rigged up 900 air compressor. Secured rig at 2000 hours.
- 07-23-82      Rig secured from 07-21-82 to 0 hours, 07-23-82. Started blowing out fluid using a 900 air compressor.
- 07-24-82      Continued blowing out hole using 1 air compressor.
- 07-25-82      Continued blowing out hole using 1 air compressor.
- 07-26-82      Blew out hole to 0800 hours. Pulled and laid down 1.9" tubing. Rigged down and moved out. Ran Westech TV camera to 484'. Video taped in and out runs.

**UE-25a #5  
CORE RECORD**

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>	<u>ORIENTED CORE</u>
1	123.0 - 128.0	5.0	4.0	80	
2	128.0 - 135.0	7.0	6.7	96	
3	135.0 - 153.0	18.0	3.5	19	
4	153.0 - 162.0	9.0	1.2	13	
5	162.0 - 174.0	12.0	9.5	79	
6	174.0 - 185.3	11.3	5.3	47	
7	185.3 - 192.0	6.7	1.2	18	X
8	192.0 - 202.0	10.0	9.0	90	
9	202.0 - 210.0	8.0	8.0	100	X
10	210.0 - 224.0	14.0	14.0	100	X
11	224.0 - 228.0	4.0	4.0	100	X
12	228.0 - 245.0	17.0	17.0	100	
13	245.0 - 268.0	23.0	3.8	17	X
14	268.0 - 279.0	11.0	3.3	30	X
15	279.0 - 288.0	9.0	9.0	100	
16	288.0 - 297.0	9.0	9.0	100	X
17	297.0 - 321.7	24.7	23.1	94	X
18	321.7 - 351.7	30.0	30.0	100	X
19	351.7 - 381.7	30.0	30.0	100	X
20	381.7 - 411.7	30.0	30.0	100	X
21	411.7 - 441.7	30.0	30.0	100	X
22	441.7 - 453.7	12.0	12.0	100	X
23	453.7 - 469.7	16.0	16.0	100	X
24	469.7 - 474.0	4.3	4.3	100	X
25	474.0 - 487.0	13.0	12.0	92	

**UE-25a #5**  
**REVIEW OF HOLE CONDITIONS**

340 mm O.D. (13-3/8") casing was set at 3.0 m (10') in a 381 mm (15") hole drilled to 3.0 (10'). 311 mm (12-1/4") hole was drilled to 37.5 m (123'). Caliper, density, gamma ray, epithermal neutron, induction and 3-D logs were run, 06-29-79. 219 mm O.D. (8-5/8") plastic pipe was set at 36.6 m (120') and the annulus cemented to surface in 3 stages with 2.12 m<sup>3</sup> (75 ft<sup>3</sup>) of Gyp-Seal, 07-01-79. Calculated annular volume was 1.87 m<sup>3</sup> (66 ft<sup>3</sup>). 156 mm (6-1/8") cores were cored to a total depth of 148.4 m (487') using mud. Changed from Revert mud to bentonite mud at 141.4 m (464'). A total of 25 cores were taken of which 15 were oriented cores. Fluid density, caliper, gamma ray, epithermal neutron, induction, density and 3-D logs were run and completed 07-12-79. Neutron, gamma ray, density, resistivity, induced polarization and magnetic susceptibility logs were completed 09-14-79. Vibroseis survey was run 10-24-79 and 11-04-79. 60 mm (2-3/8") Hydril tubing with welded plate on bottom joint was set at 148.4 m (487') and filled with water, 10-07-80. Temperature survey was run 03-16-81. 60 mm (2-3/8") tubing was pulled 06-12-82. TV camera was run 07-21-82. Dewatered hole from 07-23-82 to 07-26-82. TV camera was run 07-26-82.

**FENIX & SCISSON, INC.  
HOLE HISTORY DATA  
NNWSI**

Approved: Jerry Hall Covington  
Date: Nov 6, 1986

Hole No.: UE-25a #6 | Type Hole: Exploratory  
User: USGS | Area: 25 | Site Prep. W.O. #: None  
Location: NTS | County: Nye | W.O. #: 3404-109  
Surface Coordinates: N 765,899.48' E 564,500.73'  
Ground Elev.: 4052.9' | Pad Elev.: | Top Casing Elev.: 4053.92'  
Bottom Hole Coord: Not surveyed @ | Ref:  
Rig On Location: 07-19-79 | Spudded: 07-19-79 | Completed: 08-08-79  
Circulating Media: Bentonite mud  
Main Rig & Contractor: Boyles #2/REECO  
No. Of Compressors & Capacity: None

Bore Hole Record				Casing Record				
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	65'	12-1/4"	7.625"	8.06#	1/2"	0'	57'	126
65'	107'	6-1/4"						
107'	246'	6-1/8"	(core hole)					
246'	500'	5-1/2"	(core hole)					
			2-3/8" O.D. Tubing			0'	493'	

Total Depth: 500' | Plugs: None  
Junk: None  
Logging Data: Induction (2), Caliper (2), Electric (4), Epithermal neutron (2), Gamma ray (2), Density (2), Fluid density (1), 3-D velocity (2), Vibroseis (2), USGS-Neutron, Gamma ray, Density, Resistivity, \*

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85160	Boyles #2	VI	11.66		0.5	12.16
85160	Boyles #2 **	VI	1.33		4.00	5.33
85156	Boyles #1 ***	VI	1.08			1.08

Remarks: \* Induced polarization, Magnetic susceptibility.  
\*\* Rig used for fishing, 08-08-79.  
\*\*\* Rig used to run tubing, 10-06-80.

Prepared By: LLF:ps | Time Breakdown on Next Page



**UE-25a #6**  
**HOLE HISTORY**

- 07-19-79 Moved in Boyles #2 rig #85160 and rigged up. Drilled 12-1/4" hole from 0' to 12' using air. Hole sloughed back to 3'. Started moving in equipment.
- 07-20-79 Rigged up mud pump. Cleaned out 9' of fill and drilled 12-1/4" hole from 12' to 30' using bentonite mud. Dropped 10# sledge hammer in the hole and recovered it using a Globe basket. Drilled 12-1/4" hole from 30' to 65' and checked 7' of fill. Laid down tools. Rigged up to run plastic pipe.
- 07-21-79 Set 8-5/8" O.D., 1/2" wall plastic pipe at 57'. Cemented the annulus using Dowell as follows:

<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
1	57' - 48'	8 Gyp-Seal	7.3	0530 Hours
2	48' - 0'	118 " "	21.1	0615 "
TOTALS		126 Ft <sup>3</sup>	28.4 Ft <sup>3</sup>	

Cleaned out cement from 48' to 57' and hole to 65'. Drilled 6-1/4" hole to 70'. Made trip in with core barrel and 6-1/8" core bit and cleaned out fill from 61' to 70'. Made trip for plugged bit. Made trip in hole to clean out 10' of fill and drilled 6-1/4" hole from 70' to 81' using bentonite mud. Made trip out for core barrel.

- 07-22-79 Made trip with core barrel and tagged fill. Made trip with 6-1/4" bit and cleaned out fill to 81'. Made trip for core barrel. Cut 6-1/8" cores #1 and #2 from 81' to 102'. Made trip and drilled 6-1/8" hole from 102' to 107'. Conditioned hole and checked 2' of fill. Made trip out and laid down tools.
- 07-23-79 Ran Birdwell induction, caliper and electric logs to 102'. Ran epithermal neutron log to 95'. Ran gamma ray and density logs to 93'. Made trip with 6-1/8" bit and cleaned out fill from 93' to 107'. Made trip out of hole. Plugged back the hole using Dowell from 107' to 28.5' with 25 ft<sup>3</sup> of neat cement + 2% CaCl<sub>2</sub>. CIP at 0715 hours. Calculated hole volume was 18.2 ft<sup>3</sup>. Made trip and drilled out cement with 6-1/8" bit from 28.5' to 107', checked no fill. Made trip in hole to attempt core with 6-1/8" core barrel, hole out of gauge. Made trip out of hole.
- 07-24-79 Made trip with 6-1/4" bit and reamed hole to 107'. Made trip in hole. Cut 6-1/8" cores #3 thru #9 from 107' to 170'. Cleaned out 2' of fill at 124'.
- 07-25-79 Cut cores #10 thru #14 from 170' to 246'. Made trip to change from 6-1/8" core bit to 5-1/2" core bit. Cut core #15 from 246' to 253'.

UE-25a #6  
Hole History  
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- 07-26-79 Cut cores #16 thru #17 from 253' to 274'. Made trip out of hole. Started replacing gears in chuck.
- 07-27-79 Replaced gears in chuck. Made trip in hole. Cut core #18 from 274' to 278'. Cleaned out 6' of fill and cut cores #19 thru #21 from 278' to 316'.
- 07-28-79 Cut cores #22 thru #25 from 316' to 402'.
- 07-29-79 Cut cores #26 thru #31 from 402' to 454'.
- 07-30-79 Cut cores #32 thru #37 from 454' to 500'. Made trip out and laid down drill pipe and core barrel. Started rigging down.
- 07-31-79 Rigged down and moved out. Hole suspended from 0800 hours to 1930 hours. Ran Birdwell gamma ray log to 501' and epithermal neutron log to 500'.
- 08-01-79 Ran caliper, density and induction logs to 501'. Ran fluid density log, checked fluid level at 354'. Ran electric log tool to 500', tool hung up. Attempted to work tool free. Cable pulled out of connector or swage on top of bridle. Waited on orders. Operation secured at 1600 hours.
- 08-03-79 Operation secured from 08-01-79 to 0800 hours, 08-03-79. Moved in Boyles #2, rig #85160 and rigged up. Secured rig at 1630 hours.
- 08-06-79 Rig secured from 08-03-79 to 0800 hours, 08-06-79. Rigged up. Made trip with spear on 3-1/2" drill pipe and retrieved electric log tool bridle. Top of logging tool at 491'.
- 08-07-79 Made trip in with 5-1/4" Globe basket on 3-1/2" drill pipe. Cleaned out bridge at 450' and fill at 484'. Washed over tool to 492.77', no recovery. Made trip, washed over tool to 496' and recovered logging tool. Made trip in with 3-1/2" open ended drill pipe and circulated the hole. Made trip out and laid down drill pipe.
- 08-08-79 Rigged down and moved out. Ran electric log to 501' on 2 separate spacings and 3-D log to 500' on 2 separate spacings. Hole completed 08-08-79.
- 08-10-79 Reran Birdwell electric logs to 499'.
- 09-12-79 Ran USGS neutron, gamma ray and density logs.
- 09-13-79 Ran USGS resistivity and induced polarization logs.
- 09-14-79 Ran USGS magnetic susceptibility log.

UE-25a #6  
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- 10-24-79      Ran Birdwell vibroseis survey to 429' T.D., logged from 420' to 25' on 25' stations.
- 11-04-79      Ran Birdwell vibroseis survey to 427' T.D., logged from 418' to 75' on 25' stations.
- 10-05-80      Moved in Boyles #1, rig #85156 and started rigging up.
- 10-06-80      Rigged up. Ran in with 5-1/8" bit on HQ rods. Cleaned out bridge at 64' and washed hole to 500'. Conditioned hole using polymer mud. Made trip out. Ran and set 2-3/8" Hydril tubing with plate welded on bottom joint at 493.16'. Filled tubing with water, rigged down and moved out.

**UE-25a #6  
CORE RECORD**

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>	<u>ORIENTED CORE</u>
*					
1	81.0 - 90.5	9.5	3.0	32	
2	90.5 - 102.0	11.5	2.3	20	
	102.0 - 107.0	No core - Rock bit			
3	107.0 - 111.0	4.0	4.0	100	
4	111.0 - 118.0	7.0	7.0	100	
5	118.0 - 124.0	6.0	6.0	100	
6	124.0 - 130.0	6.0	6.0	100	
7	130.0 - 141.0	11.0	8.2	75	X
8	141.0 - 155.0	14.0	14.0	100	
9	155.0 - 170.0	15.0	15.0	100	
10	170.0 - 198.0	28.0	23.0	82	
11	198.0 - 227.0	29.0	10.0	34	
12	227.0 - 242.0	15.0	13.9	93	
13	242.0 - 243.0	1.0	0.5	50	
14	243.0 - 246.0	3.0	2.2	73	
15	246.0 - 253.0	7.0	3.5	50	X
16	253.0 - 258.0	5.0	5.0	100	X
17	258.0 - 274.0	16.0	11.0	69	X
18	274.0 - 278.0	4.0	2.2	55	X
19	278.0 - 299.0	21.0	6.0	29	X
20	299.0 - 307.0	8.0	8.0	100	X
21	307.0 - 316.0	9.0	9.0	100	X
22	316.0 - 328.0	12.0	7.0	58	X
23	328.0 - 342.0	14.0	14.0	100	X
24	342.0 - 372.0	30.0	30.0	100	X
25	372.0 - 402.0	30.0	30.0	100	X
26	402.0 - 409.0	7.0	3.0	43	
27	409.0 - 418.0	9.0	4.8	53	
28	418.0 - 426.0	8.0	4.7	59	
29	426.0 - 434.0	8.0	2.5	31	
30	434.0 - 441.0	7.0	2.4	34	
31	441.0 - 454.0	13.0	5.8	45	
32	454.0 - 457.0	3.0	1.0	33	
33	457.0 - 464.0	7.0	3.5	50	
34	464.0 - 474.0	10.0	3.6	36	
35	474.0 - 483.0	9.0	2.9	32	
36	483.0 - 495.0	12.0	2.0	17	
37	495.0 - 500.0	5.0	2.8	56	

**UE-25a #6**  
**REVIEW OF HOLE CONDITIONS**

219 mm (8-5/8") plastic pipe was set at 17.4 m (57') in a 311 mm (12-1/4") hole drilled to 19.8 m (65'). The annulus was cemented to the surface in 2 stages with 3.57 m<sup>3</sup> (126 ft<sup>3</sup>) of Gyp-Seal, 07-21-79. Calculated annular volume was 0.80 m<sup>3</sup> (28.4 ft<sup>3</sup>). 159 mm (6-1/4") hole was drilled to 24.7 m (81') and 156 mm (6-1/8") core hole drilled to 32.6 m (107') using bentonite mud. Induction, caliper, electric, epithermal neutron, gamma ray and density logs were run, 07-23-79. The average curve on the caliper log indicated a maximum enlargement to 356 mm (14") at 19.2 m (63'). The hole was plugged back from 32.6 m (107') to 8.7 m (28.5') with 0.71 m<sup>3</sup> (25 ft<sup>3</sup>) of neat cement + 2% CaCl<sub>2</sub>. Calculated hole volume was 0.52 m<sup>3</sup> (18.2 ft<sup>3</sup>). Approximately 0.24 m<sup>3</sup> (8.3 ft<sup>3</sup>) of cement was stabilizing the walls of the hole. Core drilling was then continued to a total depth of 152.4 m (500'). A total of 37 cores were taken of which 12 were oriented cores. Gamma ray, epithermal neutron, caliper, density and fluid density logs were completed, 08-01-79. Electric and 3-D logs were run, each on 2 separate spacings, 08-08-79. Electric logs were rerun, 08-10-79. Neutron, gamma ray, density, resistivity, induced polarization and magnetic susceptibility logs were completed, 09-14-79. Vibroseis survey was run 10-24-79 and 11-04-79. 60 mm (2-3/8") tubing with plate welded on bottom joint was set in hole at 150.3 m (493') and filled with water, 10-06-80.

**FENIX & SCISSON, INC.  
HOLE HISTORY DATA  
NNWSI**

Approved: *Jim Hill Covington*  
Date: *Nov 6, 1986*

Hole No.: UE-25a #7		Type Hole: Exploratory	
User: USGS	Area: 25	Site Prep. W.O. #: None	
Location: NTS	County: Nye	W.O. #: 3404-110	
Surface Coordinates: N 766,249.86' E 565,468.51'			
Ground Elev.: 4004.6'	Pad Elev.:	Top Casing Elev.: 4004.57'	
Bottom Hole Coord: Not surveyed @		Ref:	
Rig On Location: 08-10-79	Spudded: 08-10-79	Completed: 08-31-79	
Circulating Media: Air foam, Bentonite mud		Recompleted: 10-05-80	
Main Rig & Contractor: Boyles #2/REECO			
No. Of Compressors & Capacity: None			

Bore Hole Record			Casing Record					
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	10'	15"						
10'	138'	12-1/4"	7.625"		1/2"	0'	134'	90
138'	500'	5-1/2" (core hole)						
500'	502'	4-1/2"						
502'	1002'	3.875" (core hole)						
			2-3/8" O.D. Tubing			0'	956'	
Total Depth: 1002'*		Plugs: None						

Junk: None

Logging Data: Induction (4), Caliper (4), Epithermal neutron (3), Gamma ray (4), Density (4), 3-D Velocity (2), Electric (3), Fluid density (3), USGS-Neutron, Gamma Ray, Density, Resistivity, Induced Polarization, Magnetic \*\*

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85128	CP	IV	0.66		2.67	3.33
85160	Boyles #2	VI	15.16		2.17	17.33
85118	Hycalog #1 ***	V	19.00		0.33	19.33

Remarks: \* Recompleted total depth  
\*\* susceptibility, temperature  
\*\*\* Rig used for recompletion, 10-05-80.

Prepared By: LLF:ps

Time Breakdown on Next Page



**UE-25a #7  
HOLE HISTORY**

- 08-10-79 Moved in CP rig #85128 and rigged up. Drilled 15" hole from 0' to 10'. Set 13-3/8" O.D., 54.50# casing at 10'.
- 08-13-79 Rig secured from 08-10-79 to 0800 hours, 08-13-79. Drilled 2-1/4" hole from 10' to 80' using air foam. Moved out CP rig. Moved Boyles #2, rig #85160 on location. Ran Birdwell induction log to 69' and caliper log to 68'.
- 08-14-79 Ran epithermal neutron log to 62', gamma ray log to 65' and density log to 64'. Rigged up Boyles #2 rig. Cleaned out fill from 62' to 80'. Circulated hole and checked 2' of fill.
- 08-15-79 Cleaned out 2' of fill and conditioned hole. Made trip for core barrel and 5-1/2" core bit. Cut cores #1 thru core #3 from 80' to 109' using bentonite mud. Cleaned out 4' of fill at 96' and 12' of fill at 104'.
- 08-16-79 Cut core #4 thru core #8 from 109' to 138'. Lost returns at 119'. Made trip out of hole. Made trip in hole to open 5-1/2" hole to 12-1/4" from 80' to 128'. Added 1 sack of lost circulation material and got returns at 90'.
- 08-17-79 Lost returns at 128' and added 6 sacks of lost circulation material to the drilling mud. Opened 5-1/2" hole to 12-1/4" from 128' to 138'. Conditioned hole and made trip out. Ran Birdwell caliper tool to top of bridge at 68'. Made trip and cleaned out hole. Ran caliper log to 136', density to 133', gamma ray log to 132', induction log to 132', 3-D logs on 6' and 9' spacings to 133' and epithermal neutron log to 133'. Secured rig at 2000 hours.
- 08-20-79 Rig secured from 08-17-79 to 0 hours, 08-20-79. Made trip with 12-1/4" bit and cleaned out 5' of fill. Ran 1.6" O.D. tubing in the hole to 135'. Made up and set 7 joints of 8-5/8" O.D., 1/2" wall plastic pipe at 134'. Pumped 2 barrels of water ahead of stage #1 and cemented the annulus down the tubing using Dowell as follows:

<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
1	135' - 129'	10 Gyp-Seal	4	1605 Hours
2	129' - 79'	25 "	20	1650 "
3	79' - 0'	55 "	25	1810 "
TOTALS		90 Ft <sup>3</sup>	49 Ft <sup>3</sup>	

Tagged top of cement inside the plastic pipe at 129'. Pulled and laid down the 13-3/8" surface casing after stage #2.

- 08-21-79 Made trip to drill out cement from 129' to 138' with a 6-1/8" bit. Made up coring assembly with a 5-1/2" bit and ran in hole. Cut cores #9 thru #13 from 138' to 165' using mud.

UE-25a #7  
Hole History  
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08-22-79 Cut cores #14 thru #17 from 165' to 184'. Cleaned out bridge from 133' to 136'.

08-23-79 Cut cores #18 thru #21 from 184' to 237'.

08-24-79 Cut cores #22 thru #26 and started #27, from 237' to 312'.

08-25-79 Cut cores #27 thru #28 and started #29, from 312' to 336'.

08-26-79 Cut cores #29 thru #31 and started #32, from 336' to 357'.

08-27-79 Cut cores #32 thru #34 and started #35, from 357' to 393'.

08-28-79 Cut cores #35 thru #37 and started #38, from 393' to 437'. Added lost circulation material at 415' and circulated hole.

08-29-79 Cut cores #38 thru #41 from 437' to 500'.

08-30-79 Made trip out of hole and laid down drill pipe, core assembly and core #41. Rigged down and moved out. Ran Birdwell caliper log and density log to 500'.

08-31-79 Ran gamma ray log, epithermal neutron log, induction log and electric log to 500'. Ran fluid density log, checked fluid level at 420'. Filled hole with mud and reran induction and electric logs to 500'. Hole completed 08-31-79.

09-12-79 Ran USGS neutron, gamma ray and density logs.

09-13-79 Ran USGS resistivity and induced polarization logs.

09-14-79 Ran USGS induced polarization, resistivity and magnetic susceptibility logs.

10-24-79 Made 3 attempts to run Birdwell vibroseis. Tool would not work at an angle.

09-16-80 Move in Hycalog #1, rig #85118 and started moving in equipment.

09-17-80 Started rigging up.

09-18-80 Rigged up. Made up 5-1/4" rock bit on HCQ rods and started in washing hole using polymer mud.

09-19-80 Washed hole to bottom at 501.17'. Made trip out, left 260' of HCQ rods in the hole. Made trip and recovered rods. Ran 4-1/2" HW casing with casing shoe on bottom. Rotated casing to 502.5'.

UE-25a #7  
Hole History  
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- 09-20-80 Rigged up to core. Made trip in with 3.875" diamond core bit and core barrel on HCQ rods and conditioned hole. Cut 3.875" cores #1 and #2 from 502' to 514' using polymer mud. Lost returns at 508'.
- 09-21-80 Repaired rig generator and equipment to 1230 hours. Cut 3.875" cores #3 thru #8 from 514' to 545'. Rods stuck at 545' and parted near bottom.
- 09-22-80 Repaired equipment. Made trip in, screwed into fish and made trip out. Started in the hole with 3.875" core bit and barrel on HCQ rods.
- 09-23-80 Made trip in and cleaned out 38' fill. Cut 3.875" cores #9 thru #12 from 545' to 572'. Dropped inner barrel and core #12 down the rods. Worked rods free and made trip out.
- 09-24-80 Recovered core #12. Replaced 15 joints of HCQ rods and repaired core barrel. Made trip in and cut 3.875" cores #13 thru #15 from 572' to 592'.
- 09-25-80 Cut cores #16 thru #22 from 592' to 631.5'. Made trip out to repair latch on inner barrel.
- 09-26-80 Repaired inner barrel latch coupling. Made trip in and cleaned out bridge at 553'. Cut 3.875" cores #23 thru #30 from 631.5' to 649'. Made trip out for core barrel change.
- 09-27-80 Made trip in. Cut 3.875" cores #31 thru #38 from 649' to 693'. Made trip out for core barrel change.
- 09-28-80 Made trip in. Cut 3.875" cores #39 to #47 from 693' to 746'.
- 09-29-80 Cut 3.875" cores #47 thru #55 from 746' to 811'.
- 09-30-80 Cut 3.875" cores #56 thru #68 from 811' to 906'.
- 10-01-80 Cut 3.875" cores #69 thru #86 from 906' to 966'. Made trip for bit change at 922'.
- 10-02-80 Cut 3.875" cores #87 thru #96 from 966' to 1002'. Conditioned hole and made trip out. Ran Birdwell fluid density log, checked fluid level at 592'. Ran caliper tool to bridge at 514'. Made trip in, cleaned out bridge and conditioned hole at 1002' with high viscosity mud.
- 10-03-80 Made trip out. Ran caliper, gamma ray and dual proximity density logs to 1001'. Ran fluid density log, checked fluid level at 742'. Pumped in fluid and ran electric log to 1000'. Rigged up to run 2-3/8" Hydril tubing.

UE-25a #7  
Hole History  
Page 4

- 10-04-80 Ran in 2-3/8" Hydril tubing with bottom joint orange peeled to 971.44'. Rigged up and pulled the 4-1/2" HW casing. Set 2-3/8" Hydril tubing at 956.44'. Started rigging down.
- 10-05-80 Rigged down and moved out. Hole recompleted 10-05-80.
- 03-17-81 Ran USGS temperature survey.

**UE-25a #7**  
**CORE RECORD**

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>	<u>ORIENTED CORE</u>
0	0 - 80.0	No Core - Rock Bit			
1	80.0 - 96.0	16.0	1.0	6	
2	96.0 - 104.0	8.0	1.0	13	
3	104.0 - 109.0	5.0	1.8	36	
4	109.0 - 109.5	0.5	0.0	0	
5	109.5 - 113.5	4.0	0.8	20	
6	113.5 - 119.0	5.5	2.6	47	
7	119.0 - 133.0	14.0	3.0	21	
8	133.0 - 138.0	5.0	1.2	24	
9	138.0 - 142.0	4.0	0.3	8	
10	142.0 - 153.0	11.0	2.0	18	
11	153.0 - 156.0	3.0	1.0	33	
12	156.0 - 159.0	3.0	3.0	100	
13	159.0 - 165.0	6.0	2.5	42	
14	165.0 - 169.0	4.0	2.5	63	
15	169.0 - 172.0	3.0	1.5	50	
16	172.0 - 173.5	1.5	1.5	100	
17	173.5 - 184.0	10.5	9.0	86	
18	184.0 - 196.0	12.0	12.0	100	
19	196.0 - 207.5	11.5	10.5	91	X
20	207.5 - 229.0	21.5	17.7	82	X
21	229.0 - 237.0	8.0	8.0	100	X
22	237.0 - 248.0	11.0	11.0	100	
23	248.0 - 269.0	21.0	20.3	97	
24	269.0 - 288.0	19.0	19.0	100	
25	288.0 - 307.0	19.0	19.0	100	
26	307.0 - 310.0	3.0	3.0	100	X
27	310.0 - 320.0	10.0	8.6	86	X
28	320.0 - 330.0	10.0	10.0	100	X
29	330.0 - 337.0	7.0	7.0	100	X
30	337.0 - 347.0	10.0	8.0	80	X
31	347.0 - 352.0	5.0	5.0	100	X
32	352.0 - 367.5	15.5	10.0	65	X
33	367.5 - 381.0	13.5	13.0	96	X
34	381.0 - 391.0	10.0	7.5	75	X
35	391.0 - 406.0	15.0	15.0	100	X
36	406.0 - 415.0	9.0	9.0	100	X
37	415.0 - 421.0	6.0	6.0	100	
38	421.0 - 447.0	26.0	26.0	100	X
39	447.0 - 468.0	21.0	21.0	100	
40	468.0 - 481.0	13.0	13.0	100	X
41	481.0 - 500.0	19.0	5.0	26	X

Recompletion Coring

UE-25a #7  
CORE RECORD

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>
1	502.0 - 509.0	7.0	1.0	14
2	509.0 - 514.0	5.0	NA	NA
3	514.0 - 521.0	7.0	6.0	86
4	521.0 - 524.0	3.0	3.0	100
5	524.0 - 528.0	4.0	4.0	100
6	528.0 - 534.0	6.0	6.0	100
7	534.0 - 542.0	8.0	7.7	96
8	542.0 - 545.0	3.0	3.0	100
9	545.0 - 552.0	7.0	6.4	91
10	552.0 - 562.0	10.0	10.0	100
11	562.0 - 567.0	5.0	5.0	100
12	567.0 - 572.0	5.0	5.0	100
13	572.0 - 580.0	8.0	7.5	94
14	580.0 - 584.5	4.5	3.5	78
15	584.5 - 592.5	8.0	8.0	100
16	592.5 - 598.0	5.5	NA	NA
17	598.0 - 605.0	7.0	NA	NA
18	605.0 - 615.0	10.0	NA	NA
19	615.0 - 619.5	4.5	2.25	50
20	619.5 - 623.0	3.5	1.75	50
21	623.0 - 625.0	2.0	1.0	50
22	625.0 - 631.5	6.5	3.8	58
23	631.5 - 633.5	2.0	1.0	50
24	633.5 - 637.5	4.0	2.2	55
25	637.5 - 638.5	1.0	1.0	100
26	638.5 - 640.5	2.0	1.0	50
27	640.5 - 641.5	1.0	0.5	50
28	641.5 - 642.0	0.5	0.3	60
29	642.0 - 645.0	3.0	0.3	10
30	645.0 - 649.0	4.0	4.0	100
31	649.0 - 653.0	4.0	4.0	100
32	653.0 - 661.5	8.5	8.5	100
33	661.5 - 665.5	4.0	4.0	100
34	665.5 - 672.0	6.5	7.0	108
35	672.0 - 677.0	5.0	5.0	100
36	677.0 - 684.0	7.0	7.0	100
37	684.0 - 688.5	4.5	5.3	118
38	688.5 - 693.0	4.5	4.5	100
39	693.0 - 703.0	10.0	9.5	95
40	703.0 - 713.0	10.0	10.0	100
41	713.0 - 722.0	9.0	7.8	87
42	722.0 - 726.0	4.0	3.8	95
43	726.0 - 728.0	2.0	2.0	100
44	728.0 - 732.0	4.0	3.8	95

UE-25a #7  
 Recompletion Coring  
 Page 2

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>
45	732.0 - 740.0	8.0	7.3	91
46	740.0 - 743.0	3.0	2.7	90
47	743.0 - 750.0	7.0	6.0	86
48	750.0 - 757.5	7.5	6.0	80
49	757.5 - 767.0	9.5	9.5	100
50	767.0 - 777.0	10.0	10.0	100
51	777.0 - 787.0	10.0	10.0	100
52	787.0 - 793.0	6.0	4.9	82
53	793.0 - 803.0	10.0	4.1	41
54	803.0 - 808.0	5.0	5.0	100
55	808.0 - 811.0	3.0	3.0	100
56	811.0 - 818.0	7.0	7.0	100
57	818.0 - 822.0	4.0	4.0	100
58	822.0 - 832.0	10.0	10.0	100
59	832.0 - 842.0	10.0	10.0	100
60	842.0 - 852.0	10.0	10.0	100
61	852.0 - 862.0	10.0	10.0	100
62	862.0 - 872.0	10.0	8.4	84
63	872.0 - 882.0	10.0	9.0	90
64	882.0 - 884.0	2.0	2.5	125
65	884.0 - 893.0	9.0	6.5	72
66	893.0 - 897.0	4.0	2.8	70
67	897.0 - 901.0	4.0	4.0	100
68	901.0 - 906.0	5.0	5.0	100
69	906.0 - 910.0	4.0	1.3	33
70	910.0 - 913.0	3.0	2.2	73
71	913.0 - 914.0	1.0	1.0	100
72	914.0 - 916.5	2.5	2.5	100
73	916.5 - 919.5	3.0	3.0	100
74	919.5 - 922.0	2.5	2.0	80
75	922.0 - 926.0	4.0	4.5	113
76	926.0 - 931.0	5.0	4.5	90
77	931.0 - 936.0	5.0	5.0	100
78	936.0 - 938.0	2.0	1.8	90
79	938.0 - 939.0	1.0	0.1	10
80	939.0 - 941.0	2.0	2.0	100
81	941.0 - 947.0	6.0	3.0	50
82	947.0 - 951.0	4.0	4.0	100
83	951.0 - 955.0	4.0	0.4	10
84	955.0 - 957.0	2.0	1.6	80
85	957.0 - 960.0	3.0	1.5	50
86	960.0 - 966.0	6.0	2.0	33
87	966.0 - 971.0	5.0	5.0	100
88	971.0 - 972.0	1.0	1.0	100
89	972.0 - 973.0	1.0	1.0	100
90	973.0 - 979.0	6.0	5.0	83
91	979.0 - 981.0	2.0	2.0	100

UE-25a #7  
Recompletion Coring  
Page 3

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>
92	981.0 - 985.0	4.0	4.0	100
93	985.0 - 989.0	4.0	4.0	100
94	989.0 - 993.0	4.0	3.0	75
95	993.0 - 998.0	5.0	4.0	80
96	998.0 -1002.0	4.0	3.4	85

UE-25a #7  
REVIEW OF HOLE CONDITIONS

311 mm (12-1/4") hole was drilled to 24.4 m (80') using air foam. Induction, caliper, epithermal neutron, gamma ray and density logs were run, 08-14-79. 140 mm (5-1/2") cores were cut to 42.1 m (138') using bentonite mud. The core hole was opened to 311 mm (12-1/4") to 42.1 m (138'). Caliper, density, gamma ray, induction, 3-D and epithermal neutron logs were run, 08-17-79. The average curve on the caliper log indicated maximum hole enlargement to 445 mm (17-1/2") at 6.1 m (20'). 219 mm (8-5/8") plastic pipe was set at 40.8 m (134') and the annulus cemented to the surface in 3 stages with 2.55 m<sup>3</sup> (90 ft<sup>3</sup>) of Gyp-Seal, 08-20-79. Calculated annular volume was 1.39 m<sup>3</sup> (49 ft<sup>3</sup>). 140 mm (5-1/2") cores were cut to a total depth of 152.4 m (500'). A total of 41 cores were taken of which 17 were oriented cores. Caliper, density, gamma ray, epithermal neutron, induction, electric and fluid density logs were run, 08-31-79. Neutron, gamma ray, density, resistivity, induced polarization and magnetic susceptibility logs were completed 09-14-79. 98 mm (3.875") cores were cut to a recompleted total depth of 305.4 m (1002') between 09-20-80 and 10-02-80. A total of 96 cores were cut. Fluid density, caliper, gamma ray, density, and electric logs were run. 60 mm (2-3/8") tubing with bottom joint orange peeled (956'). Hole recompleted 10-05-80. Temperature survey was run 03-17-81.

## Appendix A

## GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 1

HOLE: UE-25a#1

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED BTM LOG</u>	<u>INTERNAL TOP LOG</u>
Caliper	(1,1)	1	8/26/78	Birdwell	2,499'	1,250'
Caliper	(1,2)	2	8/31/78	Birdwell	959'	0'
Caliper	(1,3)	3	7/19/82	Birdwell	2,400'	0'
Casing Collar Locator	(1,3)	1	7/19/82	Birdwell	2,393'	0'
Density	(2,1)	1	8/26/78	Birdwell	2,497'	1,250'
Fluid Density for Water Location	(1,4)	1-10	8/25-26/78	Birdwell	2,502'	1,350'
Gamma Ray	(2,3)	1	8/26/78	Birdwell	2,492'	1,250'
Gamma Ray	(2,5)	2	8/31/78	Birdwell	393'	0'
Neutron	(2,4)	1	8/26/78	Birdwell	2,499'	1,250'
Neutron	(2,5)	2	8/31/78	Birdwell	399'	0'
Electric	(2,2)	1	8/26/78	Birdwell	2,495'	1,370'
Temperature	(3,1)	1	8/26/78	Birdwell	2,500'	1,500'
3-D/Velocity	(3,2)	1	8/26/78	Birdwell	2,424'	1,407'
3-D/Velocity	(3,3)	2	8/26/78	Birdwell	2,426'	1,407'
Geophone Survey (VSP)	(4,1)	1	8/27/78	Birdwell	2,165'	25'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 1

HOLE: UE-25a#3

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED BTM LOG</u>	<u>INTERNAL TOP LOG</u>
Caliper	(1,1)	1	10/5/78	Birdwell	2,529'	1,950'
Caliper	(1,2)	2	10/7/78	Birdwell	2,110'	950'
Caliper	(1,3)	3	10/7/78	Birdwell	1,150'	150'
Density	(1,4)	1	10/7/78	Birdwell	2,500'	950'
Elastic Properties	(4,2)	1	10/5/78	Birdwell	2,520'	2,121'
NX-Density	(2,1)	1	10/5/78	Birdwell	2,520'	1,950'
NX-Density	(2,2)	2	10/7/78	Birdwell	1,150'	150'
Fluid Density for Water Location	(1,1)	1	10/5/78	Birdwell	2,150'	2,050'
Fluid Density for Water Location	(1,3)	2	10/7/78	Birdwell	2,150'	2,050'
Gamma Ray Neutron	(2,4)	1	10/5/78	Birdwell	2,524'	0'
Gamma Ray	(3,1)	2	10/6/78	Birdwell	2,102'	950'
Gamma Ray	(3,2)	3	10/7/78	Birdwell	1,150'	10'
Neutron	(3,1)	2	10/6/78	Birdwell	2,110'	950'
Neutron	(3,2)	3	10/7/78	Birdwell	1,150'	10'
Electric	(2,3)	1	10/4/78	Birdwell	2,524'	2,100'
3-D/Velocity (6')	(3,3)	1	10/4/78	Birdwell	2,525'	2,050'
3-D/Velocity (3')	(4,1)	2	10/4/78	Birdwell	2,523'	2,050'
Geophone Survey (VSP)	(4,3)	1	10/6/78	Birdwell	2,500'	200'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 2

HOLE: UE-25a#4

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED INTERNAL</u>	
					<u>BTM LOG</u>	<u>TOP LOG</u>
Caliper	(1,1)	1	7/6/79	Birdwell	118'	0'
Caliper	(1,2)	2	7/20/79	Birdwell	498'	50'
Caliper	(1,3)	3	6/29/82	Birdwell	498'	70'
Caliper	(1,4)	4	7/1/82	Birdwell	499'	50'
Density-Borehole Compensated	(2,1)	1	7/6/79	Birdwell	118'	10'
Density-Borehole Compensated	(2,2)	2	7/19/79	Birdwell	499'	70'
Fluid Density for Water Location	(1,5)	1	7/19/79	Birdwell	499'	290'
Gamma Ray	(3,3)	1	7/6/79	Birdwell	118'	0'
Gamma Ray	(3,4)	2	7/19/79	Birdwell	499'	0'
Epithermal Neutron	(3,1)	1	7/7/79	Birdwell	116'	0'
Epithermal Neutron	(3,2)	2	7/19/79	Birdwell	499'	70'
Electric	(3,5)	1	7/7/79	Birdwell	117'	10'
Electric	(2,3)	2	7/20/79	Birdwell	494'	200'
Induction	(2,4)	1	7/7/79	Birdwell	114'	10'
Induction	(2,5)	2	7/19/79	Birdwell	495'	120'
3-D/Velocity (9')	(4,1)	1	7/6/79	Birdwell	116'	0'
3-D/Velocity (6')	(4,2)	2	7/6/79	Birdwell	116'	6'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 2 of 2

HOLE: UE-25a#4 (continued)

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED INTERNAL</u>	
					<u>BTM LOG</u>	<u>TOP LOG</u>
3-D/Velocity (9')	(4,3)	3	7/19/79	Birdwell	492'	300'
3-D/Velocity (6')	(4,4)	5	7/20/79	Birdwell	494'	300'
Geophone Survey (VSP)	(5,1)	1	11/4/79	Birdwell	430'	81'

## GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 1

HOLE: UE-25a#5

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED INTERNAL</u>	
					<u>BTM LOG</u>	<u>TOP LOG</u>
Caliper	(1,1)	1	6/28/79	Birdwell	121'	12'
Caliper	(1,2)	2	7/11/79	Birdwell	487'	0'
Density-Borehole Compensated	(1,4)	1	6/28/79	Birdwell	121'	12'
Density-Borehole Compensated	(1,5)	2	7/11/79	Birdwell	486'	74'
Density-Borehole Compensated	(2,1)	3	7/11/79	Birdwell	300'	115'
Fluid Density for Water Location	(1,3)	1-2	7/11/79	Birdwell	299'	240'
Gamma Ray	(3,3)	1	6/28/79	Birdwell	120'	4'
Gamma Ray	(3,4)	2	7/11/79	Birdwell	487'	0'
Epithermal Neutron	(3,1)	1	6/28/79	Birdwell	119'	12'
Epithermal Neutron	(3,2)	2	7/11/79	Birdwell	487'	50'
Electric	(2,2)	1	7/11/79	Birdwell	486'	150'
Electric	(2,3)	2	7/11/79	Birdwell	485'	270'
Induction	(2,4)	1	6/29/79	Birdwell	120'	12'
Induction	(2,5)	2	7/11/79	Birdwell	480'	10'
3-D/Velocity (6')	(3,5)	1	6/29/79	Birdwell	114'	4'
3-D/Velocity (9')	(4,1)	2	6/29/79	Birdwell	113'	8'
3-D/Velocity (6')	(4,2)	3	7/11/79	Birdwell	480'	120'
3-D/Velocity (9')	(4,3)	4	7/12/79	Birdwell	470'	250'
Geophone Survey (VSP)	(4,4)	1	11/4/79	Birdwell	395'	102'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 1

HOLE: UE-25a#6

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED INTERNAL</u>	
					<u>BTM LOG</u>	<u>TOP LOG</u>
Caliper	(1,1)	1	7/22/79	Birdwell	101'	0'
Caliper	(1,2)	2	7/31/79	Birdwell	500'	0'
Density-Borehole Compensated	(1,4)	1	7/22/79	Birdwell	93'	0'
Density-Borehole Compensated	(1,5)	2	8/1/79	Birdwell	500'	10'
Fluid Density for Water Location	(1,3)	1	8/1/79	Birdwell	369'	300'
Electric	(3,5)	1	7/22/79	Birdwell	98'	50'
Electric	(2,1)	1-A	8/10/79	Birdwell	493'	60'
Electric	(2,2)	2	8/8/79	Birdwell	495'	70'
Electric	(2,3)	2-A	8/10/79	Birdwell	493'	60'
Induction	(2,4)	1	7/22/79	Birdwell	97'	38'
Induction	(2,5)	2	8/1/79	Birdwell	496'	20'
Gamma Ray	(3,3)	1	7/22/79	Birdwell	91'	0'
Gamma Ray	(3,4)	2	7/31/79	Birdwell	500'	0'
Epithermal Neutron	(3,1)	1	7/22/79	Birdwell	95'	10'
Epithermal Neutron	(3,2)	2	7/31/79	Birdwell	499'	20'
3-D/Velocity (6')	(4,1)	1	8/8/79	Birdwell	494'	50'
3-D/Velocity (9')	(4,2)	1	8/8/79	Birdwell	494'	50'
Geophone Survey (VSP)	(4,3)	1	11/4/79	Birdwell	418'	75'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 2

HOLE: UE-25a#7

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet, row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED INTERNAL</u>	
					<u>BTM LOG</u>	<u>TOP LOG</u>
Caliper	(1,1)	1	8/13/79	Birdwell	60'	1'
Caliper	(1,2)	2	8/17/79	Birdwell	129'	0'
Caliper	(1,3)	3	8/30/79	Birdwell	498'	50'
Caliper	(1,4)	4	10/2/80	Birdwell	1,000'	450'
Density-Borehole Compensated	(2,4)	1	8/14/79	Birdwell	63'	4'
Density-Borehole Compensated	(2,5)	2	8/17/79	Birdwell	133'	10'
Density-Borehole Compensated	(3,1)	3	8/30/79	Birdwell	499'	120'
Density	(2,3)	1	10/3/80	Birdwell	999'	490'
Fluid Density for Water Location	(1,5)	1	8/30/79	Birdwell	449'	370'
Fluid Density for Water Location	(2,1)	2	10/2/79	Birdwell	599'	550'
Fluid Density for Water Location	(2,2)	3	10/3/79	Birdwell	760'	710'
Gamma Ray	(5,1)	1	8/14/79	Birdwell	63'	1'
Gamma Ray	(5,2)	2	8/17/79	Birdwell	131'	10'
Gamma Ray	(5,3)	3	8/30/79	Birdwell	499'	0'
Epithermal Neutron	(4,3)	1	8/14/79	Birdwell	61'	12'
Epithermal Neutron	(4,4)	2	8/17/79	Birdwell	130'	13'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 2 of 2

HOLE: UE-25a#7 (continued)

GEOLOGIC EXPLORATORY

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED BTM LOG</u>	<u>INTERNAL TOP LOG</u>
Epithermal Neutron	(4,5)	3	8/31/79	Birdwell	499'	100'
Gamma Ray	(5,5)	4	10/3/80	Birdwell	994'	300'
Neutron	(5,5)	1	10/3/80	Birdwell	999'	273'
Electric	(3,2)	1	8/17/79	Birdwell	128'	68'
Electric	(3,3)	2	8/31/79	Birdwell	497'	150'
Electric	(3,4)	3	10/3/80	Birdwell	994'	490'
Induction	(3,5)	1	8/13/79	Birdwell	63'	16'
Induction	(4,1)	2	8/17/79	Birdwell	126'	10'
Induction	(4,2)	3	8/31/79	Birdwell	496'	134'
3-D/Velocity (6')	(6,1)	1	8/17/79	Birdwell	125.5'	10'
3-D/Velocity (9')	(6,2)	2	8/17/79	Birdwell	130'	10'

VIDEO TAPES RUN IN DRILL HOLES

<u>Hole</u>	<u>Run #</u>	<u>From</u>	<u>To</u>
UE-25a #4	1	119'	500'
	2	0'	409'
UE-25a #5	1	120'	318'
	2	318'	487'
	1	120'	345'
	2	345'	471'

<b>Item Description:</b>	<b>NNWSI HOLE HISTORIES</b>  UE-25a #1                    UE-25a #5 UE-25a #3                    UE-25a #6 UE-25a #4                    UE-25a #7 November 1986
<b>Availability:</b>	<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
<b>Sensitivity:</b>	<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Non-Sensitive—Copyright <input type="checkbox"/> Sensitive <input type="checkbox"/> Sensitive—Copyright
<b>Electronic Media Type:</b> <i>(if applicable)</i>	Microfiche
<b>Contact:</b>	US Nuclear Regulatory Commission Office of Nuclear Materials Safety and Safeguards Yucca Mountain Project Manager
<b>Storage/File Location:</b>	US Nuclear Regulatory Commission Office of Nuclear Materials Safety and Safeguards Two White Flint North Room T7- E34 11545 Rockville Pike Rockville, Maryland 20852-2738