



NNWSI HOLE HISTORIES

UE-25c #1

UE-25c #2

UE-25c #3

NOVEMBER, 1986

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HOLE HISTORIES**

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BY

FENIX & SCISSON, INC.

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

NOVEMBER, 1986

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**NNWSI
HOLE HISTORIES**

**UE-25c #1
UE-25c #2
UE-25c #3**

by

Reports and CEP Section

Abstract

This report is a compilation of data from three boreholes drilled in Area 25 under the guidance of the U. S. Geological Survey. They were drilled to provide geologic and hydrologic information for the Yucca Mountain area, specifically for conducting in-situ studies of radionuclide movement in the saturated zone. Data presented in this document includes the hole histories, geophysical log and video tape listings, and microfiche copies of all geophysical logs run by Fenix & Scisson, Inc. subcontractor.

FENIX & SCISSON, INC.
HOLE HISTORY DATA
NNWSI

Approved: Wally Nell Covington
 Date: 7/12/80, 1980

Hole No.: UE-25c #1		Type Hole: Hydrologic Test Hole	
User: USGS	Area: 25	Site Prep. W.O. #: None	
Location: NTS	County: Nye	W.O. #: 3404-177	
Surface Coordinates: N 757,095.85' E 569,680.44'			
Ground Elev.: 3708.7'	Pad Elev.:	Top Casing Elev.: 3709.56'	
Bottom Hole Coord: N 757,124.37' E 569,704.05' @ 2925' Ref: Gyro 09-18-83			
Rig On Location: 08-10-83		Spudded: 08-13-83 Completed: 10-17-83	
Circulating Media: Air and soap			
Main Rig & Contractor: Ideco 525 - REECO			
No. Of Compressors & Capacity: 2/1R-1500 3/Atlas-1200			

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft ³ Cement
0'	30'	36"	30"		3/8"	0'	30'	200
30'	368'	24"	16"	75#	.438"	0'	362'	972
368'	1515'	14-3/4"	10-3/4"	40.50#		0'	1365'	140
1515'	2990'	9-7/8"						
2990'	3000'	8-3/4"						

Total Depth: 3000'	Plugs: 08-17-83	1030 ft ³
--------------------	-----------------	----------------------

Junk: None

Logging Data: Caliper (4), Cement top, Casing collar, Electric (3), Epithermal Neutron (3), Density (4), Fluid density (3), Gamma ray (5), Temperature (3), 3-D velocity (2), Vibroseis (2), Gyro, Dielectric, Compensated neutron gamma,*

Rigs Used						
Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85124	Ideco 525	II	63.83	0.50	4.00	68.33

Remarks: * Acoustic-gamma ray, Gamma ray spectrum

Prepared By: LLF:JEC:ps

Time Breakdown on Next Page

TIME BREAKDOWN

MAIN HOLE CONSTRUCTION

Hole No.: UE-25c #1

Drilling Operation Time (DOT)	Other Scheduled Time (OST)	Operational Delay Time (ODT)
Drill <u>11.67</u>	Mobe & Demobe <u>8.52</u>	Rig Repairs <u>0.68</u>
Trips <u>4.25</u>	Core <u>5.21</u>	W.O. Equipment <u>0.37</u>
Dress Drilling	Log <u>4.68</u>	Fish <u>1.73</u>
Assembly	Unload Hole	Clean Out Fill <u>1.81</u>
Fluid Probe	Run Mandrel	Ream Hole
Connections <u>0.92</u>	Hydrological	Plug Back <u>0.17</u>
Open Hole <u>0.30</u>	Tests <u>18.11</u>	Drill Out Plugs <u>0.42</u>
Single Shot Dev.	Mob. Hydrologic	Secured W/Crews <u>0.50</u>
Survey <u>0.20</u>	Equip. <u>2.31</u>	Cond. Hole <u>0.40</u>
		Cond. Mud <u>0.06</u>
Main Hole DOT <u>17.34</u> Days		
Casing Operation		
Time (COT)		
Run Casing <u>0.75</u>		
Run Casing		
Cement Casing <u>0.46</u>		
Cement Casing		
Drill Out Shoe <u>0.23</u>		
Stem Casing <u>0.58</u>		

Main Hole COT: 2.02 Days Main Hole OST: 38.83 Days Main Hole ODT: 6.14 Days

Total Main Hole Construction Time: 64.33 Days

Remarks:

TOTAL ELAPSED TIME

Total Site Prep. Time	Days	Remarks:
Total Main Hole Construction <u>64.33</u>	Days	
Secured W/O Crew Site Prep.	Days	
Secured W/O Crew Main Hole Const. <u>4.00</u>	Days	
Total Suspended Time (No Rig)	Days	
TOTAL ELAPSED TIME <u>68.33</u>	Days	

UE-25c #1
HOLE HISTORY

08-10-83 Moved in Ideco 525, rig #85124 and started rigging up.

08-11-83 Continued rigging up.

08-12-83 Rigged up. Drilled 15" mouse and rat holes with Dyna-Drill using air foam. Replaced Atlas 1200 compressors with two IR 1500 compressors.

08-13-83 Rigged up, redrilled rat and mouse hole and set in mouse and rat hole pipe. Drilled 36" surface hole from 0' to 10' with conventional circulation using air foam. Added 12' mandrel and drilled 36" hole from 10' to 13'. Cleaned out plugged bit.

08-14-83 Drilled 36" hole from 13' to 30'. Made trip out. Ran and set 30" O.D., 3/8" wall casing at 30'. Poured 5' sand plug inside the casing. Cemented the annulus to surface using Halliburton with 200 ft³ of neat cement + 2% CaCl₂. CIP at 1800 hours. Calculated annular volume was 65 ft³. Made up surface installations.

08-15-83 Rigged up. Made trip in and cleaned out sand plug from 26' to 30'. Drilled 24" hole from 30' to 47' using air foam. Made trip for drill collar and replaced swivel at 43'. Hole sloughed at 47', worked tools free.

08-16-83 Drilled 24" hole from 47' to 74'. Made trip for second drill collar, fill at 64'. Removed second drill collar. Cleaned out and recleaned out fill and conditioned hole from 64' to 74', hole continued sloughing. Made trip for bit check and cleaned out hole from 67' to 74', hole continued sloughing.

08-17-83 Continued cleaning hole from 64' to 74' to 0900 hours, hole continued sloughing. Blew out soap and laid down tools. Visual inspection down hole indicated numerous cavities. Ran 6-5/8" drill pipe open ended to fill at 62.57', unable to get deeper. Cemented the hole to surface using Halliburton with 1030 ft³ neat cement + 2% CaCl₂. CIP at 1307 hours. Calculated hole volume was 197 ft³. Circulated out cement downhole to 25'. Waited on cement to set up and tagged top at 27'.

08-18-83 Waited on cement to set up to 0400 hours. Made up 24" drilling assembly. Drilled out cement from 28' to 62' and cement fill to 74' using air foam, rough drilling below 62'.

08-19-83 Drilled 24" hole from 74' to 100'. Made trip out for bit change.

08-20-83 Worked on drilling equipment and made trip in. Drilled 24" hole from 100' to 176'. Cleaned out 4' fill at 131' and 2' fill at 160'.

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Hole History
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08-21-83 Drilled 24" hole from 176' to 368'. Cleaned out 4' fill at 188' and 12' fill at 216'. Shut off air at 368' and checked for fill, after 1/2 hour had 1' fill. Made trip out. Ran Birdwell caliper log to 365' T.D.

08-22-83 Ran induction log to 365' T.D., epithermal neutron-gamma ray log to 365' T.D., and formation density log to 364' T.D. Ran 16" O.D., 75# casing, tagged fill at 364', and landed casing at 362'. Poured 1000# of sand inside the casing. Cemented the annulus using REECO trucks as follows:

	<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft³</u>	<u>Calc. Ft³</u>	<u>CIP</u>
	1	362' -	432 Redi-Mix +2% CaCl ₂		1900 Hours
	2	No Tag	432 "		2140 "
08-23-83	3	0'	<u>108</u>	<u>847</u>	0120 "
	Totals		972 Ft ³	847 Ft ³	

Made trip in with 14-3/4" drilling assembly on 6-5/8" drill pipe. Cleaned out sand and hole from 345' to 368'. Drilled 14-3/4" hole from 368' to 423' using air and soap. Conditioned hole and made trip for 8-5/8" x 4" core bit and 6-3/4" O.D. core barrel and cleaned out 2' fill. Cut 8-5/8" core #1 from 423' to 427', core incomplete.

08-24-83 Completed core #1 from 427' to 438'. Made trip for core and cleaned out 3' fill. Cut 8-5/8" core #2 from 438' to 455'. Made trip for core and 14-3/4" bit. Opened 8-5/8" hole to 14-3/4" from 423' to 455' and drilled 14-3/4" hole to 546'.

08-25-83 Drilled 14-3/4" hole from 546' to 733'.

08-26-83 Drilled 14-3/4" hole from 733' to 857'. Cleaned out 7' fill on connection at 795'. Made trip for 8-5/8" x 4" core bit. Cut core #3 from 857' to 858'. Made trip for core, no recovery. Changed to 8-3/4" x 4" core bit.

08-27-83 Cleaned out 8' fill and reamed hole to 858'. Cut 8-3/4" core #4 from 858' to 868'. Made trip for 14-3/4" bit and opened 8-3/4" hole from 857' to 868'. Drilled 14-3/4" hole from 868' to 907'. Lost string weight and made trip out. Bottom 8" O.D. drill collar had parted just below box, total length of 32.9' left in the hole. Made trip in with 11" O.D. x 9-1/4" I.D. Bowen overshot with 7-3/4" grapple. Attempted to get over fish and made trip out, no recovery.

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Hole History
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- 08-28-83 Laid down #2 drill collar and made trip in with Bowen overshot with 7-3/4" grapple. Attempted to latch on fish at 874' and made trip out, no recovery. Ran Birdwell casing collar locator to 896' T.D., top of fish indicated at 872'. Made trip in with 12-3/4" O.D. skirt on 11" O.D. overshot and grapple. Attempted to latch on fish. Made trip out, no recovery, grapple did not hold.
- 08-29-83 Made trip in with 11-1/16" O.D. skirt, overshot and 7-3/4" spiral grapple. Worked over and latched on fish. Worked fish free with 200/300,000# pull. Laid down tools, recovered all of fish. Made trip in with 14-3/4" drilling assembly on 6-5/8" drill pipe. Cleaned out 6' fill and drilled 14-3/4" hole from 907' to 938' using air foam.
- 08-30-83 Drilled 14-3/4" hole from 938' to 1070'.
- 08-31-83 Drilled 14-3/4" hole from 1070' to 1158'. Made trip for bit change at 1146'. Cones were good; however, bit was 1/4" undergauge.
- 09-01-83 Drilled 14-3/4" hole from 1158' to 1270'. Secured rig with crew from 0630 to 0730 hours.
- 09-02-83 Drilled 14-3/4" hole from 1270' to 1300'. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #5 from 1300' to 1301'. Made trip for 14-3/4" drilling assembly. Opened 8-3/4" hole to 14-3/4" from 1300' to 1301' and drilled 14-3/4" hole to 1315'. Conditioned hole for coring.
- 09-03-83 Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #6 from 1315' to 1322'. Made trip for 14-3/4" bit and 12" junk basket, scribe knife broke during coring. Opened 8-3/4" hole to 14-3/4" from 1315' to 1322' and drilled 14-3/4" hole to 1325'. Made trip out, recovered 2 pieces of metal (1/4" x 1" x 2"). Ran USGS fluid probe, no fluid indicated. Removed scribe catcher from core barrel and made trip in with 8-3/4" x 4" core bit. Started cutting 8-3/4" core #7 from 1325'.
- 09-04-83 Cut 8-3/4" core #7 from 1325' to 1332'. Made trip for 14-3/4" bit and junk catcher. Opened 8-3/4" hole to 14-3/4" from 1325' to 1332' and drilled 14-3/4" hole to 1426'. Ran USGS fluid probe at 1413', checked fluid level at 1360'. Blew out fluid using air and monitored fluid level from 2030 hours. Made trip out and secured rig at 2400 hours for holiday.
- 09-06-83 Rig secured from 09-04-83 to 0800 hours, 09-06-83. Made trip in with 14-3/4" bit. Checked fluid level at 1310' with USGS iron horse. Drilled 14-3/4" hole from 1426' to 1515'. Conditioned hole. Made trip for 8-3/4" x 4" core bit and barrel. Cleaned out 3' fill and cut 8-3/4" core #8 from 1515' to 1525'.

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- 09-07-83 Made trip out. Ran Westech TV camera and video recorded to air foam at 1328'. Ran Dresser Atlas dielectric log to 1515' T.D. Ran Birdwell fluid density log, checked fluid level at 1339'. Ran caliper log to 1513' T.D., gamma ray-compensated density log to 1511' T.D., and electric log to 1511' T.D.
- 09-08-83 Ran epithermal neutron log to 1512' T.D., temperature log to 1513' T.D., and vibroseis survey to 1512' T.D., logged in and out from 100' to 1490' on 50' stations. Ran fluid density log, checked fluid level at 1310'. Laid down drill pipe and drilling assembly. Ran USGS fluid probe. Checked fluid level at 1315.4'. Started running 10-3/4" O.D., 40.50#, K-55 casing.
- 09-09-83 Ran 36 joints of 10-3/4" casing in the hole. Ran 2-7/8" Hydril tubing inside the casing. Stemmed the hole down the tubing to 1366' with 218 (100#) sacks of Texas silica sand. Pumped in 140 ft³ of neat cement +2% CaCl₂ using Halliburton. Pulled tubing up, lowered and landed casing at 1365'. CIP at 1515 hours. Calculated annular volume was 123 ft³. Laid down tubing and rigged up to run 4-1/2" drill pipe.
- 09-10-83 Made trip in with 9-7/8" bit and cleaned out cement from 1292' to 1364'. Made trip out. Ran Birdwell 3-D velocity logs to 1363' T.D. on 6' and 3' spacings. Ran NCTL log to 1363' T.D., annular cement top indicated at 1260'. Ran stabilized temperature log to 1360', maximum temperature was 122° F. Made trip in and cleaned out cement to 1370'. Cleaned out sand to 1515' and opened 8-3/4" hole to 9-7/8" to 1525'. Drilled 9-7/8" hole from 1525' to 1578' using air and soap.
- 09-11-83 Drilled 9-7/8" hole from 1578' to 1692'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #9 from 1692' to 1704'. Made trip for 9-7/8" bit, opened 8-3/4" hole to 9-7/8" from 1692' to 1704' and drilled 9-7/8" hole to 1809'.
- 09-12-83 Drilled 9-7/8" hole from 1809' to 1876'. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #10 from 1876' to 1886'. Made trip for 9-7/8" bit. Opened 8-3/4" hole to 9-7/8" from 1876' to 1886' and drilled 9-7/8" hole to 2026'.
- 09-13-83 Drilled 9-7/8" hole from 2026' to 2065'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #11 from 2065' to 2075'. Made trip for 9-7/8" bit. Opened 8-3/4" hole to 9-7/8" from 2065' to 2075' and drilled 9-7/8" hole to 2157'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #12 from 2157' to 2167'. Made trip out for 9-7/8" bit.

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- 09-14-83 Changed to 9-7/8" bit and made trip in. Opened 8-3/4" hole to 9-7/8" from 2157' to 2167' and drilled 9-7/8" hole to 2342'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #13 from 2342' to 2348' using only soap for circulation.
- 09-15-83 Completed core #13 from 2348' to 2352'. Made trip for 9-7/8" bit. Opened 8-3/4" hole to 9-7/8" from 2342' to 2352' and drilled 9-7/8" hole to 2563' using air and soap. Returns started surging, added booster at 2485'.
- 09-16-83 Drilled 9-7/8" hole from 2563' to 2603'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #14 from 2603' to 2613'. Made trip for 9-7/8" bit and stage circulated in. Opened 8-3/4" hole to 9-7/8" from 2603' to 2613' and drilled 9-7/8" hole to 2766'.
- 09-17-83 Drilled 9-7/8" hole from 2766' to 2783'. Conditioned hole. Made trip for 8-3/4" x 4" core bit and barrel. Cleaned out 3' of fill and cut 8-3/4" core #15 from 2783' to 2793'. Made trip for 9-7/8" bit and stage circulated in from 1200'. Opened 8-3/4" hole to 9-7/8" from 2783' to 2793' and drilled 9-7/8" hole to 2934'.
- 09-18-83 Drilled 9-7/8" hole from 2934' to 2990'. Conditioned hole. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #16 from 2990' to 3000'. Ran Eastman gyroscopic survey to 2925' T.D. in and out on 50' stations using Birdwell equipment. Made trip out. Ran Birdwell caliper log to 2998' T.D. and vibroseis survey to 2997' T.D., logged from 2997' to 1400' on 50' stations. Ran Dresser Atlas compensated neutron-gamma ray log to 2998' T.D., fluid indicated at 1314'.
- 09-19-83 Ran cement bond, compensated acoustic-frac-gamma ray, gamma ray spectrum, and dielectric logs to 2998' T.D. Ran Birdwell compensated density-gamma ray log to 2996' T.D.
- 09-20-83 Ran epithermal neutron-gamma ray log to 2991' T.D. Ran fluid density log, checked fluid level at 1313'. Ran electric log to 2983' T.D. and temperature log to 2988' T.D., maximum indicated temperature was 109.4° F. Ran Birdwell bailer for fluid sample. Laid down drilling assembly and secured rig at 1600 hours.
- 09-23-83 Rig secured from 09-20-83 to 0800 hours, 09-23-83. Moved in pump equipment. USGS monitored fluid level in the hole at 1310'.
- 09-24-83 Made up 5-1/2" O.D. Centrilift pump inside fabricated 8-5/8" casing sheath. Made trip in with pump assembly on 5-1/2" casing along with 2-3/8" monitor line strapped to the casing. Landed pump at

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09-24-83 1476.98', top at 1399.46', intake at 1416.04', and bottom of
(cont.) monitor line at 1379.70'. Bottom of 70' sheath was at 1485.35'.
Attempted to run transducer downhole, instrument stopped at
1422.4'.

09-25-83 Picked up and rotated 5-1/2" casing to allow transducer to go down
the hole. Calibrated transducer at 1515'. Ran USGS pump test as
directed from 0230 hours.

09-26-83 Ran USGS pump test as directed to 0900 hours. Worked on equipment
to 2400 hours.

09-27-83 Calibrated instruments. Ran USGS pump test as directed.

09-28-83 Ran USGS pump test as directed.

09-29-83 Ran USGS pump test to 0930 hours. Ran Gearhart temperature surveys
and trace ejector tests to 2130 hours. Started running pump test
as directed.

09-30-83 Ran USGS pump test as directed.

10-01-83 Ran USGS pump test as directed.

10-02-83 Ran USGS pump test as directed. Pulled pump and laid down 5-1/2"
casing and 2-3/8" monitor line. Ran Birdwell gamma ray-
compensated density log to 2980' T.D., tool shifted scale.

10-03-83 Reran gamma ray-compensated density log to 2980' T.D. Made up 9"
TAM straddle packer on 2-7/8" tubing with 160' spacing between
packers. Ran and set straddle packer to test zone from 1515' to
1355'. Started running USGS test #1 as directed.

10-04-83 Completed test #1. Released and set straddle packer to test zone
from 1845' to 1685'. Ran test #2 as directed. Released and set
straddle packer to test zone from 2025' to 1865'. Ran test #3 as
directed. Released and set straddle packer to test zone from 2210'
to 2050'. Ran test #4 as directed. Released and set straddle
packer to test zone from 2430' to 2270'. Ran test #5 as directed.

10-05-83 Released straddle packer and made trip out. Lowered and set
straddle packer in the casing for packer test. Instrument
indicated top packer was leaking. Released and pulled packer up.
Set top of packer at 1', packer deflated. Laid down packers,
mandrel of top packer damaged. Waited for new mandrel from 1430
hours.

10-06-83 Previous hydrologic tests considered invalid. Made up and tested
9" TAM packers on 2-7/8", 6.50#, EUE tubing with 160' spacing
between packers. Made trip in and set straddle packer to test

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10-06-83 1515' to 1355'. Ran USGS test #1 as directed. Released and set straddle packer to test zone from 1845' to 1685'. Ran test #2 as directed. Released and set straddle packer to test zone from 2025' to 1865'. Ran test #3 as directed. Released and set straddle packer to test zone from 2210' to 2050'.
(cont.)

10-07-83 Ran test #4 as directed. Released and set straddle packer to test zone from 2430' to 2270'. Ran test #5 as directed. Released and set straddle packer to test zone from 2770' to 2610'. Ran test #6 as directed.

10-08-83 Ran tests #6 and #7 as directed. Released straddle packer and made trip out. Made up new assembly with 40' spacing between packers. Tested packers inside the casing. Ran and set straddle packer to test zone from 1565' to 1525'. Ran test #8 as directed.

10-09-83 Completed test #8. Released and set straddle packer to test zone from 1674' to 1634'. Ran test #9 as directed. Released and set straddle packer to test zone from 1845' to 1805'. Ran test #10, #10A, and #10B as directed. Released and set straddle packer to test zone from 1910' to 1870'. Ran test #11 as directed.

10-10-83 Completed test #11. Released and set straddle packer to test zone from 1940' to 1900'. Ran test #12 as directed. Released and set straddle packer to test zone from 1980' to 1940'. Ran test #13 as directed. Released and set straddle packer to test zone from 2595' to 2555'. Ran test #15 as directed.

10-11-83 Released packers, made trip out, and serviced test assembly. Made trip in and set straddle packer to test zone from 2255' to 2215'. Ran test #14 as directed. Released and set straddle packer to test zone from 2786' to 2746'. Ran test #16 as directed. Released and set straddle packer to test zone from 2858' to 2818'. Ran test #17 as directed. Released and set straddle packer to test zone from 2920' to 2880'. Ran test #18 as directed.

10-12-83 Ran test #19 as directed. Released packers and made trip out. Made up straddle packer assembly with 22' spacing between packers and tested packers in the casing. Ran and set straddle packer to test zone from 2437' to 2415'. Ran test #24 as directed. Released and set straddle packer to test zone from 2467' to 2445'. Ran test #20 as directed.

10-13-83 Released and set straddle packer to test zone from 2495' to 2473'. Ran test #21 as directed. Released packers and made trip for tubing tally, measurements were correct. Set straddle packer to test zone from 2520' to 2498'. Ran test #22 as directed. Released and set straddle packer to test zone from 2597' to 2575'. Ran test #23 as directed. Released packers, made trip out, and laid down packer assembly.

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10-14-83 Made trip out and laid down tubing. Laid down drill pipe and drilling assembly. Started rigging down.

10-15-83 Continued rigging down.

10-16-83 Continued rigging down.

10-17-83 Rigged down and moved out. Hole completed 10-17-83.

10-18-83 Crew on standby to 0800 hours. Moved out support equipment.

11-18-83 Ran Westech TV camera to 2961' using Birdwell mast. Fluid level was indicated at 1310' and TV run was recorded.

11-20-83 Ran USGS gravimeter as directed.

11-21-83 Completed running gravimeter as directed.

02-29-84 Moved in Failing 1500, rig #85133 and rigged up to run packers.

03-05-84 Rig secured from 2-29-84 to 0800 hours, 3-5-84. Made up 8" O.D. TAM straddle packer with dual elements on each packer on 2-7/8", 8rd. tubing. Spacing between center of packers was 90'. Started in the hole with straddle packer, 2-3/8" Hydril monitor line, and USGS instruments. Bottom joint of 2-3/8" monitor line was orange peeled and bottom 2 joints tack welded on 2-7/8" tubing.

03-06-84 Continued lowering straddle packer along with 2-3/8" monitor line strapped to 2-7/8" tubing. Rigged down and moved out Failing 1500 rig. Moved in Joy #1, rig #85172 and rigged up between 0830 and 1000 hours. Landed and set straddle packer to test zone from 2515' to 2605'. Tested USGS instruments.

03-07-84 Ran USGS fluid locator, checked static fluid level at 1309'. Pumped out fluid at UE-25c #2 for drawdown test from 0400 hours to 0430 hours, equipment failure. Repaired and calibrated instruments. Checked static fluid level at 1309'. Pumped out fluid at UE-25c #2 at 237 gpm to 246 gpm from 1800 hours. Checked fluid drawdown at 1316' at 2300 hours.

03-08-84 Continued fluid drawdown test pumping out fluid at UE-25c #2. Monitored drawdown from 1316.7' at 0100 hours to 1316.9' at 2200 hours.

03-09-84 Continued fluid drawdown test pumping out fluid at UE-25c #2. Monitored drawdown from 1316.7' at 0200 hours to 1316.9' at 2200 hours. Secured monitoring for weekend.

UE-25c #1
Hole History
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03-12-84 Monitoring secured from 3-9-84 to 3-12-84. Continued fluid drawdown test pumping out fluid at UE-25c #2. Monitored drawdown from 1316.9' at 0500 hours to 1317.0' at 2300 hours.

03-13-84 Continued fluid drawdown test pumping out fluid at UE-25c #2. Monitored drawdown from 1317.0' at 0600 hours to 1317.2' at 2400 hours.

03-14-84 Continued fluid drawdown test pumping out fluid at UE-25c #2 to 1030 hours. Monitored drawdown at 1317.2' at 0500 hours. Stopped pumping out fluid at UE-25c #2. Started fluid recovery test at 1030 hours.

03-15-84 Continued fluid recovery test. Monitored fluid level at 1316.7' at 0700 hours.

03-16-84 Continued fluid recovery test. Secured monitoring for weekend at 2400 hours.

03-18-84 Pulled transducer. Recovery test completed.

03-19-84 Rig secured to 1200 hours, 3-19-84. Released packers. Laid down 2-7/8" tubing, 2-3/8" monitor line, and TAM straddle packer.

03-20-84 Rigged down and moved out.

05-02-84 Moved in Joy #1, rig #85172 and rigged up. Made up 7-3/4" O.D. dual element TAM packers on 2-7/8", 8 rd., EUE tubing.

05-03-84 Calibrated and installed USGS and TAM instruments. Made trip in with straddle packer on 2-7/8" tubing, 74.79' spacing. Landed packers at test zone from 1605' to 1679.79'. Tested and calibrated instrumentation.

05-04-84 Continued testing equipment to 1000 hours. Made trip out, conductor cable parted above downhole recorder. Replaced cable with 7/16" conductor cable and tested equipment. Made trip in, tested equipment at 400' and 1200'. Landed and set straddle packer to test zone from 1605' to 1680'. Started monitoring zone as directed by USGS at 2300 hours.

05-07-84 Monitored test zone from 1605' to 1680' as directed.

05-08-84 Monitored test zone from 1605' to 1680' as directed.

05-09-84 Monitored test zone from 1605' to 1680' as directed.

05-10-84 Monitored test zone from 1605' to 1680' as directed.

UE-25c #1
Hole History
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05-11-84 Monitored test zone from 1605' to 1680' as directed. Secured operation for weekend at 2400 hours.

05-14-84 Monitored test zone from 1605' to 1680' as directed.

05-21-84 Rig secured from 05-14-84 to 1000 hours, 05-21-84. Moved out rig.

08-08-84 Moved in CP, rig #85128 and rigged up. Drilled four 12-1/4" x 10' anchor holes and set anchors. Rigged down and moved out.

08-10-84 Moved in Ideco 37, rig #85116 and rigged up to pull straddle packer.

08-13-84 Rig secured from 8-10-84 to 8-13-84. Released packers and made trip out with USGS checking instruments and conductor cable. Laid down packers.

08-23-84 Rig secured from 08-13-84 to 1100 hours, 08-23-84. Ran Birdwell caliper log to 2757' T.D. Secured rig at 1500 hours.

08-27-84 Rig secured from 8-23-84 to 8-27-84. Rigged up to run TAM straddle packer on 80' spacing. (Working day tour only.)

08-28-84 Completed making up TAM dual element packers on 2-7/8" tubing with 80' spacing between packers. USGS checked instruments and 7/16" conductor cable. Started in the hole with instruments and packer assembly, banding conductor cable onto tubing.

08-29-84 Lowered and set packers using LiCl water to test zone from 2520' to 2600'. USGS checked equipment and monitored overnight.

08-30-84 USGS checked instrument cable to packer assembly. Released packers and made trip out, conductor cable parted at packer assembly.

08-31-84 USGS checked monitor cable, conductor housing thru packer element was crushed. USGS to change monitor system. Secured rig at 1230 hours and waited on orders to 1600 hours.

10-12-84 Rig secured from 8-31-84 to 1200 hours, 10-12-84. Laid down 2-7/8" tubing and straddle packer. Secured rig at 2000 hours.

10-22-84 Rig secured from 10-12-84 to 0800 hours, 10-22-84. Rigged up and started making up TAM straddle packer.

10-23-84 Made up TAM straddle packer on 2-7/8" EUE, 8rd. tubing with 79.75' spacing between centers of packer elements. Installed USGS monitor instruments below bottom packer, between the 2 packers, and above top packer. Started in, banding conductor cable to the 2-7/8" tubing.

UE-25c #1
Hole History
Page 11

10-24-84 Lowered and set center of bottom packer at 2598.75' with center of top packer at 2519' using LiCl water. Checked USGS instruments below straddle packer and between packers. Released packers and started out for instrument repair.

10-25-84 Made trip out. Replaced mashed steel conductor tube in top packer. Ran and set center of bottom packer at 2598.75' with center of top packer at 2519' using LiCl water. USGS tested instruments.

10-26-84 USGS continued monitoring hydrologic test. Rigged down and moved out rig.

10-29-84 USGS continued monitoring hydrologic test.

10-30-84 USGS continued monitoring hydrologic test.

10-31-84 USGS continued monitoring hydrologic test.

11-01-84 USGS continued monitoring hydrologic test.

11-02-84 USGS continued monitoring hydrologic test.

11-05-84 USGS continued monitoring hydrologic test.

11-06-84 USGS continued monitoring hydrologic test.

11-07-84 USGS continued monitoring hydrologic test.

11-08-84 USGS continued monitoring hydrologic test.

11-09-84 USGS continued monitoring hydrologic test. Secured operation for weekend and holiday at 2400 hours.

11-13-84 Operation secured from 11-09-84 to 11-13-84. USGS continued monitoring hydrologic test.

11-14-84 USGS continued monitoring hydrologic test.

11-15-84 USGS continued monitoring hydrologic test.

11-16-84 USGS continued monitoring hydrologic test. Secured operation for weekend at 2400 hours.

11-19-84 Operation secured from 11-16-84 to 11-19-84. USGS continued monitoring hydrologic test.

11-20-84 USGS continued monitoring hydrologic test.

11-21-84 USGS continued monitoring hydrologic test. Operations secured at 2400 hours for holidays and weekend.

UE-25c #1
Hole History
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11-26-84	Operation secured from 11-21-84 to 11-26-84. USGS continued monitoring hydrologic test.
11-27-84	USGS continued monitoring hydrologic test.
11-28-84	USGS continued monitoring hydrologic test.
11-29-84	USGS continued monitoring hydrologic test.
11-30-84	USGS continued monitoring hydrologic test. Secured operation for weekend.
12-03-84	Operation secured from 11-30-84 to 12-03-84. USGS continued monitoring hydrologic test.
12-04-84	USGS continued monitoring hydrologic test.
12-05-84	USGS continued monitoring hydrologic test.
12-06-84	USGS continued monitoring hydrologic test.
12-07-84	USGS continued monitoring hydrologic test. Operation secured for weekend.
12-10-84	Operation secured from 12-07-84 to 12-10-84. USGS continued monitoring hydrologic test.
12-11-84	USGS continued monitoring hydrologic test.
12-12-84	USGS continued monitoring hydrologic test.
12-13-84	USGS continued monitoring hydrologic test.
12-14-84	USGS continued monitoring hydrologic test. Secured operation for weekend at 2400 hours.
12-17-84	USGS continued monitoring hydrologic test.
12-18-84	USGS continued monitoring hydrologic test.
12-19-84	USGS continued monitoring hydrologic test.
12-20-84	USGS continued monitoring hydrologic test.
12-21-84	USGS continued monitoring hydrologic test.
01-02-85	Operation secured from 12-21-84 to 1-2-85. USGS continued monitoring hydrologic test.
01-03-85	USGS continued monitoring hydrologic test.

UE-25c #1
Hole History
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01-04-85 USGS continued monitoring hydrologic test. Operation secured for weekend.

01-07-85 Operation secured from 01-04-85 to 01-07-85. USGS continued monitoring hydrologic test.

01-08-85 USGS continued monitoring hydrologic test.

01-09-85 USGS continued monitoring hydrologic test.

01-10-85 USGS continued monitoring hydrologic test.

01-11-85 USGS continued monitoring hydrologic test. Secured operation for weekend.

01-14-85 Operation secured from 01-11-85 to 01-14-85. USGS continued monitoring hydrologic test.

01-15-85 USGS continued monitoring hydrologic test.

01-16-85 USGS continued monitoring hydrologic test.

01-17-85 USGS continued monitoring hydrologic test.

01-18-85 USGS continued monitoring hydrologic test. Operation secured for weekend.

01-21-85 Operation secured from 01-18-85 to 01-21-85. USGS continued monitoring hydrologic test.

01-22-85 USGS continued monitoring hydrologic test.

01-23-85 USGS continued monitoring hydrologic test.

01-24-85 USGS continued monitoring hydrologic test.

01-25-85 USGS continued monitoring hydrologic test. Operation secured for weekend.

01-28-85 Operation secured from 01-25-85 to 01-28-85. USGS continued monitoring hydrologic test.

01-29-85 USGS continued monitoring hydrologic test.

01-30-85 USGS continued monitoring hydrologic test.

01-31-85 USGS continued monitoring hydrologic test.

02-01-85 USGS continued monitoring hydrologic test. Operation secured for weekend.

UE-25c #1
Hole History
Page 14

02-04-85 Operation secured from 02-01-85 to 02-04-85. USGS continued monitoring hydrologic test.

02-05-85 USGS continued monitoring hydrologic test.

02-06-85 USGS continued monitoring hydrologic test. Hydrologic test suspended at 1600 hours.

03-27-85 Moved in Ideco #37, rig #85116 and rigged up. Released straddle packer and started out of the hole, calibrated USGS GRC instruments on 1' intervals for first 10'.

03-28-85 Completed trip out calibrating USGS GRC instruments at 120' intervals. Broke down and tested each packer in a short section of 10-3/4" casing on rig catwalk as directed. Tests indicated packers were not completely sealing off formation during hydrologic test.

03-29-85 Cleaned location and moved excess equipment to Area 25 subdock.

04-01-85 Rig secured from 03-29-85 to 04-01-85. Measured 2-7/8" Hydril tubing. Made up straddle packer assembly using TAM dual element packers with NTS-10, NTS-14, NTS-15, and NTS-16 elements. Installed USGS GRC instruments.

04-02-85 Checked GRC gauges and tested packer assembly with water, packer held. Made trip in with straddle packer assembly on 2-7/8" Hydril tubing. Tested GRC gauges, filled tubing with LiCl water and attempted to set packer with bottom packer element at 1355'. Added water to the annulus. Pressured up to 1300 psi, packer would not set. Swabbed tubing and made trip out with packer. Water swabbed out of tubing was contaminated. Tested straddle packer in section of 10-3/4" casing, packer set with maximum of 550 psi.

04-03-85 Straddle packer assembly set with 550 psi had 350 psi at 0800 hours. Made trip in with packer on 2-7/8" tubing and filled tubing with LiCl water. Set packer with bottom at 1355'. USGS tested packer. Released packer, filled tubing with water, and set packer with top of shut in tool at 701'. USGS ran injection test. Released packers and made trip out. Made up new straddle packer assembly using TAM "J" PIP packer with NTS-14 and NTS-16 elements. Tested packer to 600 psi in section of 10-3/4" casing at the surface. Packer element NTS-15 bad.

04-04-85 Completed packer test. Made trip in hole with dual element packer assembly on 2-7/8" tubing. Filled tubing with LiCl water and set packer elements center at 2615'. Ran 2-7/8" tubing access line to 2430'. Ran sandline to check access line, line open. Ran sandline in packer line to break setting ball. USGS monitoring with transducer in access line.

UE-25c #1
Hole History
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04-05-85 Cleaned location and moved out support equipment. Secured rig on location.

06-25-85 Started conducting static tracer test in holes UE-25c #1, #2, and #3 using Production Logging, Inc. as directed by USGS.

06-26-85 Continued conducting short term static tracer survey as directed.

06-27-85 Conducted short term static tracer survey as directed to 0400 hours and from 1230 hours to 1900 hours.

08-02-85 Rig secured from 04-05-85 to 08-02-85. Rigged down and moved out. Right driver wheels ignited in transit to J-12 Water Well location.

**UE-25c #1
CORE RECORD**

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>	<u>REMARKS *</u>
1	423.0 - 438.0	15.0	1.4	9	
2	438.0 - 455.0	17.0	10.0	59	Opened and Drilled Hole
3	857.0 - 858.0	1.0	0.0	0	
4	858.0 - 868.0	10.0	4.8	48	Opened and Drilled Hole
5	1300.0 - 1301.0	1.0	1.0	100	Opened and Drilled Hole
6	1315.0 - 1322.0	7.0	2.1	30	Opened and Drilled Hole
7	1325.0 - 1332.0	7.0	7.0	100	Opened and Drilled Hole
8	1515.0 - 1525.0	10.0	13.2	132	Opened and Drilled Hole Logged Hole Set Csg. and Drilled Hole
9	1692.0 - 1704.0	12.0	12.0	100	Opened and Drilled Hole
10	1876.0 - 1886.0	10.0	10.0	100	Opened and Drilled Hole
11	2065.0 - 2075.0	10.0	10.0	100	Opened and Drilled Hole
12	2157.0 - 2167.0	10.0	6.0	60	Opened and Drilled Hole
13	2342.0 - 2352.0	10.0	9.7	97	Opened and Drilled Hole
14	2603.0 - 2613.0	10.0	9.3	93	Opened and Drilled Hole
15	2783.0 - 2793.0	10.0	8.2	82	Opened and Drilled Hole
16	2990.0 - 3000.0	10.0	10.5	105	Opened and Drilled Hole

* (All cores were cut with 8-3/4" x 4" core bit.)

MUD USAGE
Received from Mud Plant

<u>Date</u>	<u>#5 Air Foam Barrels</u>	<u>Stepan Gallons</u>
08-17-83	240	240
08-24-83		2100

UE-25c #1
HOLE DEVIATIONS

<u>Depth-Ft</u>	<u>Deviation</u>
140	0° 30'
178	0° 45'
275	0° 15'
355	0° 10'
515	0° 45'
609	0° 45'
733	0° 50'
826	0° 30'
950	0° 45'
1043	1° 00'
1136	1° 20'
1226	1° 15'
1340	1° 00'
1696	0° 45'
1846	0° 35'
1970	0° 30'
2157	0° 45'
2280	0° 20'

UE-25c #1
REVIEW OF HOLE CONDITIONS

762 mm (30") casing was set at 9.1 m (30') in a 914 mm (36") hole drilled to 9.1 m (30') and the annulus cemented to surface with 5.66 m³ (200 ft³) of neat cement +2% CaCl₂, 08-14-83. Calculated annular volume was 1.84 m³ (65 ft³). 610 mm (24") hole was drilled to 22.6 m (74') with conventional circulation using air foam. The hole kept sloughing in. The hole was cemented from fill at 19.2 m (63') to surface with 29.17 m³ (1030 ft³) of neat cement +2% CaCl₂, 08-17-83. Calculated hole volume was 5.58 m³ (197 ft³) based on gauge hole. Cement plug was drilled out and 610 mm (24") hole drilled to 112.2 m (368'). Caliper, electric, epithermal neutron-gamma ray, and formation density logs were run 08-21-83 and 08-22-83. The average curve on caliper log #1 indicated a maximum hole enlargement of 864 mm (34") at 56.7 m (186'). 406 mm (16") casing was set at 110.3 m (362') and the annulus cemented to surface in 3 stages with 27.52 m³ (972 ft³) of Redi-mix +2% CaCl₂, 08-23-83. Calculated annular volume was 23.98 m³ (847 ft³). 375 mm (14-3/4") hole was drilled from 112.2 m (368') to 461.8 m (1515') using air and soap. Seven 102 mm (4") cores were cut during the drilling. TV camera, dielectric, fluid density, caliper, gamma ray- compensated density, electric, epithermal neutron, temperature logs, and vibroseis survey on 15.2 m (50') stations from 454.2 m (1490') to 30.5 m (100') were run 09-07-83 and 09-08-83. The average curve on caliper log #2 indicated a maximum hole enlargement of 724 mm (28-1/2") at 131.1 m (430'). 273 mm (10- 3/4") casing was set at 416.1 m (1365') and bottom of the annulus was spot cemented with 3.96 m³ (140 ft³) of neat cement +2% CaCl₂, 09-09-83. 3-D velocity and temperature logs were run 09-10-83, maximum temperature was 50° C (122° F). NCTL log run 09-10-83 indicated annular top of cement at 384.0 m (1260'). 251 mm (9-7/8") hole was drilled from 461.8 m (1515') to 911.4 m (2990') and 222 mm (8-3/4") core hole to a total depth of 914.4 m (3000') using air and soap. Nine 102 mm (4") cores were cut below 461.8 m (1515'). Gyroscopic survey, caliper, compensated neutron-gamma ray, cement bond, compensated acoustic-frac-gamma ray, gamma ray spectrum, dielectric, compensated density-gamma ray, epithermal neutron-gamma ray, fluid density, electric, temperature logs, and vibroseis survey on 15.2 m (50') stations from 913.5 m (2997') to 426.7 m (1400') were run between 09-18-83 and 09-20-83. The average curve on caliper log #3 indicated some erosion in the 251 mm (9-7/8") hole with maximum hole enlargement of 559 mm (22") at 838.8 m (2752'). Hydrologic tests were run between 09-25-83 and 10-13-83. Hole completed 10-17-83. TV camera run 11-18-83 indicated fluid level at 399.3 m (1310'). Gravimeter log was run 11- 21-83. Hydrologic tests were run between 03-05-84 and 03-19-84. Hydrologic tests were run between 05-04-84 and 05-14-84. Caliper log was run 08-23-84. The average curve on caliper log #4 indicated no change to logged depth of 837.9 m (2749'). Hydrologic tests were run 08-29-84. Hydrologic tests were run between 10-25-84 and 02-06-85. Tests run 03-28-85 indicated that packers were not completely sealing off formation during hydrologic test. Hydrologic tests were run 04-03-85 and 04-04-85. Static tracer tests were run 06-25-85 to 06-27-85.

FENIX & SCISSON, INC.
HOLE HISTORY DATA
NNWSI

Approved: *Jerry Hall Covington*
 Date: *April 20, 1986*

Hole No.: UE-25c #2 | Type Hole: Hydrologic Test Hole
 User: USGS | Area: 25 | Site Prep. W.O. #: None
 Location: NTS | County: Nye | W.O. #: 3404-185
 Surface Coordinates: N 756,848.8' E 569,633.8'
 Ground Elev.: 3714.1' | Pad Elev.: | Top Casing Elev.: 3715.24'
 Bottom Hole Coord: N 756,851.78' E 569,650.17' @ 2975' MD | Ref: Gyro 02-27-84
 Rig On Location: 01-09-84 | Spudded: 01-09-84 | Completed: 03-21-84
 Circulating Media: Air and Soap
 Main Rig & Contractor: Ideco 525 - REECo
 No. Of Compressors & Capacity: 1-2/Atlas-1200

Bore Hole Record				Casing Record			
From	To	Size	O.D.	Wt/Ft.	Wall	From	To
0'	40'	36"	30"		1/2"	0'	39.5'
40'	320'	24"	16"	84#		0'	319'
320'	1520'	14-3/4"	10-3/4"	40.50#		0'	1365'
1520'	3000'	9-7/8"					

Total Depth: 3000' | Plugs: None
 Junk: None
 Logging Data: Gamma ray (2), Electric (4), Caliper (4), Density (2),
 Epithermal neutron (2), Fluid density (4), Dielectric (2), Temperature (3),
 Vibroseis (2), NAIL, 3-D velocity, Gyroscopic survey, Compensated *

Rigs Used						
Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85127	Auger #1	VIII	2.21			2.21
85124	Ideco 525	II	37.30	1.20	24.50	63.00

Remarks: * acoustic, Compensated acoustic frac, Gamma ray spectrum, compensated density-gamma ray, Compensated neutron

Prepared By: JRG:LLF:ps

Time Breakdown on Next Page

TIME BREAKDOWN	
1	00:00:00
2	00:00:00
3	00:00:00
4	00:00:00
5	00:00:00
6	00:00:00
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97	00:00:00
98	00:00:00
99	00:00:00
100	00:00:00

MAIN HOLE CONSTRUCTION

Hole No.: UE-25c #2

Drilling Operation Time (DOT)		Other Scheduled Time (OST)		Operational Delay Time (ODT)	
Drill	<u>10.29</u>	Mobe & Demobe	<u>6.73</u>	Rig Repairs	<u>0.08</u>
Trips	<u>3.72</u>	Core	<u>4.81</u>	W.O. Equipment	
Dress Drilling		Log	<u>3.75</u>	Fish	
Assembly		Unload Hole		Clean Out Fill	<u>0.19</u>
Fluid Probe		Run Mandrel		Ream Hole	
Connections		Hydrological		Plug Back	
Open Hole		Tests	<u>5.55</u>	Drill Out Plugs	
		Survey	<u>0.23</u>	Secured W/Crews	<u>1.20</u>
		Run & Pull Pump	<u>1.41</u>		

Main Hole DOT	14.01 Days		
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Casing Operation Time (COT)		
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Run Casing	<u>0.94</u>		
Run Casing			
Cement Casing	<u>1.27</u>		
Cement Casing			
Drill Out Shoe			
Drill Out Cement	<u>0.54</u>		

Main Hole COT: 2.75 Days	Main Hole OST: 22.48 Days	Main Hole ODT: 1.47 Days
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Total Main Hole Construction Time: 40.71 Days

Remarks:

TOTAL ELAPSED TIME	
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Total Site Prep. Time		Days	Remarks:
Total Main Hole Construction	40.71	Days	
Secured W/O Crew Site Prep.		Days	
Secured W/O Crew Main Hole Const.	24.50	Days	
Total Suspended Time (No Rig)	6.96	Days	

Total Site Prep. Time		Days	Remarks:
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TOTAL ELAPSED TIME		72.17	Days
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UE-25c #2
HOLE HISTORY

01-09-84 Moved in Auger #1, rig #85127 and rigged up. Drilled 36" hole from 0' to 30'.

01-10-84 Drilled 36" hole from 30' to 40'. Crew on stand by for H&N survey as directed from 1000 hours to 1600 hours.

01-11-84 Set 30" O.D., 1/2" wall casing at 39.5'. Cemented the annulus to surface using REECO truck with 189 ft³ of Regi-Mix. CIP at 1200 hours. Calculated annular volume was 85 ft³. Rigged down and moved out. Hole suspended.

01-18-84 Hole suspended from 01-11-84 to 1200 hours, 01-18-84. Moved in Ideco 525, rig #85124 and started rigging up.

01-19-84 Continued rigging up.

01-20-84 Continued rigging up. Made up 14-3/4" bit and Dyna-Drill on 6-5/8" drill pipe.

01-23-84 Rig secured from 01-20-84 to 01-23-84. Rigged up and mixed water and soap. Drilled 14-3/4" rat and mouse holes using Dyna-Drill and set in pipe. Drilled 17-1/2" hole from 40' to 81' with conventional circulation using Christensen Nova Drill, air and soap. Laid down tools. Made up 24" bit on 11' drill collar.

01-24-84 Made trip in with 24" drilling assembly on 6-5/8" drill pipe. Opened 17-1/2" hole to 24" from 40' to 81', hole was sloughing. Drilled 24" hole from 81' to 99' using air and soap. Made trip to check bit at 96'.

01-25-84 Drilled 24" hole from 99' to 133'.

01-26-84 Drilled 24" hole from 133' to 202'. Made trip for bit change and shock sub at 199'.

01-27-84 Drilled 24" hole from 202' to 320'. Conditioned hole and made trip out. Ran Birdwell gamma ray, induction, and caliper logs to 317' T.D. Secured rig at 2400 hours.

01-30-84 Rig secured from 01-27-84 to 01-30-84. Ran Birdwell formation density and epithermal neutron logs to 317' T.D. Ran and set 9 joints of 16" O.D., 84#, buttress thd. casing at 319', tagged bottom at 320'. Stemmed belled bottom joint 10' with sand. Cemented the annulus using REECO trucks as follows:

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01-30-84 (Cont.)	<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft³</u>	<u>Calc. Ft³</u>	<u>CIP</u>
	1	319' - 50'	648 Redi-Mix	456	1400 Hrs.
	2	50' - 0'	<u>216</u> "	<u>158</u>	1645 "
	TOTALS		864 Ft ³	614 Ft ³	
01-31-84	Installed surface equipment and made up 14-3/4" drilling assembly on 6-5/8" drill pipe. Secured rig from 0800 hours to 1000 hours. Made trip in, cleaned out sand and hole from 311' to 320'. Drilled 14-3/4" hole from 320' to 402' using air and soap.				
02-01-84	Drilled 14-3/4" hole from 402' to 704'.				
02-02-84	Drilled 14-3/4" hole from 704' to 1124'. Encountered 4' void at 940'. Made trip for bit check.				
02-03-84	Cleaned out 10' fill. Drilled 14-3/4" hole from 1124' to 1320'. Made trip out and secured rig at 2400 hours.				
02-06-84	Rig secured from 02-03-84 to 02-06-84. Rigged up, made trip in with 8-3/4" x 4" core bit and barrel on 6-5/8" drill pipe, and cleaned out 7' fill. Cut 8-3/4" core #1 from 1320' to 1340'. Made trip for 14-3/4" bit, recovered 19.3' core. Opened 8-3/4" hole to 14-3/4" from 1320' to 1340' and drilled 14-3/4" hole to 1392'. Made trip for 8-3/4" x 4" core bit and barrel.				
02-07-84	Cleaned out 1' fill and cut 8-3/4" core #2 from 1392' to 1412'. Made trip for 14-3/4" bit, recovered 20' core. Opened 8-3/4" hole to 14-3/4" from 1392' to 1412' and drilled 14-3/4" hole to 1520'. Made trip out. Ran Birdwell fluid density log to 1515' T.D., checked fluid level at 1321'. Ran caliper and induction-electric logs to 1515' T.D.				
02-08-84	Ran compensated density log to 1515' T.D., epithermal neutron log to 1514' T.D., gamma ray log to 1515' T.D., and took fluid sample. Ran Dresser Atlas dielectric log to 1515' T.D. Ran Westech TV camera, video recorded to fluid at 1321'. Ran Birdwell induction log to 1513' T.D., temperature log to 1514' T.D., and vibroseis survey to 1512' T.D., logged from 1500' to 127' on 50' stations. Laid down 6-5/8" drill pipe and drilling assembly.				
02-09-84	Rigged up to run casing. Ran and set 10-3/4", 40.50# casing at 1365'. Stemmed inside the casing with 110 sacks of #50 foundry sand. Tagged top of sand at 1224' using sandline. Made trip in with 1.9" tubing inside the casing and tagged bridge at 1205'. Washed out bridge to 1335', no sand indicated to 1393'. Stemmed the hole down 1.9" tubing with 44 sacks of #50 foundry sand and 414 sacks of NTS fine sand. Tagged top at 1370' and landed tubing at				

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- 02-09-84 1365'. Cemented 10-3/4" casing down the tubing using Halliburton (Cont.) with 2 barrels of water ahead of 100 ft³ of neat cement + 2% CaCl₂. Displaced cement in tubing with 1/2 barrel of water. CIP at 2225 hours. Calculated annular volume was 100 ft³. Made trip out with tubing.
- 02-10-84 Made trip in with 9-7/8" bit on 4-1/2" drill pipe, cleaned out cement stringers to 1315' and cement to 1360'. Made trip out. Ran Birdwell nuclear annular investigation log to 1358' T.D. Ran fluid density log (2 runs), checked fluid at 1104' and 1102'. Pumped in 15 barrels of water and ran 3-D velocity log on 3' and 6' spacings to 1358' T.D. Ran temperature log to 1358' T.D. and fluid density log, checked fluid level at 242'. Made trip in, cleaned out cement from 1360' to 1374' and stemming to 1520'. Pulled tools up into casing and secured rig at 2400 hours.
- 02-13-84 Rig secured from 02-10-84 to 02-13-84. Lowered tools and drilled 9-7/8" hole from 1520' to 1623' using air and soap. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #3 from 1623' to 1643'. Made trip for 9-7/8" bit, recovered 20' core. Opened 8-3/4" hole to 9-7/8" from 1623' to 1643' and drilled 9-7/8" hole to 1745'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #4 from 1745' to 1755'. Made trip out.
- 02-14-84 Recovered 9.2' core. Made trip in with 9-7/8" bit. Opened 8-3/4" hole to 9-7/8" from 1745' to 1755' and drilled 9-7/8" hole to 1814'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #5 from 1814' to 1824'. Made trip for 9-7/8" bit, recovered 10.6' core. Opened 8-3/4" hole to 9-7/8" from 1814' to 1824' and drilled 9-7/8" hole to 1953'.
- 02-15-84 Drilled 9-7/8" hole from 1953' to 2090'. Made trip for 8-3/4" x 4" core bit and barrel stage circulating in. Cut 8-3/4" core #6 from 2090' to 2110'. Made trip for 9-7/8" bit, recovered 20.4' core. Opened 8-3/4" hole to 9-7/8" from 2090' to 2110' and drilled 9-7/8" hole to 2244'.
- 02-16-84 Drilled 9-7/8" hole from 2244' to 2276'. Made trip for 8-3/4" x 4" core bit and barrel and cleaned out 2' fill. Cut 8-3/4" core #7 from 2276' to 2286'. Made trip for 9-7/8" bit, recovered 10.2' core. Opened 8-3/4" hole to 9-7/8" from 2276' to 2286' and drilled 9-7/8" hole to 2371'.
- 02-17-84 Drilled 9-7/8" hole from 2371' to 2402'. Made trip for 8-3/4" x 4" core bit and barrel. Stage circulated in and cleaned out 3' fill. Cut 8-3/4" core #8 from 2402' to 2412'. Made trip for 9-7/8" bit, recovered 9.4' core. Opened 8-3/4" hole to 9-7/8" from 2402' to 2412' and drilled 9-7/8" hole to 2443'. Pulled tools into 10-3/4" casing and secured rig for weekend and holiday.

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- 02-21-84 Rig secured from 2-17-84 to 2-21-84. Lowered tools stage circulating down. Drilled 9-7/8" hole from 2443' to 2470'. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #9 from 2470' to 2480'. Made trip for 9-7/8" bit, recovered 9.55' core. Ran USGS fluid locator, checked fluid level at 1357'. Opened 8-3/4" hole to 9-7/8" from 2470' to 2480' and drilled 9-7/8" hole to 2520'. Conditioned hole.
- 02-22-84 Made trip for 8-3/4" x 4" core bit and barrel and cleaned out 1' fill. Cut 8-3/4" core #10 from 2520' to 2530'. Made trip for 9-7/8" bit, recovered 12.6' core. Stage circulated in. Opened 8-3/4" hole to 9-7/8" from 2520' to 2530' and drilled 9-7/8" hole to 2683'. Made trip for 8-3/4" x 4" core bit and barrel. Measured in, no corrections. Started cutting 8-3/4" core #11 from 2683'.
- 02-23-84 Cut core #11 from 2683' to 2712'. Made trip for 9-7/8" bit, recovered 23.8' core. Opened 8-3/4" hole to 9-7/8" from 2683' to 2712' and drilled 9-7/8" hole to 2745'. Made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #12 from 2745' to 2755'. Made trip for 9-7/8" bit, recovered 10' core.
- 02-24-84 Opened 8-3/4" hole to 9-7/8" from 2745' to 2755' and drilled 9-7/8" hole to 2783'. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #13 from 2783' to 2793'. Made trip for 9-7/8" bit, recovered 6.4' core. Stage circulated in and opened 8-3/4" hole to 9-7/8" from 2783' to 2793' and drilled 9-7/8" hole to 2872'. Made trip out and secured rig for weekend at 2400 hours.
- 02-27-84 Rig secured from 2-24-84 to 2-27-84. Made trip stage circulating in. Drilled 9-7/8" hole from 2872' to 3000' and conditioned hole. Ran Sperry-Sun gyroscopic multishot survey using Birdwell equipment to 2975' on 25' stations. Made trip out. Ran Simplex televiwer using Birdwell equipment to 2997' T.D.
- 02-28-84 Ran Dresser Atlas compensated acoustic, compensated acoustic frac, dielectric, and gamma ray spectrum logs to 2998' T.D. Ran Birdwell caliper log to 2999' T.D., electric log to 2998' T.D., and compensated density-gamma ray log to 2999' T.D.
- 02-29-84 Ran compensated neutron log to 2999' T.D. Ran temperature log to 2999' T.D., maximum temperature was 109° F. Ran vibroseis survey to 2999', logged to 1400' on 50' stations. Secured rig from 1200 hours to 1600 hours. Made trip and laid down drill pipe and drill collars.
- 03-01-84 Rigged up to run pump, 5-1/2" casing, and monitor line. Made trip in with 5.44" O.D. Centrilift pump and shroud on used 5-1/2", 8rd., T&C casing along with 2-3/8" Hydril monitor line tack welded

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03-01-84 on the shroud. Landed top of pump at 1419.86', intake at 1447.17',
(Cont.) bottom of shroud at 1486.41', and bottom of monitor line at 1489.21'.

03-02-84 Made up surface installations. Ran swab in 2-3/8" Hydril monitor line to clean tubing of thread dope. Checked static water level at 1315'. Pumped out fluid from 1150 hours to 1330 hours. Checked 288 gpm pump rate at 1200 hours and 350 gpm pump rate at 1310 hours with 13' draw down. Secured rig for weekend at 2400 hours.

03-05-84 Rig secured from 3-2-84 to 3-5-84. Crew on standby to 0800 hours. Installed pump discharge line with 5" orifice.

03-07-84 Rig secured from 3-5-84 to 3-7-84. Pumped out fluid from 0400 hours to 0430 hours at 285 gpm for fluid drawdown test at UE-25c #1, equipment failure. Waited on instrument repair and calibrations. Changed 5" orifice to 4" on discharge line. Pumped out fluid for UE-25c #1 drawdown test from 1800 hours. Checked 246 gpm pump rate and fluid level drawdown at 1329.2' at 2300 hours.

03-08-84 Continued pumping out fluid. Monitored 245 gpm pump rate with drawdown to 1329.2' at 0100 hours to 245 gpm pump rate with drawdown to 1329.2' at 2200 hours.

03-09-84 Continued pumping out fluid with 245 gpm pump rate. Monitored drawdown from 1329.2' at 0200 hours to 1329.0' at 2200 hours. Secured monitoring for weekend.

03-12-84 Continued pumping out fluid at 245 gpm pump rate. Monitoring secured from 3-9-84 to 3-12-84. Monitored drawdown from 1329.4' at 0500 hours to 1329.7' at 2300 hours. Ran Gearhart tracejector log from 0915 hours to 1800 hours.

03-13-84 Continued pumping out fluid at 245 gpm pump rate. Monitored drawdown from 1329.6' at 0600 hours to 1330.0' at 2400 hours.

03-14-84 Continued pumping out fluid at 245 gpm pump rate to 1030 hours. Monitored fluid drawdown at 1330.0'. Stopped pumping out fluid and monitored fluid recovery from 1030 hours.

03-15-84 Monitored fluid recovery to 0900 hours. Checked fluid level at 1319.2' at 0700 hours. Pulled transducer and checked fluid level at 1319.2' using USGS fluid probe. Pulled and laid down 5-1/2" casing, 2-3/8" Hydril monitor line, and Centrilt pump. Started rigging down.

03-16-84 Continued rigging down. Secured rig for weekend at 2400 hours.

03-19-84 Rig secured from 3-16-84 to 3-19-84. Continued rigging down and secured rig at 1200 hours.

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03-20-84 Rig secured to 03-20-84. Continued rigging down.

03-21-84 Rigged down and moved out rig and equipment to 1200 hours. Hole completed 3-21-84.

04-14-84 Ran Westech underwater TV camera to 2825' using Birdwell mast. Too cloudy for picture below 2825'.

08-14-84 Moved in CP rig #85128 and rigged up. Drilled 4 anchor holes and set anchors. Rigged down and moved out.

08-24-84 Ran Birdwell caliper log to 2997' T.D.

10-26-84 Moved in Ideco 37, rig #85116 and started rigging up. Secured rig for weekend at 1600 hours. (Crew working day tour only.)

10-29-84 Rig secured from 10-26-84 to 10-29-84. Rigged up. Made up TAM dual element straddle packer. USGS started installing instruments.

10-30-84 USGS tested instrumentation. Lowered TAM straddle packer on 2-7/8" EUE, 8rd. tubing along with USGS instruments and set center of bottom packer at 2479.88' with center of top packer at 2360' using LiCl water. Landed tubing on well head. USGS started monitoring hydrologic test.

10-31-84 USGS continued monitoring hydrologic test.

11-01-84 USGS continued monitoring hydrologic test.

11-02-84 USGS continued monitoring hydrologic test.

11-05-84 USGS continued monitoring hydrologic test.

11-06-84 USGS continued monitoring hydrologic test.

11-07-84 USGS continued monitoring hydrologic test.

11-08-84 USGS continued monitoring hydrologic test.

11-09-84 USGS continued monitoring hydrologic test. Secured operation for weekend and holiday at 2400 hours.

11-13-84 Test secured from 11-09-84 to 11-13-84. USGS continued monitoring hydrologic test.

11-14-84 USGS continued monitoring hydrologic test.

11-15-84 USGS continued monitoring hydrologic test.

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11-16-84 USGS continued monitoring hydrologic test. Secured operation for weekend at 2400 hours.

11-19-84 Operation secured from 11-16-84 to 11-19-84. USGS continued monitoring hydrologic test.

11-20-84 USGS continued monitoring hydrologic test.

11-21-84 USGS continued monitoring hydrologic test. Operations secured at 2400 hours for holidays and weekend.

11-26-84 Operations secured from 11-21-84 to 11-26-84. USGS continued monitoring hydrologic test.

11-27-84 USGS continued monitoring hydrologic test.

11-28-84 USGS continued monitoring hydrologic test.

11-29-84 USGS continued monitoring hydrologic test.

11-30-84 USGS continued monitoring hydrologic test. Secured operation for weekend.

12-03-84 USGS continued monitoring hydrologic test.

12-04-84 USGS continued monitoring hydrologic test.

12-05-84 USGS continued monitoring hydrologic test.

12-06-84 USGS continued monitoring hydrologic test.

12-07-84 USGS continued monitoring hydrologic test. Operation secured for weekend.

12-10-84 Operation secured from 12-07-84 to 12-10-84. USGS continued monitoring hydrologic test.

12-11-84 USGS continued monitoring hydrologic test.

12-12-84 USGS continued monitoring hydrologic test.

12-13-84 USGS continued monitoring hydrologic test.

12-14-84 USGS continued monitoring hydrologic test. Secured operation for weekend at 2400 hours.

12-17-84 USGS continued monitoring hydrologic test.

12-18-84 USGS continued monitoring hydrologic test.

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12-19-84	USGS continued monitoring hydrologic test.
12-20-84	USGS continued monitoring hydrologic test.
12-21-84	USGS continued monitoring hydrologic test.
01-02-85	Operation secured from 12-21-84 to 1-2-85. USGS continued monitoring hydrologic test.
01-03-85	USGS continued monitoring hydrologic test.
01-04-85	USGS continued monitoring hydrologic test. Operation secured for weekend.
01-07-85	Operation secured from 01-04-85 to 01-07-85. USGS continued monitoring hydrologic test.
01-08-85	USGS continued monitoring hydrologic test.
01-09-85	USGS continued monitoring hydrologic test.
01-10-85	USGS continued monitoring hydrologic test.
01-11-85	USGS continued monitoring hydrologic test. Secured operation for weekend.
01-14-85	Operation secured from 01-11-85 to 01-14-85. USGS continued monitoring hydrologic test.
01-15-85	USGS continued monitoring hydrologic test.
01-16-85	USGS continued monitoring hydrologic test.
01-17-85	USGS continued monitoring hydrologic test.
01-18-85	USGS continued monitoring hydrologic test. Operation secured for weekend.
01-21-85	Operation secured from 01-18-85 to 01-21-85. USGS continued monitoring hydrologic test.
01-22-85	USGS continued monitoring hydrologic test.
01-23-85	USGS continued monitoring hydrologic test.
01-24-85	USGS continued monitoring hydrologic test.
01-25-85	USGS continued monitoring hydrologic test. Operation secured for weekend.

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01-28-85 Operation secured from 01-25-85 to 01-28-85. USGS continued monitoring hydrologic test.

01-29-85 USGS continued monitoring hydrologic test.

01-30-85 USGS continued monitoring hydrologic test.

01-31-85 USGS continued monitoring hydrologic test.

02-01-85 USGS continued monitoring hydrologic test. Operation secured for weekend.

02-04-85 Operation secured from 02-01-85 to 02-04-85. USGS continued monitoring hydrologic test.

02-05-85 USGS continued monitoring hydrologic test.

02-06-85 USGS continued monitoring hydrologic test. Hydrologic test suspended at 1600 hours.

03-04-85 Rig secured from 02-06-85 to 03-04-85. Checked fluid level at 1313' at 0900 hours. Released packers and started out of hole calibrating USGS GRC gauges as directed.

03-05-85 Removed USGS GRC gauges and laid down packers #NTS-5, #NTS-6, #NTS-7, AND #NTS-8. Made up TAM retrievable bridge plug.

03-06-85 Ran and set TAM #NTS-13 retrievable bridge plug center of pack-off element at 2485' using 2-7/8" EUE tubing. Serviced and made up Hughes Centrillift H-27, 88 stage, 30 gpm pump.

03-07-85 Completed making up Centrillift pump. Started in the hole with pump on 2-7/8" EUE, 8rd. tubing along with power cable and 2-3/8" Hydril monitor line.

03-08-85 Lowered and set intake at 2364.07' and bottom of monitor line at 2364.92'. Tested pump, water to surface in 17-1/2 minutes. Rigged down.

03-11-85 Rig secured from 03-08-85 to 03-11-85. Moved out rig.

06-25-85 Started conducting static tracer test in holes UE-25c #1, #2, and #3 using Production Logging, Inc. as directed by USGS.

06-26-85 Continued conducting short term static tracer survey as directed.

06-27-85 Conducted short term static tracer survey as directed to 0400 hours and from 1230 hours to 1900 hours.

**UE-25c #2
CORE RECORD**

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>	<u>REMARKS *</u>
1	1320.0 - 1340.0	20.0	19.3	97	Opened and Drilled Hole
2	1392.0 - 1412.0	20.0	20.0	100	Opened and Drilled Hole
3	1623.0 - 1643.0	20.0	20.0	100	Opened and Drilled Hole
4	1745.0 - 1755.0	10.0	9.2	92	Opened and Drilled Hole
5	1814.0 - 1824.0	10.0	10.6	106	Opened and Drilled Hole
6	2090.0 - 2110.0	20.0	20.4	102	Opened and Drilled Hole
7	2276.0 - 2286.0	10.0	10.2	102	Opened and Drilled Hole
8	2402.0 - 2412.0	10.0	9.4	94	Opened and Drilled Hole
9	2470.0 - 2480.0	10.0	9.55	96	Opened and Drilled Hole
10	2520.0 - 2530.0	10.0	12.6	126	Opened and Drilled Hole
11	2683.0 - 2712.0	29.0	23.8	82	Opened and Drilled Hole
12	2745.0 - 2755.0	10.0	10.0	100	Opened and Drilled Hole
13	2783.0 - 2793.0	10.0	6.4	64	Opened and Drilled 9-7/8" Hole to 3000.0' T.D.

* (All cores were cut with 8-3/4" x 4" core bit.)

**MUD REPORT
Mud Plant Record**

<u>Date</u>	<u>Detergent Barrels</u>
01-26-84	75

UE-25c #2
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
01-25-84	129'	0° 20'
01-27-84	224'	2° 0'
	286'	1° 47'
02-01-84	400'	0° 55'
	495'	0° 45'
	588'	0° 25'
	679'	0° 25'
02-02-84	771'	0° 25'
	865'	0° 25'
	988'	0° 50'
	1019'	1° 0'
	1081'	1° 0'
02-03-84	1175'	1° 30'
	1237'	1° 40'
	1320'	2° 20'
02-07-84	1424'	0° 40'
	1520'	0° 45'
02-13-84	1520'	0° 40'
	1620'	0° 50'
	1745'	0° 15'
02-14-84	1873'	0° 20'
02-15-84	1999'	0° 20'
	2090'	0° 10'
02-16-84	2276'	0° 10'
02-17-84	2402'	0° 30'
02-21-84	2470'	0° 35'
02-22-84	2683'	0° 50'
02-24-84	2777'	0° 40'
02-27-84	3000'	0° 25'

UE-25c #2
REVIEW OF HOLE CONDITIONS

762 mm (30") casing was set at 12.0 m (39.5') in a 914 mm (36") hole drilled to 12.2 m (40') using an Auger rig. The annulus was cemented to the surface with 5.35 m³ (189 ft³) of Redi-Mix cement, 01-11-84. Calculated annular volume was 2.41 m³ (85 ft³). 610 mm (24") hole was drilled to 97.5 m (320') with conventional circulation using air and soap. Gamma ray, electric, caliper, density, and epithermal neutron logs were run 01-27-84 and 01-30-84. The average curve on caliper log run #1 indicated an eroded zone below 762 mm (30") casing to 28.7 m (94') with maximum hole enlargement beyond arm limits of 974 mm (38-1/3") at 15.8 m (52'). 406 mm (16") casing was set at 97.2 m (319') and the annulus cemented to the surface in 2 stages with 24.47 m³ (864 ft³) of Redi-Mix cement, 01-30-84. Calculated annular volume was 17.39 m³ (614 ft³). 375 mm (14-3/4") hole was drilled to 463.3 m (1520') using air and soap. Two 102 mm (4") cores were cut during the drilling. Fluid density, caliper, electric, density, epithermal neutron, gamma ray, dielectric, temperature logs, TV camera, and vibroseis survey, logged from 457.2 m (1500') to 38.7 m (127') on 15.2 m (50') stations, were run 02-07-84 and 02-08-84. The average curve on caliper log #2 indicated hole erosion to 437.7 m (1436') with several eroded zones and maximum hole enlargements to 584 mm (23") at 109.7 m (360'), 603 mm (23-3/4") at 153.0 m (502'), 692 mm (27-1/4") at 287.1 m (942'), and 565 mm (22-1/4") at 335.3 m (1100'). 273 mm (10-3/4") casing was set at 416.1 m (1365') and the annulus was spot cemented with 2.83 m³ (100 ft³) of neat cement + 2% CaCl₂, 02-09-84. Calculated annular volume was 2.83 m³ (100 ft³). NAIL, fluid density, 3-D velocity, and temperature logs were run 02-10-84. 251 mm (9-7/8") hole was drilled to a total depth of 914.4 m (3000') using air and soap. Eleven 102 mm (4") cores were cut below 493.8 m (1620'). Gyroscopic survey, compensated acoustic, compensated acoustic frac, dielectric, gamma ray spectrum, caliper, electric, compensated density-gamma ray, compensated neutron, temperature logs, and vibroseis survey, logged to 426.7 m (1400') on 15.2 m (50') stations, were run between 02-27-84 and 0-29-84. Maximum temperature was 42.78° C (109° F). The average curve on caliper log run #3 indicated a fairly uniform hole with slight erosion at 510.5 m (1675') with maximum hole enlargement to 445 mm (17-1/2"), slightly eroded zones between 624.8 m (2050') and 652.6 m (2141') with maximum hole enlargements to 406 mm (16") at 634.6 m (2082') and 635.2 m (2084'), between 726.3 m (2383') and 728.8 m (2391') with maximum hole enlargement to 368 mm (14-1/2") at 728.2 m (2389'), and between 826.9 m (2713') and 831.5 m (2728') with maximum hole enlargement to 387 mm (15-1/4") at 830.3 m (2724'). Hydrologic tests were run between 03-02-84 and 03-15-84. Tracejector log was run 03-12-84. Fluid probe indicated fluid at 402.0 m (1319'), 03-15-84. Hole completed 03-15-84. Hole completed 03-21-84. Underwater TV camera was run, too cloudy for picture below 861.1 m (2825'), 04-14-84. The average curve on caliper log run #4, ran 08-23-84, indicated no change in hole condition. Hydrologic tests were run between 10-30-84 and 02-06-85. Retrievable bridge plug was set at 757.4 m (2485'), 03-06-85. Centrilift pump was set in hole with intake at 720.5 m (2364') and monitor line at 720.9 m (2365'), 03-08-85. Static tracer tests were conducted 06-26-85 to 06-27-85.

FENIX & SCISSON, INC.
HOLE HISTORY DATA
NNWSI

Approved: *Jerry Hall Covington*
 Date: *Nov 20, 1986*

Hole No.: UE-25c #3		Type Hole: Hydrologic Test Hole	
User: USGS	Area: 25	Site Prep. W.O. #: None	
Location: NTS	County: Nye	W.O. #: 3404-186	
Surface Coordinates: N 756,909.9' E 569,554.9'			
Ground Elev.: 3714.2'	Pad Elev.:	Top Casing Elev.: 3715.5'	
Bottom Hole Coord: N 156,878.8' E 569,556.5' @ 2980' MD		Ref: Gyro 04-26-84	
Rig On Location: 03-20-84	Spudded: 03-20-84	Completed: 06-11-84	
Circulating Media: Air, Water, Soap-Air and Soap			
Main Rig & Contractor: Ideco 525 - REEC			
No. Of Compressors & Capacity: 2/Atlas 1200, 1/Joy 900			

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft ³ Cement
0'	39'	48"	30"		3/8"	0'	39'	432
39'	315'	24"	16"	84#		0'	313'	864
315'	1520'	14-3/4"	10-3/4"	40.50#		0'	1323'	100
1520'	3000'	9-7/8"						

Total Depth: 3000' Plugs: None

Junk: None

Logging Data: Caliper (4), Density (2), Gamma ray (1), Electric (3), Fluid density (2), Compensated density-gamma ray (2), Dielectric (2), Epithermal neutron-gamma ray (1), Temperature (4), Vibroseis Survey (2), Temperature *

**Rigs
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85127	Auger #1	VIII	0.33			0.33
85124	Ideco 525	II	38.71	1.96	43.00	83.67

Remarks: * Collar (1), 3-D velocity (2), NCTL (1), Gyroscopic Survey (1), Gamma ray Spectrum (1), Compensated neutron-gamma ray (1), CEL (1), Compensated acoustic.

Prepared By: LLF:ps

Time Breakdown on Next Page

TIME BREAKDOWN					
MAIN HOLE CONSTRUCTION					
Hole No.: UE-25c #3					
Drilling Operation		Other Scheduled		Operational Delay	
Time (DOT)		Time (OST)		Time (ODT)	
Drill	13.21	Mobe & Demobe	4.88	Rig Repairs	0.23
Trips	2.46	Core	1.94	W.O. Equipment	
Dress Drilling		Log	4.12	Fish	2.08
Assembly		Unload Hole		Clean Out Fill	0.33
Fluid Probe		Run Mandrel		Ream Hole	
Connections		Hydrological		Plug Back	
Open Hole		Tests	7.33	Drill Out Plugs	
		Open Hole	0.10	Secured W/Crews	1.96
				Stem Hole	0.21
				Condition	0.40
Main Hole DOT 15.67 Days					
Casing Operation					
Time (COT)					
Run Casing	0.98				
Run Casing					
Cement Casing	0.38				
Cement Casing					
Drill Out Shoe					
Drill Out Cement	0.39				
Main Hole COT: 1.75 Days		Main Hole OST: 18.37 Days		Main Hole ODT: 5.21 Days	
Total Main Hole Construction Time: 41.00 Days					
Remarks:					
TOTAL ELAPSED TIME					
Total Site Prep. Time		Days		Remarks:	
Total Main Hole Construction		41.00	Days		
Secured W/O Crew Site Prep.			Days		
Secured W/O Crew Main Hole Const.		43.00	Days		
Total Suspended Time (No Rig)		0.33	Days		
TOTAL ELAPSED TIME		84.33	Days		

UE-25c #3
HOLE HISTORY

03-20-84 Moved in Auger #1, rig #85127 and rigged up. Drilled 48" hole from 0' to 39'. Set 30" O.D., 3/8" wall casing at 39'. Rigged down and moved out. Hole suspended at 2400 hours.

03-21-84 Hole suspended to 0800 hours. Moved in Ideco 525, rig #85124 and equipment. Cemented the annulus to 2.5' using REECo trucks with 432 ft³ of Redi-Mix. CIP at 1230 hours. Calculated annular volume was 279 ft³. Rigged up and drilled 14-3/4" mouse hole using Dyna-Drill.

03-22-84 Set in mouse hole pipe. Drilled rat hole and set in rat hole pipe. Made up 24" drilling assembly on 4-1/2" drill pipe and releveled rig. Made trip in, cleaned out stemming and hole from 35' to 39'. Drilled 24" hole from 39' to 71' with conventional circulation using air, water, and soap.

03-23-84 Drilled 24" hole from 71' to 82', tools stopped drilling. Made trip out. Pin broke off on crossover sub at 16.31' above bit. Made trip in with overshot, 21" skirt, and 8-1/2" grapples, unable to get over fish. Made trip for 8-5/8" grapples and recovered fish. Secured rig for weekend at 2400 hours.

03-26-84 Rig secured from 03-23-84 to 03-26-84. Laid down fishing tools. Made trip in with new 24" drilling assembly and cleaned out 5' fill. Drilled 24" hole from 82' to 120' using air, water, and soap.

03-27-84 Drilled 24" hole from 120' to 163'. Made trip for bit change at 162'.

03-28-84 Drilled 24" hole from 163' to 315'. Made trip out. Ran Birdwell caliper log to 313' T.D.

03-29-84 Ran formation density log to 313' T.D., tool stuck at 188'. Worked stuck tool and poured soap and water down the hole. Retrieved tool. Ran gamma ray and induction logs to 313' T.D. Rigged up to run casing. Ran and set 16" O.D., 84# casing at 313'. Stemmed inside the casing with 16 sacks of sand. Cemented the annulus from 313' to surface in 1 stage using REECo trucks with 864 ft³ of Redi-Mix. CIP at 1930 hours. Calculated annular volume was 730 ft³.

03-30-84 Laid down 24" tools. Made trip in with 14-3/4" drilling assembly on 6-5/8" drill pipe, cleaned out sand and hole from 302' to 315'. Drilled 14-3/4" hole from 315' to 336' using air, water, and soap. Pulled tools up into casing and secured rig for weekend at 2400 hours.

04-02-84 Rig secured from 03-30-84 to 04-02-84. Lowered tools and drilled 14-3/4" hole from 336' to 570'.

UE-25c #3
Hole History
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04-03-84 Drilled 14-3/4" hole from 570' to 712'.

04-04-84 Drilled 14-3/4" hole from 712' to 971'. Made trip out.

04-05-84 Changed bit and made trip in. Drilled 14-3/4" hole from 971' to 1058'. Made trip for new 14-3/4" bit and drilling assembly at 1051'.

04-06-84 Drilled 14-3/4" hole from 1058' to 1204'. Pulled drill pipe into casing and secured rig for weekend at 2400 hours.

04-09-84 Rig secured from 04-06-84 to 04-09-84. Made trip in and attempted to drill 14-3/4" hole. Made trip out, left pin end of drill collar crossover sub, shock sub, crossover sub, junk sub, and bit in the hole. Total length of fish was 16.76'. Made trip in with 10-1/16" overshot and 7-3/4" spiral grapple. Set down on fish with 20,000#. Made trip out, no recovery. Made trip in and worked over fish. Made trip out, no recovery. Replaced spiral grapple with 7-5/8" basket grapple and made trip in.

04-10-84 Worked over fish and made trip out, no recovery. Changed to 7-1/2" grapple and made trip in. Worked over fish and made trip out, no recovery. Added 2.57' overshot extension and made trip in. Worked over fish and made trip out, no recovery. Dressed 7-1/2" grapple and made trip in. Worked over, jarred fish free, and made trip out, full recovery. Made trip in with 14-3/4" drilling assembly and cleaned out fill from 1177' to 1204'. Drilled 14-3/4" hole from 1204' to 1215' using air, water, and soap.

04-11-84 Drilled 14-3/4" hole from 1215' to 1340'. Formation water indicated at 1317'.

04-12-84 Drilled 14-3/4" hole from 1340' to 1520'. Conditioned hole, made trip out, and laid down tools. Ran Birdwell fluid density log to 1517' T.D., fluid indicated at 1324'. Ran caliper log to 1517' T.D. Ran vibroseis survey to 1516' T.D., logged from 1500' to 165' on 50' stations.

04-13-84 Ran Birdwell borehole compensated density-gamma ray log to 1515' T.D. Ran Dresser Atlas dielectric log to 1517' T.D. Ran Westech TV camera above fluid at 1316'. Ran Birdwell induction electric log to 1515' T.D., epithermal neutron-gamma ray log to 1515' T.D., and temperature log, maximum temperature was 89° F. Secured rig for weekend at 2400 hours.

04-16-84 Rig secured from 4-13-84 to 4-16-84. Rigged up to run casing. Ran and set 10-3/4", 40.50# casing at 1322.92'. Stemmed the hole with 191 sacks of 8-12 mesh sand, tagged top of sand at 1368' with 2-7/8" Hydril tubing. Cleared tubing with water and cemented hole using Halliburton with 100 ft³ of neat + 2% CaCl₂. CIP at 1520

UE-25c #3
Hole History
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- 04-16-84
(Cont.) hours. Calculated hole volume was 102 ft³. Pulled tubing and rigged up to add 1 joint 10-3/4" casing to string. Cement had set up, unable to work 10-3/4" casing down hole. Attached 10-3/4" casing to 16" casing and cut off at floor level. Made trip with 2-7/8" tubing and tagged cement at 1289.15'. Laid down 2-7/8" tubing and rigged up rotating head.
- 04-17-84 Made trip in with 9-7/8" bit on 4-1/2" drill pipe and drilled out cement inside 10-3/4" casing from 1283' to 1320'. Pumped in 50 barrels of water and ran Birdwell temperature-collar locator log to cement at 1320'. Ran cement bond logs, two runs to 1322' T.D. Ran nuclear cement top locator log to 1322' T.D. Made trip in with 9-7/8" bit, drilled out cement from 1320' to 1368', and cleaned out sand from 1368' to 1395'.
- 04-18-84 Cleaned out sand from 1395' to 1515' and solid fill to 1520'. Drilled 9-7/8" hole from 1520' to 2008' with conventional circulation using air and soap.
- 04-19-84 Drilled 9-7/8" hole from 2008' to 2210'. Pulled up to unplug bit at 2179', unloaded hole, and cleaned out 9' fill. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel on 4-1/2" drill pipe. Cut 8-3/4" core #1 from 2210' to 2230'. Made trip for 9-7/8" bit, recovered 19.75' core. Unloaded hole at 1437'.
- 04-20-84 Completed trip in and opened 8-3/4" hole to 9-7/8" from 2210' to 2230'. Drilled 9-7/8" hole from 2230' to 2525'. Water inflow increased at 2375'. Pulled tools up into 10-3/4" casing and secured rig for weekend at 2400 hours.
- 04-23-84 Rig secured from 04-20-84 to 04-23-84. Made trip in and cleaned out 9' fill. Drilled 9-7/8" hole from 2525' to 2625' and conditioned hole. Made trip for 8-3/4" x 4" core bit and barrel. Cut core #2 from 2625' to 2645'. Made trip for 9-7/8" bit, recovered 20' core. Stage circulated in and opened 8-3/4" hole to 9-7/8" from 2625' to 2645'. Drilled 9-7/8" hole from 2645' to 2650'.
- 04-24-84 Drilled 9-7/8" hole from 2650' to 2806'. Conditioned hole, made trip for 8-3/4" x 4" core bit and barrel, and cleaned out 1' fill. Cut 8-3/4" core #3 from 2806' to 2826'. Made trip for 9-7/8" bit, recovered 19.8' core. Made trip in to 2528'. Secured drilling at 2230 hours due to high wind.
- 04-25-84 Drilling secured to 0300 hours due to extreme high wind. Completed trip in and cleaned out 4' fill. Opened 8-3/4" hole to 9-7/8" from 2806' to 2826' and drilled 9-7/8" hole to 2900'. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel. Cut 8-3/4" core #4 from 2900' to 2920'. Made trip for 9-7/8" bit, recovered

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Hole History
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04-25-84 19' core. Opened 8-3/4" hole to 9-7/8" from 2900' to 2920' and
(cont.) drilled 9-7/8" hole to 2923'.

04-26-84 Drilled 9-7/8" hole from 2923' to 3000'. Ran Sperry Sun gyroscopic
survey using Birdwell equipment in and out on 50' stations. Made
trip out. Ran Dresser Atlas compensated acoustic, variable
density, dielectric, and gamma ray spectrum logs to 3008' T.D.

04-27-84 Ran Birdwell caliper log to 3008' T.D., compensated density - gamma
ray log to 3009' T.D., and compensated neutron - gamma ray log to
3009' T.D. Ran fluid density log, fluid level indicated at 1319'.
Ran Simplex seisviewer using Birdwell equipment to 3004' T.D.
Secured rig for weekend at 2400 hours.

04-30-84 Rig secured from 4-27-84 to 4-30-84. Ran Birdwell vibroseis survey
to 3004' T.D., logged from 2990' to 1400' on 50' stations. Ran
sinker bar and worked tool thru bridge at 1640'. Ran induction
electric log to 3001' T.D., containment evaluation log to 1399',
and temperature log to 3001' T.D., temperature was 109.5° F at
3001' and fluid level at 1320'. Laid down drill pipe and drilling
assembly.

05-01-84 Made up Centrilift pump on 5-1/2", 15.50#, 8rd. casing. Ran and
set pump along with 2-3/8" Hydril monitor line banded to casing at
1485', bottom of shroud, and bottom of monitor line at 1411'.
Installed surface connections.

05-02-84 Rigged down casing equipment. Tested pump equipment for pump down
tests.

05-03-84 Stand by for pump down test as directed.

05-04-84 Standby for pump test to 2300 hours. Started pump test. Secured
operation for weekend at 2400 hours.

05-07-84 Pumped out fluid with intake at 1485' to 1215 hours. Ran Gearhart
temperature log down 2-3/8" monitor line to 3003' T.D., fluid level
at 1392', tracejector survey, and temperature log to 3003' T.D.,
fluid level at 1393'. Started pumping out fluid at 1830 hours.
Started moving out drilling support equipment.

05-08-84 Moved out drilling equipment. Continued monitoring pump test as
directed.

05-09-84 Monitored pump test as directed. Repaired control panel from 1130
hours to 1415 hours.

05-10-84 Monitored pump test as directed.

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Hole History
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05-11-84 Monitored pump test as directed. Secured operation for weekend at 2400 hours.

05-14-84 Operation secured from 05-11-84 to 05-14-84. Monitored pump test as directed. Shut off pump at 1000 hours. USGS started monitoring recovery. Rig secured at 2400 hours.

06-11-84 Rig secured from 05-14-84 to 06-11-84. Rigged down. Moved out rig and equipment. Hole completed 06-11-84.

06-12-84 Completed moving out equipment.

08-08-84 Moved in CP, rig #85128 and rigged up. Drilled four 12-1/4" x 10' anchor holes and set anchors. Rigged down and moved out.

10-30-84 USGS monitored well fluid from 1600 hours to 1800 hours. Started pumping out water at 415/420 gpm from 1800 hours.

10-31-84 USGS continued hydrologic pump test.

11-01-84 USGS continued monitoring hydrologic pump test, 415/420 gpm out.

11-02-84 USGS monitored hydrologic pump test at 420 gpm to 0944 hours. Repaired generator and monitored hydrologic pump test at 425 gpm from 1004 hours.

11-05-84 USGS monitored hydrologic pump test at 415/420 gpm.

11-06-84 USGS monitored hydrologic pump test at 415/420 gpm.

11-07-84 USGS monitored hydrologic pump test at 420/425 gpm.

11-08-84 USGS monitored hydrologic pump test at 415/420 gpm, fluid level at 1388.4' at 0830 hours.

11-09-84 USGS monitored hydrologic pump test at 420/425 gpm. Secured operation for weekend and holiday at 2400 hours.

11-13-84 Test secured from 11-09-84 to 11-13-84. USGS monitored hydrologic pump test at 420/425 gpm.

11-14-84 USGS continued monitoring hydrologic pump test at 420/425 gpm.

11-15-84 USGS monitored hydrologic pump test to 1340 hours at 420/425 gpm. Monitored recovery test from 1340 hours.

11-16-84 USGS monitored hydrologic pump test recovery. Secured operation for weekend at 2400 hours.

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Hole History
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11-19-84 Operation secured from 11-16-84 to 11-19-84. USGS monitored hydrologic pump test recovery, fluid level at 1319.7' at 0800 hours.

11-20-84 USGS monitored hydrologic test recovery, fluid level at 1319.9' at 0930 hours.

11-21-84 USGS monitored hydrologic pump test recovery, fluid level at 1319.8' at 0830 hours. Operations secured at 2400 hours for holidays and weekend.

11-26-84 Operations secured from 11-21-84 to 11-26-84. USGS monitored hydrologic pump test recovery, fluid level at 1319.9' at 0800 hours.

11-27-84 USGS monitored hydrologic pump test recovery, fluid level at 1319.8' at 0800 hours.

11-28-84 USGS monitored hydrologic pump test recovery, fluid level at 1319.9' at 0800 hours.

11-29-84 USGS monitored hydrologic pump test recovery, fluid level at 1319.8' at 0800 hours.

11-30-84 USGS monitored hydrologic pump test recovery, fluid level at 1319.8'. Secured operation for weekend.

12-03-84 Operation secured from 11-30-84 to 12-03-84. USGS monitored hydrologic pump test recovery, fluid level at 1320'.

12-04-84 USGS monitored hydrologic pump test recovery, fluid level at 1320.0' at 0756 hours.

12-05-84 USGS monitored hydrologic pump test recovery.

12-06-84 USGS monitored hydrologic pump test recovery.

12-07-84 USGS monitored hydrologic pump test recovery. Operation secured for weekend.

12-10-84 Operation secured from 12-07-84 to 12-10-84. USGS removed surface instruments.

01-02-85 Operation secured from 12-10-84 to 01-02-85. USGS started monitoring hydrologic pump test recovery, fluid level at 1320.0' at 0744 hours.

01-03-85 USGS continued monitoring hydrologic pump test recovery, fluid level at 1320.1' at 0844 hours.

01-04-85 USGS continued monitoring hydrologic pump test recovery. Operation secured for weekend.

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01-07-85 Operation secured from 01-04-85 to 01-07-85. USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.2' at 0800 hours.

01-08-85 USGS continued monitoring hydrologic pump test recovery, fluid level was at 1320.2' at 0758 hours.

01-09-85 USGS continued monitoring hydrologic pump test recovery, fluid level was at 1320.2' at 0800 hours.

01-10-85 USGS continued monitoring hydrologic pump test recovery.

01-11-85 USGS continued monitoring hydrologic pump test recovery, fluid level was at 1320.1' at 0756 hours. Secured operation for weekend.

01-14-85 Operation secured from 01-11-85 to 01-14-85. USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.2' at 0855 hours.

01-15-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.1' at 0755 hours.

01-16-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.5' at 1225 hours.

01-17-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.2' at 0755 hours.

01-18-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.2' at 0725 hours. Operation secured for weekend.

01-21-85 Operation secured from 01-18-85 to 01-21-85. USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.4' at 0755 hours.

01-22-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.3' at 0820 hours.

01-23-85 USGS continued monitoring hydrologic pump test recovery, fluid level at 1320.4' at 0825 hours.

01-24-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.3' at 0749 hours.

01-25-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.4' at 0800 hours. Operation secured for weekend.

01-28-85 Operation secured from 01-25-85 to 01-28-85. USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.7' at 1030 hours.

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01-29-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.6' at 0800 hours.

01-30-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.8' at 1104 hours.

01-31-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.6' at 0800 hours.

02-01-85 USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.7' at 0800 hours. Operation secured for weekend.

02-04-85 Operation secured from 02-01-85 to 02-04-85. USGS continued monitoring hydrologic pump test recovery, fluid level was 1320.8' at 0800 hours.

02-05-85 USGS continued monitoring hydrologic pump test recovery.

02-06-85 USGS continued monitoring hydrologic pump test recovery. Hydrologic test suspended at 1600 hours.

03-08-85 Took off well head.

03-11-85 Moved in Ideco 37, rig #85116 and rigged up to pull Centrilift pump.

03-12-85 Pulled and laid down 5-1/2" casing and 2-3/8" Hydril monitor line.

03-13-85 Laid down pump. Made up TAM PIP dual element packer on 2-7/8" EUE tubing and tested packer in 10-3/4" casing at the surface to a maximum of 250 psi.

03-14-85 Lowered PIP dual element (#NTS-7 and #NTS-8) packer on 2-7/8" EUE tubing in the hole along with 2-7/8" EUE monitor line mule shoed and beveled inside, monitor line was tack welded to packer line up 200'. Encountered tight spot at 1640.60'. Pulled packer up and secured rig.

03-15-85 Rig secured from 03-14-85 to 1130 hours. Ran sinker bar on sandline inside 2-7/8" tubing and thru packer, tagged solid bridge at 1700'. Rigged up and started out of hole with packer, standing both strings of tubing in the derrick. Secured rig for weekend.

03-18-85 Rig secured from 03-16-85 to 03-18-85. Completed trip out with tubing and laid down dual element packer, both elements badly damaged. Rigged up to run 9-7/8" drilling assembly on 4-1/2" drill pipe.

03-19-85 Made trip in, cleaned out bridges from 1692' to 1698', 1886' to 1891', and tagged fill at 2990'.

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03-20-85 Laid down drill pipe and drilling assembly.

03-21-85 Ran Dresser Atlas caliper log to 2986' T.D. Secured rig at 1300 hours.

03-25-85 Rig secured from 03-20-85 to 03-25-85. Rigged up and made up dual element NTS #11 and NTS #12 packer on 2-7/8" tubing. Tested packer in 10-3/4" casing to 700 psi. Ran TAM "J" packer center to 2470'. Started filling tubing with LiCl water.

03-26-85 Filled tubing with LiCl water and set packer with center at 2469.5'. Ran sinker bar on a sand line and broke setting ball. Attempted to run 2-7/8" monitor line, collars interfered. Ran and set 2-3/8" Hydril monitor line at 2270.5'. Bottom joint of monitor line was mule shoed and beveled on the inside. Rigged down and moved out.

03-27-85 Broke second setting ball in packer, monitored with USGS transducer. Completed moving out equipment.

06-25-85 Started conducting static tracer test in holes UE-25c #1, #2, and #3 using Production Logging, Inc. as directed by USGS.

06-26-85 Continued conducting short term static tracer survey as directed.

06-27-85 Conducted short term static tracer survey as directed to 0400 hours and from 1230 hours to 1900 hours.

**UE-25c #3
CORE RECORD**

<u>CORE NO.</u>	<u>INTERVAL</u>	<u>FOOTAGE CORED</u>	<u>FOOTAGE RECOVERED</u>	<u>% RECOVERY</u>	<u>REMARKS *</u>
1	2210.0 - 2230.0	20.0	19.75	99	Opened and Drilled Hole
2	2625.0 - 2645.0	20.0	20.0	100	Opened and Drilled Hole
3	2806.0 - 2826.0	20.0	19.8	99	Opened and Drilled Hole
4	2900.0 - 2920.0	20.0	19.0	95	Opened and Drilled 9-7/8" Hole to 3000' TD

* (All cores were cut with 8-3/4" x 4" core bit.)

**MUD REPORT
Mud Plant Records**

<u>Date</u>	<u>Detergent Barrels</u>
03-22-84	80
04-20-84	<u>50</u>
TOTAL	130

UE-25c #3
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
03-27-84	162'	0° 50'
03-28-84	200'	1° 05'
	315'	0° 55'
04-02-84	403'	1° 05'
	526'	1° 10'
04-03-84	650'	1° 40'
04-04-84	804'	1° 00'
	833'	0° 55'
	958'	1° 35'
	971'	1° 40'
04-05-84	1051'	1° 45'
04-06-84	1079'	1° 40'
	1111'	1° 45'
	1173'	1° 40'
04-11-84	1256'	1° 45'
04-12-84	1380'	1° 10'
04-18-84	1619'	0° 35'
	1719'	0° 30'
	1837'	0° 30'
	1959'	0° 30'
04-19-84	2200'	0° 30'
04-20-84	2525'	1° 00'
04-23-84	2625'	1° 05'
04-24-84	2806'	1° 10'
04-25-84	2900'	1° 05'

UE-25c #3
REVIEW OF HOLE CONDITIONS

762 mm (30") casing was set at 11.9 m (39') in a 1.22 m (48") hole drilled to 11.9 m (39') using an Auger rig. The annulus was cemented to 0.8 m (2.5') with 12.23 m³ (432 ft³) of Redi-Mix, 03-21-84. Calculated annular volume was 7.90 m³ (279 ft³). 610 mm (24") hole was drilled to 96.0 m (315') with conventional circulation using air, water, and soap. Caliper, density, gamma ray, and induction logs were run 03-28-84 and 03-29-84. The average curve on caliper log run #1 indicated hole erosion to 63.1 m (207') with maximum hole enlargements to 984 mm (38-3/4") at 13.1 m (43'), 730 mm (28-3/4") at 45.4 m (149') and 737 mm (29") at 62.2 m (204'). 406 mm (16") casing was set at 95.4 m (313') and the annulus was cemented to the surface with 24.47 m³ (864 ft³) of Redi-Mix, 03-29-84. Calculated annular volume was 20.67 m³ (730 ft³). 375 mm (14-3/4") hole was drilled to 463.3 m (1520') using air, water, and soap. Fluid density, caliper, compensated density-gamma ray, dielectric, electric, epithermal neutron-gamma ray, temperature logs, TV camera, and vibroseis survey, logged from 457.2 m (1500') to 50.3 (165') on 15.2 m (50') stations, were run 04-12-84 and 04-13-84. The average curve on caliper log run #2 indicated hole erosion to 365.8 m (1200') with maximum hole enlargements to 654 mm (25-3/4") at 139.9 m (459') and to 648 mm (25-1/2") at 273.1 m (896') and 280.7 m (921'). 273 mm (10-3/4") casing was set at 403.3 m (1323'). The hole was stemmed with sand to 417.0 m (1368') and then hole and bottom of 273 mm (10-3/4") casing were cemented to 392.9 m (1289') with 2.83 m³ (100 ft³) of neat cement + 2% CaCl₂, 04-16-84. Calculated hole volume was 2.89 m³ (102 ft³). Temperature-collar, cement bond, and nuclear cement top locator logs were run 04-17-84. 251 mm (9-7/8") hole was drilled to a total depth of 914.4 m (3000') using air and soap. A total of four 102 mm (4") cores were cut below 673.6 m (2210'). Gyroscopic survey, compensated acoustic, density, gamma ray spectrum, caliper, compensated density-gamma ray, compensated neutron-gamma ray, fluid density, electric, containment evaluation, temperature logs, seisviewer, and vibroseis survey, logged from 911.4 m (2990') to 426.7 m (1400') on 15.2 m (50') stations, were run between 04-26-84 and 04-30-84. The average curve on caliper run #3 indicated a fairly uniform hole with an eroded zone between 493.8 m (1620') and 499.6 m (1639') with a maximum hole enlargement beyond arm limits of 806 mm (31-3/4") at 498.7 m (1636') and an eroded zone between 863.5 m (2833') and 865.3 m (2839') with a maximum hole enlargement to 591 mm (23-1/4") at 864.7 m (2837'). Fluid density log #2 indicated fluid level at 402.0 m (1319'). Temperature was 43.06° C (109.5° F) at 914.7 m (3001'). Hydrologic tests were run between 05-04-84 and 06-11-84. Hole completed 06-11-84. Hydrologic tests were run between 10-30-84 and 02-06-85. The average curve on caliper run #4, 04-27-84, indicated no change in hole condition. Dual element packer was set in hole with center at 752.7 m (2469.5') and 60 mm (2-3/8") monitor line at 692.0 m (2270.5'), 03-26-85. Conducted short term static tracer survey 06-25-85 to 06-27-85.

Appendix A
GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 3

HOLE: UE-25c#1

HYDROLOGIC TEST HOLE

<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	8/21/83	Birdwell	358'	5'
Caliper	(1,2)	2	9/7/83	Birdwell	1,505'	310'
Caliper	(1,4)	3	9/18/83	Birdwell	2,994'	1,300'
Caliper	(2,1)	4	8/23/84	Birdwell	2,749'	1,300'
Casing Collar Locator	(2,4)	1	8/28/83	Birdwell	896'	0'
Density	(3,3)	1	8/22/83	Birdwell	361'	10'
Density	(3,4)	1-A	8/22/83	Birdwell	361'	10'
Density-Borehole Compensated	(3,5)	1	9/7/83	Birdwell	1,509'	276'
Density-Borehole Compensated	(4,2)	2-A	10/2/83	Birdwell	2,976'	1,312'
Fluid Density for Water Location	(2,5)	1	9/7/83	Birdwell	1,379'	1,282'
Fluid Density for Water Location	(3,1)	2	9/8/83	Birdwell	1,340'	1,242'
Fluid Density for Water Location	(3,2)	3	9/20/83	Birdwell	1,340'	1,302'
Epithermal Neutron	(5,4)	1	8/22/83	Birdwell	363'	10'
Epithermal Neutron	(5,5)	2	9/8/83	Birdwell	1,510'	320'
Epithermal Neutron	(6,2)	3	9/20/83	Birdwell	2,988'	1,337'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 2 of 3

HOLE: UE-25c#1 (continued)

HYDROLOGIC TEST HOLE

<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>
Compensated Neutron (5")	(6,4)	2	9/18/83	Dresser Atlas	2,996'	1,314'
Compensated Neutron-Gamma Ray (2")	(6,5)	2	9/18/83	Dresser Atlas	2,996'	1,314'
BHC Acoustic Gamma Ray (2")	(11,1)	2	9/18/83	Dresser Atlas	2,989'	1,365'
BHC Acoustic Fraclog Gamma Ray (5")	(11,2)	2	9/18/83	Dresser Atlas	2,986'	1,314'
Spectralog Gamma Ray (2")	(8,4)	2	9/18/83	Dresser Atlas	2,997'	0'
Spectralog Gamma Ray (5")	(8,5)	2	9/18/83	Dresser Atlas	2,997'	0'
Spectralog Gamma Ray	(9,2)	2	9/18/83	Dresser Atlas	2,997'	0'
Gamma Ray	(5,4)	1	8/22/83	Birdwell	349'	0'
Gamma Ray	(3,5)	2	9/7/83	Birdwell	1,495'	306'
Gamma Ray	(5,5)	3	9/8/83	Birdwell	1,497'	306'
Gamma Ray	(4,2)	4-A	10/2/83	Birdwell	2,961'	1,334'
Gamma Ray	(6,2)	5	9/20/83	Birdwell	2,973'	1,322'
Induction	(4,4)	1	8/22/83	Birdwell	360'	10'
Induction Electric	(4,5)	1	9/7/83	Birdwell	1,506'	330'
Induction Electric	(5,2)	2	9/20/83	Birdwell	2,982'	1,342'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 3 of 3

HOLE: UE-25c#1 (continued)

HYDROLOGIC TEST HOLE

<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>
Dielectric	(9,4)	1	9/7/83	Dresser Atlas	1,510'	362'
Dielectric	(10,1)	2	9/18/83	Dresser Atlas	2,993'	1,365'
Nuclear Cement Top Locator	(2,3)	1	9/10/83	Birdwell	1,363'	1,200'
Acoustic CMT Bond Variable Density Log/Signature/ Gamma Ray	(8,2)	2	9/18/83	Dresser Atlas	1,365'	1,314'
Temperature	(7,3)	1	9/8/83	Birdwell	1,513'	5'
Temperature	(7,4)	2	9/10/83	Birdwell	1,360'	0'
Temperature	(7,5)	3	9/20/83	Birdwell	2,988'	5'
Temperature/ Tracer	(13,1)	1	9/29/83	Gearhart	2,986'	1,300'
Temperature/ Tracer	(10,3)	1	6/26/85	Production Logging Services, Inc.	2,953'	2,300'
3-D/Velocity (6')	(8,3)	1	9/10/83	Birdwell	1,359'	1,240'
3-D/Velocity (3')	(8,3)	2	9/10/83	Birdwell	1,359'	990'
Geophone Survey (VSP)	(14,4)	1	9/8/83	Birdwell	1,490'	100'
Geophone Survey (VSP)	(14,5)	2	9/18/83	Birdwell	2,980'	1,400'
Compensated Neutron-Gamma Ray	(7,1)	2	9/18/83	Dresser Atlas	2,998'	2,996'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 3

HOLE: UE-25c#2

HYDROLOGIC TEST HOLE

LOG TYPE	MICROFICHE (sheet,row)	RUN NO.	LOG DATE	LOGGING COMPANY	LOGGED INTERNAL	
					BTM LOG	TOP LOG
Caliper	(1,1)	1	1/27/84	Birdwell	310'	20'
Caliper	(1,2)	2	2/7/84	Birdwell	1,507'	260'
Caliper	(1,4)	3	2/28/84	Birdwell	2,990'	1,310'
Caliper	(2,1)	4	8/23/84	Birdwell	2,989'	1,300'
Density	(2,3)	1	1/30/84	Birdwell	316'	20'
Density-Borehole Compensated	(2,4)	1	2/8/84	Birdwell	1,514'	290'
Density-Borehole Compensated	(3,1)	2	2/28/84	Birdwell	2,998'	1,350'
Density-Borehole Compensated	(3,1)	3	2/28/84	Birdwell	2,998'	1,350'
Fluid Density for Water Location	(3,3)	1	2/7/84	Birdwell	1,340'	1,072'
Fluid Density for Water Location	(3,4)	2	2/10/84	Birdwell	1,131'	1,052'
Fluid Density for Water Location	(3,4)	3	2/10/84	Birdwell	1,142'	1,062'
Fluid Density for Water Location	(3,4)	4	2/10/84	Birdwell	270'	202'
Epithermal Neutron	(6,3)	1	1/30/84	Birdwell	315'	20'
Epithermal Neutron	(6,4)	2	2/8/84	Birdwell	1,513'	290'
Gamma Ray	(5,5)	1	1/27/84	Birdwell	314'	30'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 2 of 3

HOLE: UE-25c#2 (continued)

HYDROLOGIC TEST HOLE

<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>
Gamma Ray	(6,1)	2	2/8/84	Birdwell	1,512'	290'
Gamma Ray	(3,1)	3	2/28/84	Birdwell	2,982'	1,350'
Gamma Ray	(7,5)	4	2/29/84	Birdwell	2,988'	1,350'
Neutron-Borehole Compensated	(7,5)	1	2/29/84	Birdwell	2,998'	1,350'
BHC Acoustilog/ Gamma Ray (2")	(7,3)	1	2/28/84	Dresser Atlas	2,989'	1,365'
BHC Acoustilog/ Gamma Ray (5")	(7,2)	1	2/28/84	Dresser Atlas	2,989'	1,365'
BHC Acoustic/ Gamma Ray (2")	(7,1)	1	2/28/84	Dresser Atlas	2,989'	1,365'
Spectralog/ Gamma Ray	(8,1)	1	2/28/84	Dresser Atlas	2,997'	0'
Spectralog	(8,3)	2	2/28/84	Dresser Atlas	2,997'	0'
Induction	(3,5)	1	1/27/84	Birdwell	312'	20'
Induction	(4,3)	2	2/8/84	Birdwell	1,507'	300'
Induction-Electric	(4,1)	1	2/7/84	Birdwell	1,509'	290'
Induction-Electric	(4,4)	3	2/28/84	Birdwell	2,990'	1,348'
Dielectric (5")	(5,1)	1	2/8/84	Dresser Atlas	1,510'	319'
Dielectric (5")	(5,3)	2	2/28/84	Dresser Atlas	2,993'	1,365'
Nuclear Annulus Investigation	(9,1)	1	2/10/84	Birdwell	1,357'	1,000'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 3 of 3

HOLE: UE-25c#2 (continued)

HYDROLOGIC TEST HOLE

<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>
Temperature	(9,2)	1	2/8/84	Birdwell	1,514'	5'
Temperature	(9,3)	2	2/10/84	Birdwell	1,358'	945'
Temperature	(10,2)	3	2/28/84	Birdwell	2,999'	5'
Temperature- Tracer	(10,4)	1	3/12/84	Gearhart	2,996'	1,000'
Temperature- Tracer	(12,2)	1	6/24/85	Production Logging Services, Inc.	2,480'	2,100'
3-D/Velocity (6')	(11,3)	1	2/10/84	Birdwell	1,355'	998'
Geophone Survey (VSP)	(11,4)	1	2/8/84	Birdwell	1,500'	127'
Geophone Survey (VSP)	(11,5)	2	2/29/84	Birdwell	2,985'	1,400'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 3

HOLE: UE-25c#3

HYDROLOGIC TEST HOLE

<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	3/28/84	Birdwell	305'	10'
Caliper	(1,2)	2	4/12/84	Birdwell	1,508'	260'
Caliper	(1,4)	3	4/27/84	Birdwell	3,001'	1,260'
Caliper	(2,1)	4	3/21/85	Birdwell	2,977'	1,261'
Density	(2,4)	1	3/29/84	Birdwell	311'	188'
Density-Borehole Compensated	(2,5)	1	4/13/84	Birdwell	1,513'	300'
Density-Borehole Compensated	(3,2)	2	4/27/84	Birdwell	3,006'	1,240'
Fluid Density for Water Location	(3,4)	1	4/12/84	Birdwell	1,350'	1,270'
Fluid Density for Water Location	(3,5)	2	4/27/84	Birdwell	1,340'	1,270'
Spectralog (2")	(8,5)	1	4/27/84	Dresser Atlas	3,006'	0'
Spectralog (5")	(8,3)	1	4/27/84	Dresser Atlas	3,006'	0'
Gamma Ray	(7,3)	1	3/29/84	Birdwell	310'	20'
Gamma Ray	(2,5)	2	4/13/84	Birdwell	1,495'	300'
Gamma Ray	(7,4)	3	4/13/84	Birdwell	1,500'	269'
Gamma Ray	(3,2)	3	4/27/84	Birdwell	2,991'	1,290'
Gamma Ray	(8,1)	4	4/27/84	Birdwell	2,998'	1,294'
Epithermal Neutron	(7,4)	1	4/13/84	Birdwell	1,511'	269'
Neutron/Borehole Compensated	(8,1)	1	4/27/84	Birdwell	3,008'	1,294'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 2 of 3

HOLE: UE-25c#3

HYDROLOGIC TEST HOLE

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED INTERNAL BTM LOG TOP LOG</u>
BHC Acoustilog- Gamma Ray (2")	(6,2)	1	4/26/84	Dresser Atlas	3,000' 1,600'
BHC Acoustilog Gamma Ray (5")	(6,3)	1	4/26/84	Dresser Atlas	3,000' 1,600'
BHC Acoustilog/ Fraclog Gamma Ray	(7,1)	1	4/27/84	Dresser Atlas	3,000' 1,600'
Induction	(4,1)	1	3/29/84	Birdwell	306' 30'
Induction Electric	(4,2)	1	4/13/84	Birdwell	1,507' 300'
Induction Electric	(4,4)	2	4/30/84	Birdwell	2,995' 1,300'
Dielectric	(5,1)	1	4/13/84	Dresser Atlas	1,509' 312'
Dielectric	(5,2)	2	4/26/84	Dresser Atlas	3,004' 1,322'
Dielectric	(5,5)	2	4/26/84	Dresser Atlas	3,004' 1,322'
Nuclear Annulus Investigation	(9,1)	1	4/30/84	Birdwell	1,399' 970'
Nuclear Cement Top Locator	(2,3)	1	4/17/84	Birdwell	1,320' 1,089'
Temperature	(9,2)	1	4/13/84	Birdwell	1,510' 35'
Temperature	(9,3)	2	4/17/84	Birdwell	1,322' 24'
Temperature	(9,4)	3	4/30/84	Birdwell	3,001' 5'
Casing Collar Locator	(9,3)	1	4/17/84	Birdwell	1,320' 16'
Temperature- Tracer	(10,1)	1	5/7/84	Gearhart	3,003' 1,000'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 3 of 3

HOLE: UE-25c#3 (continued)

HYDROLOGIC TEST HOLE

<u>LOG TYPE</u>	<u>MICROFICHE (sheet,row)</u>	<u>RUN NO.</u>	<u>LOG DATE</u>	<u>LOGGING COMPANY</u>	<u>LOGGED</u> <u>BTM LOG</u>	<u>INTERNAL</u> <u>TOP LOG</u>
Temperature- Tracer	(10,5)	1	6/25/85	Production Logging Services, Inc.	2,986'	2,100'
3-D/Velocity	(11,3)	1	4/17/84	Birdwell	1,317'	1,100'
3-D/Velocity	(11,3)	2	4/17/84	Birdwell	1,317'	1,086'
Geophone Survey (VSP)	(11,4)	1	4/12/84	Birdwell	1,500'	165'
Geophone Survey (VSP)	(11,5)	2	4/30/84	Birdwell	2,990'	1,400'

VIDEO TAPES RUN IN DRILL HOLES

<u>Hole</u>	<u>Run #</u>	<u>From</u>	<u>To</u>
UE-25c #1	1	0'	911'
	2	911'	1328'
	1	1310'	1845'
	1	1310'	1885'
	2	1815'	2235'
	3	2235'	2578'
	4	2578'	2947'
	5	2947'	3000'
UE-25c #2	1	0'	1086'
	2	1085'	1316'
	1	1316'	1920'
	2	1920'	2525'
	3	2525'	2825'
UE-25c #3	1	313'	820'
	2	820'	1316'

Item Description:	NNWSI Hole Histories UE-25c #1 UE-25c #2 UE-25c #3
Availability:	<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Sensitivity:	<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Non-Sensitive—Copyright <input type="checkbox"/> Sensitive <input type="checkbox"/> Sensitive—Copyright
Electronic Media Type: (If applicable)	Microfiche
Contact:	US Nuclear Regulatory Commission Office of Nuclear Materials Safety and Safeguards Yucca Mountain Project Manager
Storage/File Location:	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