

**NNWSI  
HOLE HISTORIES**

<b>UE-25 WT #3</b>	<b>UE-25 WT #16</b>
<b>UE-25 WT #4</b>	<b>UE-25 WT #17</b>
<b>UE-25 WT #5</b>	<b>UE-25 WT #18</b>
<b>UE-25 WT #6</b>	<b>USW WT-1</b>
<b>UE-25 WT #12</b>	<b>USW WT-2</b>
<b>UE-25 WT #13</b>	<b>USW WT-7</b>
<b>UE-25 WT #14</b>	<b>USW WT-10</b>
<b>UE-25 WT #15</b>	<b>USW WT-11</b>

**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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HOLE HISTORIES

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by

Reports and CEP Section

Abstract

This report is a compilation of data from sixteen boreholes drilled under the guidance of the U. S. Geological Survey to help identify the areas water table. The sixteen boreholes were drilled between April, 1983 and November, 1983 in Area 25, Nevada Test Site land and in Bureau of Land Management land adjacent to the Nevada Test Site. Data presented in the hole histories include all locations, daily activities, review of hole conditions, geophysical log lists, video tape lists, and microfiche copies of the geophysical logs run by the Fenix & Scisson, Inc. subcontractor.

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

Approved: James Paul Covington  
 Date: Nov 14, 1986

Hole No.: UE-25 WT #3      Type Hole: Water Table Test Hole  
 User: USGS      Area: 25      Site Prep. W.O. #:  
 Location: NTS      County: Nye      W.O. #: 3404-159  
 Surface Coordinates: N 745,995.09' E 573,384.41'  
 Ground Elev.:      Pad Elev.:      Top Casing Elev.: 3379.52'  
 Bottom Hole Coord: N 745,970.79' E 573,343.96' @ 1142' | Ref: Gyro, 05-23-83  
 Rig On Location:      Spudded: 04-29-83      Completed: 05-25-83  
 Circulating Media: Air foam  
 Main Rig & Contractor: Ideco #37/REECO  
 No. Of Compressors & Capacity: 1/Atlas 1200

Bore Hole Record				Casing Record				
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	13.5'	48"	15.01"	84#		0'	13.5'	216
13.5'	41'	14-3/4"	10.05"	40.50#		0'	40'	68
41'	1142'	8-3/4"	2-7/8"	O.D., EUE Tubing *		0'	1125'	

Total Depth: 1142'      Plugs:  
 Junk:  
 Logging Data: Gamma ray-spectrum, Dielectric, Caliper, Fluid density, Electric,  
 Gamma ray-epithermal neutron, Gamma ray-density, Gyroscopic

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85134	Auger #2	VIII	0.25			0.25
85122	Portadrill	VIII	1.29		6.71	8.00
85116	Ideco #37	III	6.67			6.67

Remarks: \* 12' screen sub on bottom of tubing

Prepared By: JEC:LLF:ps

Time Breakdown on Next Page



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

- 04-29-83 Moved in Auger #2, rig #85134 and rigged up. Drilled 26" hole from 0' to 11', formation hard. Opened 26" hole to 48" from 0' to 11' and drilled 48" hole to 13.5', formation too hard to drill. Rigged down and moved out. Ran and set 16", 84# casing at 13.5'. Hole suspended at 1630 hours.
- 05-06-83 Hole suspended from 04-29-83 to 05-06-83. The annulus was cemented to surface using REECO truck with 216 ft<sup>3</sup> of Redi-Mix. Calculated annular volume was 151 ft<sup>3</sup>. Hole suspended.
- 05-10-83 Hole suspended from 05-06-83 to 05-10-83. Moved in Portadrill rig #85122 and rigged up. Drilled 14-3/4" anchor hole to 10'.
- 05-11-83 Drilled 14-3/4" anchor hole #2 to 10'. Rig secured.
- 05-16-83 Rig secured from 05-11-83 to 05-16-83. Drilled four 12-1/4" x 10' anchor holes and cemented in anchors. Rig secured.
- 05-18-83 Rig secured from 05-16-83. Moved out Portadrill rig. Moved in Ideco #37, rig #85116 and started rigging up.
- 05-19-83 Rigged up, drilled and set mouse hole pipe.
- 05-20-83 Drilled and set rat hole pipe. Drilled 14-3/4" hole from 13.5' to 41' with conventional circulation using air foam. Attempted to run 10-3/4", 40.50# casing, unable to get below 33'. Reamed hole to bottom. Ran and rotated 10-3/4" casing to 40'. Poured 4 ft<sup>3</sup> of sand inside the casing. Cemented the annulus to surface using REECO Redi-Mix truck with 68 ft<sup>3</sup> of Redi-Mix. CIP at 1500 hours. Calculated annular volume was 22 ft<sup>3</sup>. Installed surface connections. Made trip in with 8-3/4" bit on 4-1/2" drill pipe and cleaned out sand from 35' to 41'. Drilled 8-3/4" hole from 41' to 72' using air foam.
- 05-21-83 Drilled 8-3/4" hole from 72' to 447'. Made trip to change drilling assembly at 360'.
- 05-22-83 Drilled 8-3/4" hole from 447' to 1138'. Made trip for 8-3/4" O.D. core bit and barrel. Reamed hole from 1030' to T.D. and conditioned hole.
- 05-23-83 Cut 8-3/4" core #1 from 1138' to 1142' using air foam. Made trip for 8-3/4" drilling assembly. Ran Eastman gyroscopic survey in and out using Birdwell equipment. Made trip out with 4-1/2" drill pipe. Ran Westech TV camera to bridge at 130'. Made trip with 8-3/4" bit, cleaned out bridges at 130', 500' and 900' to fill at 1125'. Ran TV camera to bridge at 125' and solid bridge at 143'. Made trip with 8-3/4" bit to 1131', no bridge indicated. Ran TV camera to 1100', no picture below fluid level at 985'. Ran Dresser Atlas gamma ray-spectrum log to 1133' T.D.

UE-25 WT #3  
Hole History  
Page 2

- 05-24-83 Ran dielectric log to 1133' T.D. Ran Birdwell caliper log to 1132' T.D. Ran fluid density log, checked fluid level at 983'. Ran induction-electric, gamma ray-epithermal neutron and gamma ray-compensated density logs to 1131' T.D. Laid down 4-1/2" drill pipe and rigged up to run tubing.
- 05-25-83 Ran and landed 2-7/8" EUE tubing with 12' screen sub on bottom at 1125.18'. Rigged down and moved out. Hole completed.
- 05-26-83 Completed moving out equipment.

UE-25 WT #3  
Singe Shot Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
05-21-83	200'	1° 0'
	350'	2° 35'
	410'	2° 35'
05-22-83	572'	2° 30'
	728'	2° 30'
	886'	2° 30'
	1044'	2° 45'

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

406 mm (16") casing was set at 4.1 m (13.5') in a 1.22 m (48") hole drilled to 4.1 m (13.5'). The annulus was cemented to surface with 6.12 m<sup>3</sup> (216 ft<sup>3</sup>) of cement slurry 05-06-83. Calculated annular volume was 4.28 m<sup>3</sup> (151 ft<sup>3</sup>). 375 mm (14-3/4") hole was drilled to 12.5 m (41') with conventional circulation using air foam. 273 mm (10-3/4") casing was set at 12.2 m (40') and the annulus cemented to surface with 1.93 m<sup>3</sup> (68 ft<sup>3</sup>) of cement slurry 05-20-83. Calculated annular volume was 0.62 m<sup>3</sup> (22 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 348.1 m (1142') using air foam. One 222 mm (8-3/4") core was cut from 346.9 m (1138') to 348.1 m (1142') with full recovery. Gyroscopic survey, TV camera, gamma ray-spectrum, dielectric, caliper, fluid density, electric, gamma ray-epithermal neutron and gamma ray-density logs were run 05-23-83 and 05-24-83. Fluid level was indicated at 299.6 m (983'). The average curve on caliper log #1 indicated an eroded zone between 12.2 m (40') and 42.7 m (140') with a maximum hole enlargement of 546 mm (21-1/2") at 25.0 m (82'). 73 mm (2- 7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 342.9 m (1125'). Hole completed 05-24-83.

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

Approved: Jerry Nell Covington  
Date: Nov 14, 1986

Hole No.: UE-25 WT #4		Type Hole: Water Table Test Hole	
User: USGS	Area: 25	Site Prep. W.O. #:	
Location: NTS	County: Nye	W.O. #: 3404-167	
Surface Coordinates: N 768,511.75' E 568,040.15'			
Ground Elev.: 3829.1'	Pad Elev.:	Top Casing Elev.: 3829.59'	
Bottom Hole Coord: N 768,473.51' E 567,992.28' @ 1540'		Ref: Gyro, 06-02-83	
Rig On Location:	Spudded: 05-28-83	Completed: 06-06-83	
Circulating Media: Air and Soap			
Main Rig & Contractor: Ideco #37/REECO			
No. Of Compressors & Capacity: 1/Atlas 1200			

Bore Hole Record				Casing Record				
From	To	Size	I.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	50'	14-3/4"	10.05"	40.50#		0'	48'	28
50'	1580'	8-3/4"	2-7/8"	O.D., 8rd tubing *		0'	1567'	

Total Depth: 1580'      Plugs:

Junk:  
Logging Data: Caliper, Gamma ray-compensated density (2), Gamma ray-spectrum (2), Dielectric, Gamma ray-epithermal neutron (2), Induction-electric (2), Fluid density (2), Gyro

Rigs Used							
Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location	
85116	Ideco #37	III	9.12		2.67	11.79	

Remarks: \* 12' screen sub on bottom of tubing.

Prepared By: LLF:ps      Time Breakdown on Next Page



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

- 05-25-83 Moved in Ideco #37, rig #85116 and equipment.
- 05-26-83 Moved in Failing 1500, rig #85133 and rigged up. Drilled 3 anchor holes. Started rigging up Ideco #37.
- 05-27-83 Drilled #4 anchor hole, left 12-1/4" bit in the hole, unable to recover. Set and cemented anchors. Moved out Failing rig. Rigged up, drilled mouse and rat holes using 9-7/8" bit and Dyna-Drill and set in pipe.
- 05-28-83 Drilled 14-3/4" hole from 0' to 20' using Dyna-Drill, Dyna-Drill not operating properly. Made trip for drill collar and jars. Drilled 14-3/4" hole from 20' to 50' using air and soap. Blew out fluid and made trip out. Ran and set 10-3/4", 40.50# casing at 48'. Cemented the annulus to surface in 4 stages using Halliburton with 28 ft<sup>3</sup> of 75% neat & 25% gypsum cement. CIP at 1:35 hours. Calculated annular volume was 27 ft<sup>3</sup>. Cement was very slow in setting up. Installed surface drilling equipment. Made trip in and cleaned out fill from 48' to 50'. Drilled 8-3/4" hole from 50' to 104' with conventional circulation using air and soap.
- 05-29-83 Drilled 8-3/4" hole from 104' to 881'. Made trip for bit change at 503'. Made trip out and secured rig at 2400 hours.
- 05-31-83 Rig secured from 05-29-83 to 0800 hours, 05-31-83. Worked on rig motors and changed bit. Made trip in and reamed hole from 858' to 881'. Drilled 8-3/4" hole from 881' to 1160'.
- 06-01-83 Drilled 8-3/4" hole from 1160' to 1570'. (Started LiBr solution injection at 1223'.) Conditioned hole, made trip for bit change and reamed undergauge hole from 1490' to 1520'.
- 06-02-83 Reamed 8-3/4" hole from 1520' to 1570'. Ran Eastman gyroscopic survey in and out using Birdwell equipment. Made trip for 8-3/4" core bit and barrel. Cut 8-3/4" core #1 from 1570' to 1580'. Made trip out, recovered 7' core. Ran Birdwell caliper log to 1572' T.D. and gamma ray-compensated density log to 1573' T.D.
- 06-03-83 Ran Dresser Atlas gamma ray-spectrum log to 1573' T.D., dielectric log to 1573' T.D., gamma ray-epithermal neutron log to 1568' T.D., induction-electric log to 1567' T.D. and fluid density log, checked fluid level at 1438'. Ran and recorded Westech TV camera to fluid level at 1450'. Ran underwater TV camera, fluid too murky. Ran Dresser Atlas gamma ray-spectrum log.
- 06-05-83 Rig secured from 06-03-83 to 0800 hours, 06-05-83. Ran Birdwell fluid density log, checked fluid level at 1437'. Added 20 gallons of Magconol down hole. Ran gamma ray-compensated density log to 1568' T.D., gamma ray-epithermal neutron log to 1568' T.D. and induction-electric log to 1567' T.D. Made trip in and tagged bottom at 1570'. Laid down drill pipe.

UE-25 WT #4  
Hole History  
Page 2

06-06-83

Rigged up to run 2-7/8", 8rd tubing. Ran and landed 2-7/8" tubing with 12' screen sub on bottom at 1566.67'. Rigged down and moved out. Hole completed 06-06-83.

Mud Plant Records

<u>Date</u>	<u>Turco Barrels</u>
05-29-83	50

**UE-25 WT #4**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 14.6 m (48') in a 375 mm (14-3/4") hole drilled to 15.2 m (50') using air and soap. The annulus was cemented to the surface in 4 stages with 0.79 m<sup>3</sup> (28 ft<sup>3</sup>) of cement slurry, 05-28-83. Calculated annular volume was 0.76 m<sup>3</sup> (27 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to 478.5 m (1570') with conventional circulation using air and soap. LiBr solution was injected from 372.8 m (1223'). One 222 mm (8-3/4") core was cut from 478.5 m (1570') to 481.6 m (1580'). Caliper, gamma ray-compensated density, gamma ray-spectrum, dielectric, gamma ray-epithermal neutron, induction-electric, fluid density logs, gyroscopic survey and TV camera were run between 06-02-83 and 06-05-83. The average curve on the caliper log indicated eroded zones between 18.3 m (60') and 48.8 m (160') with a maximum hole enlargement of 457 mm (18") at 32.6 m (107') and an eroded zone between 287.7 m (944') and 292.0 m (958') with hole enlargement of 419 mm (16-1/2") at 291.4 m (956'). Fluid density log indicated fluid level at 438.0 m (1437'). 73 mm (2- 7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 477.6 m (1567'). Hole was completed 06-06-83.





UE-25 WT #5  
HOLE HISTORY

- 06-02-83 Moved in Failing 1500, rig #85133 and rigged up. Drilled 2 anchor holes and cemented in anchors.
- 06-03-83 Drilled anchor holes #3 and #4 and cemented in anchors. Rigged down and moved out. Location suspended.
- 06-06-83 Moved in Ideco #37, rig #85116 and started rigging up.
- 06-07-83 Rigged up. Drilled 14-3/4" hole from 0' to 40' using air foam. Ran and set 10-3/4", 40.50# casing at 40'. Poured 10 ft<sup>3</sup> of sand inside the casing. Cemented the annulus to surface using REECO Redi-Mix truck with 162 ft<sup>3</sup> of Redi-Mix cement. CIP at 1430 hours. Calculated annular volume was 22 ft<sup>3</sup>. Drilled 9-7/8" rat hole using a Dyna-Drill. Attempted to drill mouse hole, unable to start Dyna-Drill.
- 06-08-83 Made up 8-3/4" bit and drilling assembly. Cleaned out sand in 10-3/4" casing from 20' to 40'. Drilled 8-3/4" hole from 40' to 105', hole sloughing badly. Made trip out to replace worn stabilizer. Drilled mouse hole using Dyna-Drill. Made trip in and cleaned out fill to 105'. Drilled 8-3/4" hole from 105' to 356' with conventional circulation using air foam.
- 06-09-83 Drilled 8-3/4" hole from 356' to 1168'. Started adding LiBr to air foam at 980'.
- 06-10-83 Drilled 8-3/4" hole from 1168' to 1330', water inflow indicated at 1180'. Conditioned hole 2 hours, hole sloughing. Ran Eastman gyroscopic survey in and out using Birdwell equipment. Worked stuck drill pipe. Added second Atlas 1200 compressor, no returns. Started replacing #2 rig engine at 2000 hours. Continued keeping air on hole.
- 06-11-83 Replaced rig engine to 1300 hours. Worked stuck drill pipe, no movement. Ran Birdwell free point and collar log. Log indicated pipe free at top of drill collars at 1121'. Attempted Birdwell back-off shot at 1121' with 3', 600 grain string shot, no success. Made second attempt with 3', 900 grain string shot at 1121', no success. Ran back-off shot at 1121' with 6', 3600 grain string shot. Recovered 4-1/2" drill pipe and crossover sub to drill collars.
- 06-12-83 Made trip in with drill collars and jars on 4-1/2" drill pipe to 1116.37'. Washed hole to fish and screwed into drill collar. Jarred and worked fish free with 170,000# pull. Made trip out, recovered all of fish. Made trip in with reamer, jars and 8-3/4" bit to fill at 1286'. Washed and conditioned hole to 1330'. Pulled tools up to 1276', shut off circulation and tagged fill at 1315'. Washed and conditioned hole from 1276' to 1330'.

UE-25 WT #5  
Hole History  
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- 06-13-83 Washed hole from 1276' to 1330' using 1 and 2 Atlas compressors and soap to 0800 hours. Attempted to make trip out, tools stuck at 1299'. Ran Birdwell free point and collar log. Drill pipe free to 1168' at tool joint of top drill collar. Attempted Birdwell back-off shot at 1168' with 6', 3600 grain string shot, no success. Attempted back-off shot again at 1168' with 6', 4800 grain string shot, no success. Ran third back-off shot to drill pipe tool joint at 1137' with 6', 4800 grain string shot. Backed off drill pipe and made trip out. Made up 6-1/2" jars, drill collar and subs on 4-1/2" drill pipe.
- 06-14-83 Made trip in with rerun 8-3/4" bit. Cleaned out bridges at 151', 304', 870', 1038', and 1060' using air foam. Washed and conditioned hole to 1136'. Made trip out. Made trip in with fabricated 7-5/8" O.D. skirt on crossover sub to bridge at 149'. Made trip for modified skirt, unable to clean out bridge below 149'. Made trip for 8-3/4" bit. Cleaned out 8' bridge from 149', 5' bridge from 712', cleaned and conditioned hole to 1136'. Started out of hole.
- 06-15-83 Made trip out. Made up 7-5/8" skirt with Clusterite bottom on 4-1/2" drill pipe and made trip in to 1124'. Washed to 1137' and screwed into 4-1/2" drill pipe. Attempted to circulate, fish plugged. Jarred on fish using air foam down annulus. Backed off fish and attempted to circulate hole. Worked tools in tight hole, broke circulation and made trip out. Tools drug all the way out. Left jars and washover skirt with crossover sub in the hole. Waited for 4-1/2" jars for bit run.
- 06-16-83 Made trip in with 8-3/4" rerun bit, cleaned out bridges at 210', 764', 790', 981', and 1000'. Washed and cleaned out hole from 1065' to fish at 1127'. Washed and conditioned hole, hole sloughing. Circulated tight hole making trip out using air foam. Made trip in with Bowen overshot, jars and drill collars on 4-1/2" drill pipe to fill at 1085'. Washed hole to fish at 1127' and washed tools over fish. Attempted to jar fish, grapple did not hold. Worked tools up to 1036', tools stuck.
- 06-17-83 Worked stuck tools to 0830 hours with no returns. Continued working tools to 1500 hours using soap and LiBr water with 30% returns. Stuck tools at 1036' with no movement. Made up hammer drive and attempted to drive tools down hole, no movement with 50% returns. Rigged down hammer unit. Ran Birdwell free point and collar log, tools free at 1026'.
- 06-18-83 Ran Birdwell back-off shot to 1018' with 6', 10,800 grain string shot. Backed off 4-1/2" drill pipe at 1018', Birdwell tools and conductor cable hung in the drill pipe at 960'. Made trip out with drill pipe, cutting cable off at each joint and recovered back-off

UE-25 WT #5  
Hole History  
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- 06-18-83 tools. Left Bowen overshoot, crossover sub, and Bowen bumper  
(Cont.) sub in the hole (17.98'), top of fish at 1018'. Rigged down and  
moved out. Hole abandoned 06-18-83.
- 07-05-83 Ran Westech TV camera using Birdwell mast truck to bridge at 52'.
- 07-16-84 Ran "Inspection Technology" experimental TV camera to 70' using  
Birdwell logging truck as directed by USGS.

UE-25 WT #5  
Single Shot Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
06-08-83	180'	0° 0'
06-09-83	356'	0° 10'
	548'	0° 20'
	652'	0° 20'
	808'	0° 20'
	961'	0° 20'
	1091'	0° 30'
06-10-83	1140'	1° 25'

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

273 mm (10-3/4") casing was set at 12.2 m (40') in a 375 mm (14-3/4") hole drilled to 12.2 m (40') using air foam. The annulus was cemented to the surface with 4.59 m<sup>3</sup> (162 ft<sup>3</sup>) of cement slurry, 06-07-83. Calculated annular volume was 0.62 m<sup>3</sup> (22 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 405.4 m (1330') with conventional circulation using air foam. Hole started sloughing at 32.0 m (105') and continued sloughing to bottom. Bowen overshot, crossover sub, and Bowen bumper sub were left in hole at 315.8 m (1036') with top at 310.3 m (1018'). Hole was abandoned 06-18-83.



**TIME BREAKDOWN**

**MAIN HOLE CONSTRUCTION**

Hole No.: UE-25 WT #6

Drilling Operation Time (DOT)		Other Scheduled Time (OST)		Operational Delay Time (ODT)	
Drill	2.94	Mobe & Demobe	3.60	Rig Repairs	0.19
Trips	0.73	Core	0.33	W.O. Equipment	
Dress Drilling		Log	1.06	Fish	
Assembly		Unload Hole		Clean Out Fill	0.17
Fluid Probe		Run Mandrel		Ream Hole	0.31
Connections		Hydrological		Plug Back	
Open Hole		Tests		Drill Out Plugs	
		Survey	0.12	Secured W/Crews	0.15
				Open Hole	0.15
				Condition Hole	0.31
<b>Main Hole DOT 3.67 Days</b>					
<b>Casing Operation Time (COT)</b>					
Run Casing	0.54				
Run Tubing	0.21				
Cement Casing	0.27				
Cement Casing					
Drill Out Shoe					

**Main Hole COT: 1.02 Days Main Hole OST: 5.11 Days Main Hole ODT: 1.28 Days**  
**Total Main Hole Construction Time: 11.08 Days**

Remarks:

**TOTAL ELAPSED TIME**

Total Site Prep. Time		Days	Remarks:
Total Main Hole Construction	11.08	Days	
Secured W/O Crew Site Prep.		Days	
Secured W/O Crew Main Hole Const.		Days	
Total Suspended Time (No Rig)		Days	
<b>TOTAL ELAPSED TIME</b>	<b>11.08</b>	<b>Days</b>	

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

- 06-18-83 Moved in Ideco #37, rig #85116, and started rigging up.
- 06-19-83 Continued rigging up. Moved in Failing 1500, rig #85133 and drilled three 14-1/4" anchor holes and set in anchors.
- 06-20-83 Drilled fourth 14-1/4" anchor hole and set in anchor. Moved out Failing 1500 rig. Rigged up Ideco #37 rig. Drilled mouse and rat holes and set in pipe. Drilled 14-3/4" surface hole from 0' to 10' with conventional circulation using air foam. Made up Dyna-Drill and drilled 14-3/4" hole from 10' to 34' using air foam.
- 06-21-83 Drilled 14-3/4" hole from 34' to 68.99'. Made trip out and laid down Dyna-Drill. Ran and set 10-3/4", 40.50# casing at fill at 65' and poured sand plug inside the casing. Cemented the annulus to surface using REECO Redi-Mix truck with 216 ft<sup>3</sup> of Redi Mix. CIP at 1300 hours. Calculated annular volume was 36 ft<sup>3</sup>. Installed surface connections and made up 8-3/4" drilling assembly on 4-1/2" drill pipe.
- 06-22-83 Made trip in and cleaned out sand and fill from 60' to 69'. Drilled 8-3/4" hole from 69' to 134' with conventional circulation using Dyna-Drill and air foam. Laid down Dyna-Drill and changed bit. Drilled 8-3/4" hole from 134' to 250' using air foam. Worked sloughing hole from 135' to 163'. Reamed and conditioned hole at 250'.
- 06-23-83 Made trip, cleaned out fill from bridge at 153' to 192'. Conditioned hole. Continued reaming and conditioning hole from 130' to 192'. Pumped 90 viscosity mud in hole at 163'. Made trip for 9-7/8" bit and opened 8-3/4" hole to 250'. Conditioned hole.
- 06-24-83 Made trip out and laid down tools. Ran and rotated 273.23' of 7-5/8" O.D., 26.40# casing with clusterite reaming shoe on bottom to 250.85'. Started making up tools.
- 06-25-83 Made trip in with 6-3/4" bit on 3-1/2" drill pipe. Drilled 6-3/4" hole from 250' to 696' using air foam.
- 06-26-83 Drilled 6-3/4" hole from 696' to 1081'. Made trip for tool change at 786'. Hole making water from 990' to 1021'.
- 06-27-83 Drilled 6-3/4" hole from 1081' to 1250'. Conditioned hole and made trip for PQ 6-1/4" O.D. core barrel and 3.345" I.D. core bit. Core barrel plugged, pulled up hole. Ran Eastman gyroscopic survey to 1075' T.D. on 25' stations. Made trip out with core barrel. Ran Westech TV camera to 1000', no picture past 873'. Made trip in and cut 6-1/4" core #1 from 1250' to 1256.5'. Made trip out with plugged core barrel, 100% core recovery. Ran Dresser Atlas dielectric log to 1249' T.D.

UE-25 WT #6  
Hole History  
Page 2

- 06-28-83 Ran gamma ray-spectrum log to 1247' T.D. Ran Birdwell caliper log to 1242' T.D., fluid density log to 1120', fluid indicated at 874', electric log to 1241' T.D., compensated density log to 1242' T.D., epithermal neutron log to 1242' T.D., and vibroseis survey on 50' stations from 1235' to 86'. Laid down drill pipe and drilling assembly.
- 06-29-83 Rigged up to run tubing. Ran and landed 2-7/8", 8rd., EUE tubing with 12.30' screen sub on bottom at 1220.71'. Rigged down and moved out. Hole completed 06-29-83.

**MUD REPORT**  
**Mud Plant Records**

<u>Date</u>	<u>Detergent</u> <u>Gals.</u>
06-23-83	2100

**UE-25 WT #6**  
**DEVIATION SURVEYS**

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
06-25-83	410'	0° 30'
	575'	1° 45'
06-26-83	725'	2° 30'
	785'	2° 45'
	958'	3° 10'

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

273 mm (10-3/4") casing was set at 19.8 m (65') in a 375 mm (14-3/4") hole drilled to 21.0 m (69') using Dyna-Drill and air foam. The annulus was cemented to the surface with 6.12 m<sup>3</sup> (216 ft<sup>3</sup>) of Redi-Mix cement, 06-21-83. Calculated annular volume was 1.02 m<sup>3</sup> (36 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to 76.2 m (250') with conventional circulation using air foam. Dyna-Drill was used to 40.8 m (134'). Opened hole to 251 mm (9-7/8") to 76.2 m (250') and rotated 194 mm (7-5/8") casing to 76.5 m (251'). 171 mm (6-3/4") hole was drilled to 381.0 m (1250') using air foam. Gyroscopic survey and TV camera were run. One 159 mm (6-1/4") core was taken from 381.0 m (1250') to 383.0 m (1256.6') with full recovery. Dielectric, gamma ray spectrum, caliper, fluid density, electric, compensated density, epithermal neutron logs and vibroseis survey from 376.4 m (1235') to 26.2 m (86') were run 6-27-83 and 6-28-83. Fluid level was indicated at 266.4 m (874'). The average curve on caliper log #1 indicated a nearly gauge hole with an eroded zone from 90.2 m (296') to 129.8 m (426') with maximum hole enlargement to 267 mm (10-1/2") and an eroded zone from 366.4 m (1202') to 368.2 m (1208') with hole enlargement to 225 mm (8-7/8") at 368.2 m (1208'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was set at 372.2 m (1221'). Hole was completed 06-29-83.

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

Approved: James V. Hill Covington  
Date: Apr 14, 1986

Hole No.: UE-25 WT #12 | Type Hole: Water Table Test Hole  
 User: USGS | Area: 25 | Site Prep. W.O. #:  
 Location: NTS | County: Nye | W.O. #: 3404-176  
 Surface Coordinates: N 739,725.9' E 567,011.0'  
 Ground Elev.: 3526.6' | Pad Elev.: | Top Casing Elev.: 3527.3'  
 Bottom Hole Coord: N 739,693.83' E 566,987.76' @ 1230'MD | Ref: Gyro 09-09-83  
 Rig On Location: 08-09-83 | Spudded: 08-11-83 | Completed: 08-16-83  
 Circulating Media: Air Foam  
 Main Rig & Contractor: Ideco #37/REECO  
 No. of Compressors & Capacity: 1/Atlas 1200

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	70'	15"	10-3/4"	40.50#	.35"	0'	70'	162
70'	1308'	8-3/4"	2-7/8" tubing and screen sub			0'	1276'	

Total Depth: 1308' | Plugs:

Junk:

Logging Data: Gyroscopic survey, Gamma ray spectrum, Dielectric, Caliper, Fluid density, Compensated density-gamma ray, Epithermal neutron-gamma ray, Electric, Vibroseis survey

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85116	Ideco 37	III	7.67			7.67

Remarks: \*12' screen sub on bottom of tubing.

Prepared By: JRG:LLF:ps

Time Breakdown on Next Page



UE-25 WT #12  
HOLE HISTORY

- 08-09-83 Moved in Ideco #37, rig #85116 and started rigging up.
- 08-10-83 Continued rigging up. Moved in Failing 1500, rig #85133. Drilled 4 anchor holes and cemented in anchors. Moved out Failing rig.
- 08-11-83 Rigged up. Drilled 9-7/8" rat and mouse holes using Dyna-Drill and set in pipe. Drilled 15" surface hole from 0' to 70' with Dyna-Drill using air foam and made trip out. (Good formation encountered at 43'). Ran and set 10-3/4" O.D., 40.50#, 8rd casing with bottom belled at 70'. Poured sand plug inside the casing. Cemented the annulus to surface using REECO truck with 162 ft<sup>3</sup> of Redi-Mix cement (7-sack mix). CIP at 1530 hours. Calculated annular volume was 42 ft<sup>3</sup>. Rigged up drilling equipment.
- 08-12-83 Made trip in with 8-3/4" drilling assembly on 4-1/2" drill pipe and cleaned out sand plug to 70'. Drilled 8-3/4" hole from 70' to 455' with conventional circulation using air foam. Made trip for stabilizer change at 267' and cleaned out 6' fill.
- 08-13-83 Drilled 8-3/4" hole from 455' to 1051'. Made trip for bit check and replaced broken stabilizer. Cleaned out 3' fill, tools would not drill.
- 08-14-83 Made trip to remove jars (jars rotating inside) and cleaned out 2' fill. Drilled 8-3/4" hole from 1051' to 1300'. Blew out fluid at 1176' for USGS hydrological test. Made trip for 8-3/4" core bit and barrel and cleaned out fill from 1265' to bottom. Cut 8-3/4" core #1 from 1300' to 1308'. Ran Eastman multishot gyroscopic survey in and out using Birdwell equipment.
- 08-15-83 Made trip out, recovered 8' core. Ran Dresser-Atlas gamma ray spectrum and dielectric logs to 1306' T.D. Ran Westech TV camera to top of fluid at 1133'. Ran Birdwell caliper log to 1300' T.D. and fluid density log, checked fluid level at 1133'. Ran compensated density-gamma ray log to 1299' T.D., epithermal neutron-gamma ray log to 1297' T.D., electric log to 1298' T.D., and vibroseis survey to 1297' T.D., logged from 1280' to 100' on 50' stations.
- 08-16-83 Laid down drill pipe. Ran and landed 2-7/8", 8rd., EUE tubing with 11.65' screen sub on bottom at 1275.98'. Rigged down and moved out. Hole completed 08-16-83.

UE-25 WT #12  
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
08-12-83	225'	1° 35'
	382'	1° 15'
08-13-83	604'	1° 40'
	757'	1° 30'
	913'	2° 30'
08-14-83	1140'	3° 30'

**UE-25 WT #12**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 21.3 m (70') in a 381 mm (15") hole drilled to 21.3 m (70') with Dyna-Drill using air foam. The annulus was cemented to the surface with 4.59 m<sup>3</sup> (162 ft<sup>3</sup>) of Redi-Mix cement, 08-11-83. Calculated annular volume was 1.19 m<sup>3</sup> (42 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 398.7 m (1308') with conventional circulation using air foam. Conducted USGS hydrological test at 358.4 m (1176'). One 222 mm (8-3/4") core was cut from 396.2 m (1300') to 398.7 m (1308') with full recovery. Gamma ray spectrum, dielectric, caliper, fluid density, compensated density-gamma ray, epithermal neutron-gamma ray, electric logs, gyroscopic survey, vibroseis survey from 390.1 m (1280') to 30.5 m (100'), and TV camera were run 08-15-83 and 08-16-83. The average curve on caliper log #1 indicated eroded zones between 31.7 m (104') to 112.8 m (370') with maximum hole enlargement to 546 mm (21-1/2") and 145.1 m (476') to 286.5 (940') with hole enlargement to 451 mm (17-3/4"). Fluid density log indicated fluid level at 345.3 m (1133'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was set at 388.9 m (1276'). Hole was completed 08-16-83.

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

Approved: Jerry Spill Covington  
 Date: Jan 14, 1986

Hole No.: UE-25 WT #13 | Type Hole: Water Table Test Hole  
 User: USGS | Area: 25 | Site Prep. W.O. #:  
 Location: NTS | County: Nye | W.O. #: 3404-170  
 Surface Coordinates: N 756,715.0' E 578,756.7'  
 Ground Elev.: 3386.0' | Pad Elev.: | Top Casing Elev.: 3387.0'  
 Bottom Hole Coord: N 756,716.4' E 578,752.1' @ 1120'MD | Ref: Gyro 07-11-83  
 Rig On Location: | Spudded: 06-29-83 | Completed: 07-07-83  
 Circulating Media: Air Foam  
 Main Rig & Contractor: Ideco #37/REECO  
 No. Of Compressors & Capacity: 1-2/Atlas 1200

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	48.5'	15"						
48.5'	224'	14-3/4"	10-3/4"	40.50#	.35"	0'	222'	386
224'	1150'	8-3/4"	2-7/8"	tubing and screen sub		0'	1136'	
1150'	1160'	8-1/16"						

Total Depth: 1160' | Plugs:  
 Junk:

Logging Data: Gyroscopic survey, Dielectric, Caliper, Gamma ray-compensated density, Gamma ray-epithermal neutron, Induction-electric, Fluid density, Gamma ray-spectrum, Vibroseis survey

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85116	Ideco #37	III	7.25		1.42	8.67

Remarks: \*12' screen sub on bottom of tubing.

Prepared By: JRG:LLF:ps

Time Breakdown on Next Page



**UE-25 WT #13  
HOLE HISTORY**

- 06-28-83 Moved in Failing 1500, rig #85133 and rigged up. Drilled 4 anchor holes to 10'. Set in and cemented anchors. Rigged down and moved out. Location suspended.
- 06-29-83 Moved in Ideco #37, rig #85116 and rigged up. Drilled 14-3/4" surface hole from 0' to 13' with conventional circulation using air foam. Drilled rat and mouse holes using Dyna-Drill and 12- 1/4" bit.
- 06-30-83 Set in rat and mouse hole pipe. Attempted to drill 14-3/4" hole using Dyna-Drill. Made trip. Drilled 14-3/4" hole from 13' to 17'. Opened 14-3/4" hole to 15" from 0' to 17' and drilled 15" hole to 48.5'. Made trip for Dyna-Drill and bit change. Drilled 14-3/4" hole from 48.5' to 142' cleaning out 10' to 15' fill at each connection. Hole sloughed back in to 117'.
- 07-01-83 Drilled 14-3/4" hole from 142' to 224.31' with Dyna-Drill using air foam. Laid down drilling assembly. Made up 12-1/2" O.D. clusterite shoe with centralizer 10' above shoe on bottom joint of 10-3/4", 40.50# casing. Washed, rotated and set 6 joints of 10-3/4" casing at 222'. Poured 14 ft<sup>3</sup> of sand inside the casing. Cemented down the annulus using Halliburton as follows:
- | <u>Stage No.</u> | <u>Interval</u> | <u>Cement Used Ft<sup>3</sup></u>         | <u>Calc. Ft<sup>3</sup></u> | <u>CIP</u> |
|------------------|-----------------|---|-----------------------------|------------|
| 1                | 222' - 40'      | 125 neat cement<br>+ 3% CaCl <sub>2</sub> | 101                         | 1700 Hours |
| 2                | 40' - 3'        | 250 "                                     | 21                          | 2045 "     |
| 3                | 3' - 0'         | 6 "                                       | 2                           |            |
|                  |                 | 5 Cal-Seal                                |                             | 2115 "     |
| Totals           |                 | 386 Ft <sup>3</sup>                       | 124 Ft <sup>3</sup>         |            |
- 07-02-83 Made up surface installations. Made trip in with 8-3/4" drilling assembly on 4-1/2" drill pipe. Cleaned out sand and hole from 214' to 224'. Drilled 8-3/4" hole from 224' to 663' with conventional circulation using air foam.
- 07-03-83 Drilled 8-3/4" hole from 663' to 1150'. Made trip for bit change at 758'. Blew out fluid at 1073' for USGS hydrological test. Cleaned, conditioned hole, made trip out for PQ coring and secured rig for holiday at 2400 hours.
- 07-05-83 Rig secured from 07-03-83 to 0800 hours, 07-05-83. Made trip in with 6-1/4" O.D. x 3.270" I.D. core bit and barrel on 4-1/2" drill pipe. Cut 6-1/4" core #1 from 1150' to 1154', core barrel jammed. Ran Eastman gyroscopic survey in and out using Birdwell equipment. Made trip out with core barrel, recovered 4' core. Left 6-1/4" O.D. x .90' long Christensen rerun core bit in the hole. Ran

UE-25 WT #13  
Hole History  
Page 2

- 07-05-83 (Cont.) Westech TV camera to fluid at 995'. Attempted to run underwater camera, could not clear up fluid enough. Ran Dresser Atlas dielectric log to 1133' T.D. Ran Birdwell caliper log to 1132' T.D.
- 07-06-83 Ran gamma ray-compensated density log to 1131' T.D., gamma ray-epithermal neutron log to 1130' T.D., induction-electric log to 1130' T.D. and fluid density log, checked fluid level at 994'. Ran Dresser Atlas gamma ray-spectrum log to 1130' T.D. Ran Birdwell vibroseis survey on 50' stations from 1125' to 100'. Made trip in with 8-1/16" Globe basket to tight hole at 1004'. Rotated tools to fill at 1130' and cleaned out fill to 1150'. Opened 6-1/4" hole to 8-1/16" from 1150' to 1154' and drilled 8- 1/16" hole to 1160' using air foam. Laid down tools measuring out.
- 07-07-83 Recovered 6-1/4" core bit intact. Rigged up to run tubing. Ran and landed 2-7/8", 8rd., EUE tubing with 12.26' screen sub and 1.5' orange peeled sub on bottom at 1135.60'. Rigged down and moved out. Hole completed 07-07-83.

MUD REPORT  
Mud Plant Records

<u>Date</u>	<u>Detergent Gals.</u>
06-30-83	4200

UE-25 WT #13  
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
07-02-83	258'	0° 30'
	445'	0° 30'
	600'	0° 30'
07-03-83	750'	0° 15'

UE-25 WT #13  
REVIEW OF HOLE CONDITIONS

273 mm (10-3/4") casing was set at 67.7 m (222') in a 375 mm (14-3/4") hole drilled to 68.3 m (224') with conventional circulation using Dyna-Dri]] and air foam. The annulus was cemented to the surface with 10.93 m<sup>3</sup> (386 ft<sup>3</sup>) of neat cement + 3% CaCl<sub>2</sub> and Cal-Seal. Calculated annular volume was 3.51 m<sup>3</sup> (124 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to 350.5 m (1150') using air foam. Conducted USGS hydro test. Cut one 159 mm (6-1/4") core from 350.5 m (1150') to 351.7 m (1154') with full recovery. Dielectric, caliper, gamma ray-compensated density, gamma ray-epithermal neutron, induction-electric, fluid density, gamma ray-spectrum logs, gyroscopic survey, TV camera, and vibroseis survey from 342.9 C m (1125') to 30.5 m (100') were run 07-05-83 and 07-06-83. The average curve on caliper log, run #1, indicated eroded zones from 150.0 m (492') to 151.5 m (497') with hole enlargement to 425 mm (16-3/4") and from 312.1 m (1024') to 332.2 m (1090') with maximum hole enlargement to 451 mm (17-3/4"). Fluid density log indicated fluid level at 303.0 m (994'). 222 mm (8-3/4") hole was drilled to a total depth of 353.6 m (1160') using air foam. 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was set at 346.3 m (1136'). Hole was completed 07-07-83.

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

Approved: Jerry Nell Covington  
 Date: Nov 14, 1986

Hole No.: UE-25 WT #14	Type Hole: Water Table Test Hole
User: USGS	Area: 25
Location: NTS	County: Nye
Surface Coordinates: N 761,650.6' E 575,210.1'	
Ground Elev.: 3529.9'	Pad Elev.:
Top Casing Elev.: 3531.2'	
Bottom Hole Coord: N 761,640.7' E 575,184.85'@1280' MD   Ref: Eastman Gyro, 09-30-83	
Rig On Location: 08-16-83	Spudded: 08-17-83
Completed: 09-30-83	
Circulating Media: Air foam, Air and soap	
Main Rig & Contractor: Ideco #37/REECO	
No. Of Compressors & Capacity: 1/Atlas 1200	

Bore Hole Record				Casing Record			
From	To	Size	O.D.	Wt/Ft.	Wall	From	To
0'	125.5'	15"	10-3/4"	40.50#	.35"	0'	120'
125.5'	1310'	8-3/4"	2-7/8"*			0'	1303'

Total Depth: 1310'      Plugs:

Junk:  
 Logging Data: Fluid density (2), Caliper, Gamma ray-compensated density,  
 Epithermal neutron porosity, Electric, Dielectric, Gamma ray spectrum,  
 Gyroscopic survey, Vibroseis survey

Rigs Used						
Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85116	Ideco #37	III	10.34	1.54	33.33	45.21

Remarks: \* EUE tubing with 12' screen sub on bottom of tubing

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

**TIME BREAKDOWN**

**MAIN HOLE CONSTRUCTION**

Hole No.: UE-25 WT #14

Drilling Operation Time (DOT)	Other Scheduled Time (OST)	Operational Delay Time (ODT)
Drill <u>3.15</u>	Mobe & Demobe <u>2.71</u>	Rig Repairs <u>0.15</u>
Trips <u>0.69</u>	Core <u>0.25</u>	W.O. Equipment _____
Dress Drilling _____	Log <u>1.54</u>	Fish _____
Assembly _____	Unload Hole _____	Clean Out Fill _____
Fluid Probe _____	Run Mandrel _____	Ream Hole _____
Connections _____	Hydrological _____	Plug Back _____
Open Hole _____	Tests _____	Drill Out Plugs _____
	TV Camera <u>0.27</u>	Secured W/Crews <u>1.54</u>
	Survey <u>0.33</u>	Condition Hole/ Fill <u>0.58</u>
	Drill Out Cement <u>0.02</u>	
<b>Main Hole DOT 3.84 Days</b>		
<b>Casing Operation Time (COT)</b>		
Run Casing <u>0.17</u>		
Run Tubing <u>0.31</u>		
Cement Casing <u>0.17</u>		
Cement Casing _____		
Drill Out Shoe _____		

**Main Hole COT: 0.65 Days Main Hole OST: 5.12 Days Main Hole ODT: 2.27 Days**

**Total Main Hole Construction Time: 11.88 Days**

Remarks:

**TOTAL ELAPSED TIME**

Total Site Prep. Time _____ Days	Remarks:
Total Main Hole Construction <u>11.88</u> Days	
Secured W/O Crew Site Prep. _____ Days	
Secured W/O Crew Main Hole Const. <u>33.33</u> Days	
Total Suspended Time (No Rig) _____ Days	
<b>TOTAL ELAPSED TIME <u>45.21</u> Days</b>	

**UE-25 WT #14**  
**HOLE HISTORY**

- 08-15-83 Moved in Failing 1500, rig #85133 and rigged up. Drilled 4 anchor holes and cemented anchors. Rigged down and moved out. Location suspended at 2400 hours.
- 08-16-83 Location suspended to 1330 hours. Moved in Ideco #37, rig #85116 and equipment, and started rigging up.
- 08-17-83 Rigged up, drilled 9-7/8" rat and mouse holes using a Dyna-Drill and set in pipe. Drilled 15" surface hole from 0' to 34' with conventional circulation using air foam and LiBr.
- 08-18-83 Drilled 15" hole from 34' to 82'. Made trip to remove Dyna-Drill. Drilled 15" hole from 82' to 125.5', hole continued sloughing. Conditioned hole, shut off air and checked for fill. Cleaned out 2' fill.
- 08-19-83 Checked hole for fill and cleaned out 3' fill. Made trip out. Ran and set 10-3/4" O.D., 40.50# casing at 120'. Poured 2000# of sand inside the casing. Cemented the annulus to surface using REECO trucks with 378 ft<sup>3</sup> of Redi-Mix cement. CIP at 1315 hours. Calculated annular volume was 72 ft<sup>3</sup>. Secured rig at 1600 hours.
- 08-20-83 Rig secured to 0800 hours. Secured rig and equipment. Rig secured at 1600 hours.
- 09-20-83 Rig secured from 08-20-83 to 1600 hours, 09-20-83. Moved in equipment and started rigging up.
- 09-21-83 Rigged up and secured rig from 0800 hours to 1130 hours. Made trip in with 8-3/4" bit on 4-1/2" drill pipe, cleaned out sand and cement from 117' to 125.5'. Drilled 8-3/4" hole from 125.5' to 223' with conventional circulation using air and soap.
- 09-22-83 Drilled 8-3/4" hole from 223' to 633'. Made trip for bit check at 475'.
- 09-23-83 Drilled 8-3/4" hole from 633' to 1013'. Made trip out and secured rig at 2400 hours.
- 09-25-83 Rig secured from 09-23-83 to 1600 hours, 09-25-83. Made up drilling assembly, made trip in, and cleaned out 2' fill. Drilled 8-3/4" hole from 1013' to 1043'.
- 09-26-83 Drilled 8-3/4" hole from 1043' to 1300'. Conditioned hole. Made trip for 8-3/4" x 4" core barrel. Cut 8-3/4" core #1 from 1300' to 1310'. Made trip out and laid down core barrel, 100% core recovery. Ran Birdwell fluid density, caliper, and gamma ray-compensated density logs to 1305' T.D. Checked fluid level at 928'.

UE-25 WT #14  
 Hole History  
 Page 2

- 09-27-83      Ran Birdwell epithermal neutron porosity log to 1303' T.D. and induction electric log to 1305' T.D. Attempted to run Westech TV camera, not working. Ran Dresser Atlas dielectric and gamma ray spectrum logs to 1305' T.D. Attempted to run TV camera, not working. Ran Birdwell vibroseis survey to 1305' T.D. on 50' stations from 1290' to 86' and fluid density log to 1305' T.D., checked fluid level at 1136'. Made trip in with 8-3/4" bit on 4-1/2" drill pipe.
  
- 09-28-83      Ran Eastman gyroscopic survey in and out to 1296' on 50' stations. Laid down drill pipe. Rigged up to run tubing. Ran USGS magnetometer, magnetic susceptibility, and induced polarization logs to 1310' T.D.
  
- 09-29-83      Waited on Westech equipment to 1430 hours. Ran TV camera to fluid at 1130', run was video recorded. Ran and landed 2-7/8" EUE, 8rd. tubing with 12.1' steel screen on bottom at 1303'. Secured rig at 2400 hours.
  
- 09-30-83      Rig secured to 0800 hours. Rigged down and moved out. Hole completed 09-30-83.

UE-25 WT #14  
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
09-22-83	318'	0° 30'
	475'	1° 0'
	620'	1° 0'
09-23-83	754'	1° 0'
	994'	1° 30'
09-26-83	1168'	1° 30'
	1300'	2° 0'

**UE-25 WT #14**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 36.6 m (120') in a 381 mm (15") hole drilled to 38.3 m (125.5') with conventional circulation using Dyna-Drill, air foam, and LiBr. The annulus was cemented to the surface with 10.70 m<sup>3</sup> (378 ft<sup>3</sup>) of Redi-Mix cement, 08-19-83. Calculated annular volume was 2.04 m<sup>3</sup> (72 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 399.3 m (1310'), with a 102 mm (4") core cut from 396.2 m (1300') to 399.3 m (1310'). Fluid density, caliper, gamma ray-compensated density, epithermal neutron porosity, electric, dielectric, gamma ray spectrum logs and vibroseis survey, logged from 393.2 m (1290') to 26.2 m (86'), were run 09-26-83 and 09-27-83. The average curve on caliper log #1 indicated a slightly eroded hole with maximum hole enlargements to 502 mm (19-3/4") at 57.9 m (190'), 483 mm (19") at 178.3 m (585'), 406 mm (16") at 283.5 m (930') and 368 mm (14-1/2") at 316.1 m (1037'). Gyroscopic survey, magnetometer, magnetic susceptibility, and induced polarization logs were run 09-28-83. TV camera was run to fluid at 344.4 m (1130'). 73 mm (2-7/8") tubing with 3.7 m (12') steel screen sub on bottom was landed at 397.2 m (1303'). Hole completed 09-30-83.





**UE-25 WT #15  
HOLE HISTORY**

- 11-08-83 Moved in Failing 1500, rig #85133 and rigged up. Drilled anchor hole #1 using an auger bit. Started drilling anchor hole #2, auger bit twisted off. Made up 12-1/4" rock bit.
- 11-09-83 Drilled 12-1/4" anchor holes #2 thru #4 and set anchors. Rigged down and moved out. Location secured from 0800 hours to 1300 hours. Moved in drilling equipment and started rigging up.
- 11-10-83 Moved in Ideco #37, rig #85116 and continued rigging up. Drilled mouse and rat holes and set in pipe. Secured rig for holiday at 2400 hours.
- 11-12-83 Rig secured from 11-10-83 to 0800 hours, 11-12-83. Rigged up. Drilled 14-3/4" surface hole from 0' to 15' with conventional circulation using Dyna-Drill, air, and soap. Replaced Dyna-Drill with a drill collar. Drilled 14-3/4" hole from 15' to 77', unable to keep hole clean due to sloughing. Hole kept filling back to 35'.
- 11-13-83 Cleaned out and conditioned hole to 77', hole continued sloughing. Laid down tools. Cemented the hole using Halliburton with 4-1/2" drill pipe open ended at 20' on stage #1 as follows:

<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
1	35' - 12'	400 neat cement + 2% CaCl <sub>2</sub>	27	0500 Hours
2	12' - 0'	125	14	0845 Hours

Drilled out cement from 0' to 34' with 14-3/4" bit using air and soap. Hole started caving, tagged fill at 25', and made trip out. Cemented hole as follows:

<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
3	25' - 0'	200 neat cement + 2% CaCl <sub>2</sub>	40	1635 Hours
TOTALS		725 Ft <sup>3</sup>	81 Ft <sup>3</sup>	

Made up 14-3/4" bit on Dyna-Drill.

- 11-14-83 Drilled out cement and cleaned out hole from 0' to 52' using air and soap. Made trip to replace Dyna-Drill with a drill collar. Cleaned out hole from 52' to 77'. Drilled 14-3/4" hole from 77' to 130', had approximately 8' fill at connections. Cleaned and conditioned hole, 5' fill. Made trip out. Ran and set 10-3/4", 40.50# casing at 127'. Poured 2500# (25 sacks) of desert fine sand down the casing for a sand plug. Cemented the annulus using Halliburton as follows:

UE-25 WT #15  
Hole History  
Page 2

	<u>Stage No.</u>	<u>Interval</u>	<u>Cement Used Ft<sup>3</sup></u>	<u>Calc. Ft<sup>3</sup></u>	<u>CIP</u>
11-14-83 (Cont.)	1	127' -	150 neat cement + 2% CaCl <sub>2</sub>		2111 Hours
11-15-83	2	No tag	180 "		0150 "
	3	Surface	<u>100</u> "	<u>71</u>	0605 "
	TOTALS		430 Ft <sup>3</sup>	71 Ft <sup>3</sup>	

Installed surface equipment and made up 8-3/4" drilling assembly. Made trip in, cleaned out sand and hole from 115' to 130'. Drilled 8-3/4" hole from 130' to 255' using air and soap. Had fill at connections. Changed from LiBr to LiCl as trace material.

- 11-16-83 Drilled 8-3/4" hole from 255' to 525'.
- 11-17-83 Drilled 8-3/4" hole from 525' to 882'.
- 11-18-83 Drilled 8-3/4" hole from 882' to 987'. Made trip and replaced top roller reamer, bumper sub, and jars. Cleaned out 2' fill and drilled 8-3/4" hole from 987' to 1171'.
- 11-19-83 Drilled 8-3/4" hole from 1171' to 1355'. Made trip for 8-3/4" x 4" core bit and barrel. Cleaned out 3' fill and cut core #1 from 1355' to 1360'. Ran Sperry-Sun gyroscopic survey in and out. Made trip out, recovered 1.6' core. Ran Westech gamma ray log to 1352' T.D., checked fluid level at 1160'. Started running TV camera.
- 11-20-83 Completed running TV camera to fluid at 1160', TV run was recorded. Ran Dresser Atlas gamma ray spectrum and dielectric logs to 1349' T.D. Ran Birdwell gamma ray log to 1350' T.D., electric log to 1351' T.D., caliper log to 1350' T.D., compensated density-gamma ray log to 1351' T.D., and epithermal neutron-gamma ray log to 1351' T.D.
- 11-21-83 Ran fluid density log, checked fluid level at 1190'. Ran vibroseis survey, logged from 1335' to 97' on 50' stations. Laid down drill pipe and rigged up to run tubing. Ran and landed 12' screen sub on 2-7/8" EUE, 8rd. tubing at 1335' on 10-3/4" x 1" plate and installed lock cover. Rigged down and started moving out.
- 11-22-83 Moved out rig and equipment. Hole completed 11-22-83.

**UE-25 WT #15**  
**Directional Survey**

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
11-16-83	289'	0° 55'
	403'	0° 50'
11-17-83	569'	1° 30'
	724'	2° 14'
	848'	2° 30'
11-18-83	942'	2° 40'
	987'	2° 20'
	1079'	3° 15'
11-19-83	1203'	3° 15'
	1355'	3° 0'

**MUD REPORT**  
**Mud Plant Records**

<u>Date</u>	<u>Detergent Barrels</u>
11-07-83	1,680

**UE-25 WT #15**  
**REVIEW OF HOLE CONDITIONS**

375 mm (14-3/4") hole was drilled to 23.5 m (77'). The hole continued to slough and was cemented from fill at 10.7 m (35') to surface in 3 stages with 20.53 m<sup>3</sup> (725 ft<sup>3</sup>) of neat cement + 2% CaCl<sub>2</sub>, 11-13-83. Calculated hole volume was 2.29 m<sup>3</sup> (81 ft<sup>3</sup>). Cement was drilled out and 273 mm (10-3/4") casing was set at 38.7 m (127') in a 375 mm (14-3/4") hole drilled to 39.6 m (130') with conventional circulation using Dyna-Drill, air, and spap. The annulus was cemented to surface in 3 stages with 12.18 m<sup>3</sup> (430 ft<sup>3</sup>) of neat cement + 2% CaCl<sub>2</sub>, 11-15-83. Calculated annular volume was 2.01 m<sup>3</sup> (71 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 414.5 m (1360') with one 102 mm (4") core cut from 413.0 m (1355') to 414.5 m (1360'). Gyroscopic survey and TV camera were run. Gamma ray, gamma ray spectrum, dielectric, electric, caliper, compensated density-gamma ray, epithermal neutron-gamma ray, fluid density logs, and vibroseis survey, logged from 406.9 m (1335') to 29.6 m (97') on 15.2 m (50') stations, were run between 11-19-83 and 11-21-83. The average curve on caliper log run #1 indicated an eroded zone below 273 mm (10-3/4") casing to 63.4 m (208') with maximum hole enlargement to 762 mm (30") at 39.6 m (130'), eroded zones between 100.6 m (330') and 249.9 m (820') with maximum hole enlargement to 451 mm (17-3/4") at 197.5 m (648'), and a slightly eroded hole below 289.6 m (950') with maximum hole enlargement to 400 mm (15-3/4") at 303.6 m (996'). Fluid density log run #1 indicated fluid level at 362.7 m (1190'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 406.9 m (1335'). Hole completed 11-22-83.

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

Approved: Jerry Spell Covington  
Date: Nov 14, 1986

Hole No.: UE-25 WT #16 | Type Hole: Water Table Test Hole  
 User: USGS | Area: 25 | Site Prep. W.O. #:  
 Location: NTS | County: Nye | W.O. #: 3404-181A  
 Surface Coordinates: N 774,419.66' E 570,394.88'  
 Ground Elev.: 3971.4' | Pad Elev.: | Top Casing Elev.: 3972.41'  
 Bottom Hole Coord: N 774,441.59' E 570,389.09' @ 1625' MD | Ref: Gyro 11-07-83  
 Rig On Location: 10-31-83 | Spudded: 11-02-83 | Completed: 11-10-83  
 Circulating Media: Air, Water, Soap  
 Main Rig & Contractor: Ideco #37/REECO  
 No. Of Compressors & Capacity: 1-2/Atlas 1200

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	108'	14-3/4"	10-3/4"	40.50#	.35#	0'	102'	324
108'	1710'	8-3/4"	2-7/8"			0'	1686'	

Total Depth: 1710' | Plugs:

Junk:

Logging Data: Gyroscopic survey, Dielectric, Gamma ray spectrum, Caliper,  
 Fluid Density, Electric, Epithermal neutron-gamma ray, Vibroseis survey,  
 Gamma ray-compensated density

**Rigs  
Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85116	Ideco #37	III	10.00		.33	10.33

Remarks: \* EUE tubing with 12' screen on bottom of tubing.

Prepared By: JRG:LLF:ps

Time Breakdown on Next Page

**TIME BREAKDOWN**

**MAIN HOLE CONSTRUCTION**

Hole No.: UE-25 WT #16

Drilling Operation Time (DOT)		Other Scheduled Time (OST)		Operational Delay Time (ODT)	
Drill	3.69	Mobe & Demobe	3.50	Rig Repairs	0.23
Trips	0.23	Core	0.52	W.O. Equipment	
Dress Drilling		Log	1.35	Fish	
Assembly		Unload Hole		Clean Out Fill	
Fluid Probe		Run Mandrel		Ream Hole	
Connections		Hydrological		Plug Back	
Open Hole		Tests		Drill Out Plugs	
		Condition Hole	0.04	Secured W/Crews	
<b>Main Hole DOT</b>	<b>3.92 Days</b>				
<b>Casing Operation</b>					
Time (COT)					
Run Casing	0.10				
Run Tubing	0.17				
Cement Casing	0.17				
Cement Casing					
Drill Out Shoe					
<b>Main Hole COT:</b>	<b>0.44 Days</b>	<b>Main Hole OST:</b>	<b>5.41 Days</b>	<b>Main Hole ODT:</b>	<b>0.23 Days</b>
<b>Total Main Hole Construction Time: 10.00 Days</b>					

Remarks:

**TOTAL ELAPSED TIME**

Total Site Prep. Time		Days	Remarks:
Total Main Hole Construction	10.00	Days	
Secured W/O Crew Site Prep.		Days	
Secured W/O Crew Main Hole Const.	0.33	Days	
Total Suspended Time (No Rig)		Days	
<b>TOTAL ELAPSED TIME</b>	<b>10.33</b>	<b>Days</b>	

**UE-25 WT #16**  
**HOLE HISTORY**

- 10-31-83 Moved in equipment.
- 11-01-83 Moved in Ideco #37, rig #85116 and started rigging up.
- 11-02-83 Rigged up. Drilled mouse and rat holes with Dyna-Drill using air and soap. Set pipe in holes. Drilled 14-3/4" surface hole from 0' to 108' with Dyna-Drill using air and soap. Conditioned hole and laid down tools. Ran 10-3/4", 40.50# casing, tagged fill at 103', and set casing at 102'. Poured 1000# of sand inside the casing. Cemented the annulus to surface using REECO trucks with 324 ft<sup>3</sup> of Regi-Mix. CIP at 2245 hours. Calculated annular volume was 57 ft<sup>3</sup>.
- 11-03-83 Installed surface connections and made trip in with 8-3/4" drilling assembly on 4-1/2" drill pipe. Cleaned out sand plug and hole from 102' to 108'. Drilled 8-3/4" hole from 108' to 320' with conventional circulation using air, water, and soap. Made trip for additional drill collar and 2 roller reamers at 291'.
- 11-04-83 Drilled 8-3/4" hole from 320' to 870'.
- 11-05-83 Drilled 8-3/4" hole from 870' to 1285'. Made trip for bit change and changed drilling line at 880'. Checked for fluid inflow below 1100', no inflow indicated.
- 11-06-83 Drilled 8-3/4" hole from 1285' to 1662'. Possible water inflow indicated at 1580'.
- 11-07-83 Drilled 8-3/4" hole from 1662' to 1700'. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel. Cleaned out 12' fill and cut 8-3/4" core from 1700' to 1710'. Ran Sperry-Sun gyroscopic survey in and out on 50' stations using Birdwell equipment. Made trip out, 100% core recovery. Ran Dresser Atlas dielectric log to 1706' T.D. and gamma ray spectrum log to 1704' T.D.
- 11-08-83 Ran Westech TV camera to fluid at 1544'. Ran Birdwell caliper log to 1693' T.D. Ran fluid density log, checked fluid level at 1549'. Ran electric, epithermal neutron-gamma ray logs and vibroseis survey to 1692' T.D. Logged vibroseis survey from 1689' to 108' on 50' stations.
- 11-09-83 Ran gamma ray-compensated density log to 1691' T.D. Made trip in with drill pipe and tagged fill at 1690'. Laid down drill pipe and rigged up to run tubing. Ran and landed 2-7/8", 8rd, EUE tubing with 12' screen on bottom at 1685.57'. Installed hole cover, rigged down and started moving out.
- 11-10-83 Rigged down and moved out. Hole completed 11-10-83.

UE-25 WT #16  
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
11-03-83	149'	0° 15'
	250'	0° 30'
11-04-83	382'	0° 45'
	506'	0° 45'
	630'	0° 45'
	755'	0° 55'
	942'	0° 55'
11-05-83	1068'	0° 55'
	1254'	0° 45'
	1378'	1° 10'
11-06-83	1508'	1° 15'
	1688'	1° 0'
11-07-83		

**UE-25 WT #16**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 31.1 m (102') in a 375 mm (14-3/4") hole drilled to 32.9 m (108') using Dyna-Drill, air and soap. The annulus was cemented to surface with 9.17 m<sup>3</sup> (324 ft<sup>3</sup>) of Redi-Mix cement, 11-02-83. Calculated annular volume was 1.61 m<sup>3</sup> (57 ft<sup>3</sup>). Drilled 222 mm (8-3/4") hole to a total depth of 521.2 m (1710') with conventional circulation using air, water, and soap. One 102 mm (4") core was cut from 518.2 m (1700') to 521.2 m (1710'). Gyroscopic survey, dielectric, gamma ray spectrum, caliper, fluid density, electric, epithermal neutron-gamma ray, gamma ray-compensated density logs, TV camera, and vibroseis survey, logged from 514.8 m (1689') to 32.9 m (108') on 15.2 m (50') stations, were run between 11-07-83 and 11-09-83. The average curve on caliper log #1 indicated several eroded zones from below 273 mm (10- 3/4") casing to 479.1 m (1572') with maximum hole enlargements to 705 mm (27- 3/4") at 32.0 m (105'), 470 mm (18-1/2") at 189.6 m (622'), and 476 mm (18-3/4") at 443.2 m (1454'). Fluid density log #1 indicated fluid level at 472.1 m (1549'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 513.9 m (1686'). Hole completed 11-10-83.





**UE-25 WT #17**  
**HOLE HISTORY**

- 10-18-83 Moved in Failing 1500, rig #85133 and rigged up. Drilled 2 anchor holes.
- 10-19-83 Location secured to 1300 hours. Moved out Failing 1500 and moved in Ideco #37, rig #85116. Started rigging up.
- 10-20-83 Rigged up. Moved in Portadrill rig #85122 and drilled 2 additional 12-1/4" x 10' anchor holes and set anchors. Moved out rig. Drilled mouse and rat holes using a Dyna-Drill and set in pipe. Drilled 14-3/4" hole from 0' to 27' with Dyna-Drill, conventional circulation using air and soap.
- 10-21-83 Drilled 14-3/4" hole from 27' to 53'. Made trip for bit change, Dyna-Drill quit working. Made trip to replace Dyna-Drill with a drill collar. Drilled 14-3/4" hole from 53' to 55' and made trip out. Ran and set 10-3/4", 40.50# casing at 55'. Poured 12' sand plug inside the casing. Cemented the annulus to surface using Halliburton with 75 ft<sup>3</sup> of neat cement +2% CaCl<sub>2</sub>. CIP at 1200 hours. Calculated annular volume was 31 ft<sup>3</sup>. Made up surface installations. Made trip in, cleaned out sand, and drilled 8-3/4" hole from 55' to 59' using air and soap.
- 10-22-83 Drilled 8-3/4" hole from 59' to 512'. Made trip for bit check at 72'.
- 10-23-83 Drilled 8-3/4" hole from 512' to 800'. Made trip for bit and drilling assembly change at 733'.
- 10-24-83 Drilled 8-3/4" hole from 800' to 1049'.
- 10-25-83 Drilled 8-3/4" hole from 1049' to 1453'. Conditioned hole and made trip out for 8-3/4" x 4" core bit and barrel. Made trip in to fill at 1440' and attempted to clean out fill, hole kept sloughing in and tight.
- 10-26-83 Made trip out, hole tight to 1210'. Made trip in with 8-3/4" bit to fill at 1377'. Cleaned out fill to 1453' and conditioned hole. Checked for fill 1-1/2 hours. Tagged and cleaned out 33' fill and conditioned hole. Rechecked for fill 2 hours. Tagged fill at 1398' and pulled tools up to 1381'. Ran Sperry Sun multishot gyroscopic survey to 1365' using Birdwell equipment. Made trip out. Poured 15 gallons of alcohol in the hole. Ran Westech color TV camera to 500', black and white TV camera to fluid at 1292' and Westech gamma ray log to 1422' T.D.
- 10-27-83 Ran Dresser Atlas gamma ray spectrum log to 1393' T.D. and dielectric log to 1396' T.D. Ran Birdwell caliper log to 1392' T.D., fluid density log to 1390' T.D., electric log to 1391' T.D., and gamma ray-compensated density log to 1392' T.D., fluid level was at 1294'.

UE-25 WT #17  
 Hole History  
 Page 2

- 10-28-83 Ran epithermal neutron log to 1390' T.D. Made trip in with 8-3/4" drilling assembly and tagged fill at 1395'. Cleaned out fill to 1453' and conditioned hole. Attempted to pull tools up, hole sloughed in and stuck pipe. Worked tools free and tagged fill at 1390'. Cleaned out fill to 1420', hole continued sloughing.
- 10-29-83 Cleaned out fill from 1420' to 1453' and conditioned hole. Laid down drill pipe and drilling assembly. Ran and landed 2-7/8" O.D., 8rd. tubing with 12' well screen on bottom at 1375.7'. Started rigging down.
- 10-30-83 Rigged down and moved out. Hole completed 10-30-83.

**MUD REPORT**  
Mud Plant Records

<u>Date</u>	<u>Detergent Barrels</u>
10-20-83	50

**UE-25 WT #17**  
Directional Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
10-22-83	348'	2° 30'
	472'	2° 45'
10-23-83	539'	2° 45'
	630'	2° 50'
	713'	3° 25'
	800'	3° 30'
10-24-83	862'	3° 15'
	945'	3° 15'
	1047'	3° 0'
10-25-83	1141'	2° 25'
	1257'	2° 5'
	1453'	2° 0'

**UE-25 WT #17**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 16.8 m (55') in a 375 mm (14-3/4") hole drilled to 16.8 m (55') with conventional circulation using Dyna-Drill, air and soap. The annulus was cemented to the surface with 2.12 m<sup>3</sup> (75 ft<sup>3</sup>) of neat cement + 2% CaCl<sub>2</sub>, 10-21-83. Calculated annular volume was 0.88 m<sup>3</sup> (31 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 442.9 m (1453'). Gyroscopic survey, TV camera, and gamma ray log were run 10-26-83. Gamma ray spectrum, dielectric, caliper, fluid density, electric, gamma ray-compensated density, and epithermal neutron logs were run 10-27-83 and 10-28-83. The average curve on caliper log run #1 indicated an eroded hole to 310.6 m (1019') with maximum hole enlargements to 591 mm (23-1/4") at 30.5 m (100'), beyond arm limits of 838 mm (33") at 146.6 m (481'), 603 mm (23-3/4") at 170.7 m (560'), and a slightly eroded zone from 390.1 m (1280') to caliper T.D. of 424.3 m (1392') with a maximum hole enlargement to 552 mm (21-3/4") at 399.6 m (1311'). Fluid density log run #1 indicated fluid level at 394.4 m (1294'). 73 mm (2- 7/8") tubing with a 3.7 m (12') well screen on bottom was landed at 419.4 m (1376'). Hole completed 10-30-83.



**TIME BREAKDOWN**

**MAIN HOLE CONSTRUCTION**

Hole No.: UE-25 WT #18

Drilling Operation Time (DOT)		Other Scheduled Time (OST)		Operational Delay Time (ODT)	
Drill	4.44	Mobe & Demobe	3.89	Rig Repairs	0.49
Trips	0.21	Core	0.23	W.O. Equipment	0.33
Dress Drilling		Log	1.54	Fish	
Assembly		Unload Hole		Clean Out Fill	0.72
Fluid Probe		Run Mandrel		Ream Hole	
Connections		Hydrological		Plug Back	
Open Hole		Tests		Drill Out Plugs	
		TV Camera	0.21	Secured W/Crews	0.13
		Clean out sand	0.02	Unplug core barrel	0.10
<b>Main Hole DOT</b>	<b>4.65 Days</b>				
<b>Casing Operation Time (COT)</b>					
Run Casing	0.25				
Run Tubing	0.17				
Cement Casing	0.17				
Cement Casing					
Drill Out Shoe					
<b>Main Hole COT:</b>	<b>0.59 Days</b>	<b>Main Hole OST:</b>	<b>5.89 Days</b>	<b>Main Hole ODT:</b>	<b>1.87 Days</b>
<b>Total Main Hole Construction Time: 13.00 Days</b>					

Remarks:

**TOTAL ELAPSED TIME**

Total Site Prep. Time		Days	Remarks:
Total Main Hole Construction	13.00	Days	
Secured W/O Crew Site Prep.		Days	
Secured W/O Crew Main Hole Const.	4.00	Days	
Total Suspended Time (No Rig)	6.67	Days	
<b>TOTAL ELAPSED TIME</b>	<b>23.67</b>	<b>Days</b>	

**UE-25 WT #18**  
**HOLE HISTORY**

- 04-30-84 Moved in CP rig #85128 and rigged up. Drilled 4 anchor holes, rigged down, and moved out. Location suspended at 1400 hours.
- 05-07-84 Location suspended from 04-30-84 to 0800 hours, 05-07-84. Moved in Ideco #37, rig #85116 and started rigging up.
- 05-08-84 Moved in equipment and started rigging up. Drilled mouse hole using Dyna-Drill and set in pipe.
- 05-09-84 Drilled rat hole and set in pipe. Drilled 14-3/4" hole from 0' to 12' with Dyna-Drill using air, water, and soap, Dyna-Drill quit working. Removed Dyna-Drill and drilled 14-3/4" hole from 12' to 88'. Conditioned hole and made trip out.
- 05-10-84 Ran 3 joints of 10-3/4", 40.50#, K-55 casing with centralizers on each joint. Tagged fill at 87' and set casing at 86'. Poured 800# of sand inside the casing, tagged top at 73'. Cemented the annulus to surface using REECO truck with 108 ft<sup>3</sup> of Redi-Mix (7 sack mix). CIP at 1100 hours. Calculated annular volume was 48 ft<sup>3</sup>. Made trip in with 8-3/4" drilling assembly on 4-1/2" drill pipe and cleaned out sand, cement, and hole from 73' to 88'. Drilled 8-3/4" hole from 88' to 202' using air, water, and soap.
- 05-11-84 Drilled 8-3/4" hole from 202' to 564', hole sloughing below 465', and lost returns below 522'. Pulled tools up into 10-3/4" casing and secured rig for weekend at 2400 hours.
- 05-14-84 Rig secured from 05-11-84 to 05-14-84. Made trip in and cleaned out 14' fill. Drilled 8-3/4" hole from 564' to 974'. Added second Atlas 1200 compressor at 627' to get returns, removed at 862'.
- 05-15-84 Drilled 8-3/4" hole from 974' to 1360' with partial returns to 1260'.
- 05-16-84 Drilled 8-3/4" hole from 1360' to 1472'. Pulled up tools and secured rig from 0700 hours to 1000 hours. Lowered tools and cleaned out 9' fill. Drilled 8-3/4" hole from 1472' to 1739'. Lost returns between 1515' and 1556'.
- 05-17-84 Drilled 8-3/4" hole from 1739' to 2033'. Conditioned hole and made trip for 8-3/4" x 4" core bit and barrel. Cleaned out 8' fill to 2033' and made trip to unplug core barrel. Cleaned out 30' fill to 2033'. Cut 8-3/4" core #1 from 2033' to 2043'.
- 05-18-84 Ran Sperry-Sun gyroscopic survey in and out to 1899' T.D. using Birdwell equipment. Made trip out, recovered 9.25' core. Attempted to run Dresser Atlas dielectric log, hole bridged at 1577'. Made trip with 8-3/4" bit and cleaned out bridges to fill at 2025'. Attempted to run Dresser Atlas dielectric log, hole bridged at 699'. Made trip with 8-3/4" bit and cleaned hole

UE-25 WT #18  
Hole History  
Page 2

- 05-18-84 (Cont.) to fill at 2025'. Ran Dresser Atlas gamma ray spectrum and dielectric logs to 2018' T.D. Ran Westech TV camera to fluid at 1667'. Secured rig for weekend at 2400 hours.
- 05-21-84 Rig secured from 05-18-84 to 05-21-84. Ran Birdwell fluid density log to 2022' T.D., fluid indicated at 1840'. Ran caliper log to 2013' T.D. Attempted to run electric log, could not get below 500'. Made trip with 8-3/4" bit, cleaned out bridge from 487' to 501', and hole to 2009'. Ran electric log tool to 2027', tool not working. Conductor cable bridle parted leaving tool in hole at 200' coming out of hole. Ran SNL TV camera to 1600', lens fogged up, no indication of tool. Ran fluid density log to 1840', fluid indicated at 1834'. Made trip with 8-3/4" bit to 1965', no indication of electric log tool. Ran induction log to 1965', no T.D.
- 05-22-84 Ran epithermal neutron-gamma ray and compensated density logs to 1965', no T.D. Ran fluid density log to 1880', fluid indicated at 1855'. Ran vibroseis survey, logged from 1950' to 100' on 50' stations. Ran fluid density log to 1880', fluid indicated at 1860'. Laid down drill pipe and drilling assembly. Ran and landed 12' well screen sub on 2-7/8" tubing at 1965'. Started rigging down.
- 05-23-84 Rigged down and moved out equipment and rig. Hole completed 05-23-84.

**MUD REPORT**  
**MUD PLANT RECORDS**

<u>Date</u>	<u>Detergent Barrels</u>
05-15-84	55

**UE-25 WT #18**  
**Deviation Survey**

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
05-10-84	134'	0° 25'
05-11-84	471'	0° 15'
05-14-84	751'	0° 45'
05-15-84	1005'	1° 15'
	1256'	1° 05'
05-16-84	1380'	1° 00'
05-17-84	1753'	2° 10'
	2033'	2° 10'

UE-25 WT #18  
REVIEW OF HOLE CONDITIONS

273 mm (10-3/4") casing was set at 26.2 m (86') in a 375 mm (14-3/4") hole drilled to 26.8 m (88') with Dyna-Drill using air, water, and soap. The annulus was cemented to the surface with 3.06 m<sup>3</sup> (108 ft<sup>3</sup>) of Redi-Mix cement, 05-10-84. Calculated annular volume was 1.36 m<sup>3</sup> (48 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 622.7 m (2043') using air, water, and soap. One 102 mm (4") core was cut from 619.7 m (2033') to 622.7 m (2043'). Gyroscopic survey, gamma ray spectrum, dielectric, TV camera, fluid density, caliper, electric, epithermal neutron, density logs, and vibroseis survey, logged from 594.4 m (1950') to 30.5 m (100') on 15.2 m (50') stations, were run between 05-18-84 and 05-22-84. Electric log tool was lost in hole below 61.0 m (200'). The average curve on caliper log run #1 indicated a slightly eroded hole with an eroded zone between 143.6 m (471') and 153.9 m (505') with a maximum hole enlargement beyond arm limits of 756 mm (29-3/4") at 146.6 m (481') and an eroded zone between 285.6 (937') and 331.0 m (1086') with a maximum hole enlargement to 425 mm (16-3/4") at 328.6 m (1078'). Fluid density log run #4 indicated fluid level at 566.9 m (1860'). 73 mm (2-7/8") tubing with 3.7 m (12') well screen sub on bottom was set at 598.9 m (1965'). Hole completed 05-23-84.





**USW WT-1**  
**HOLE HISTORY**

- 04-28-83 Moved in Auger #2, rig #85134 and rigged up. Drilled 26" hole from 0' to 33.5', rock too hard for auger bit.
- 04-29-83 Set 10-3/4", 40.50# casing with bottom belled at 32.5'. Rigged down and moved out. Hole suspended at 1030 hours.
- 05-05-83 Hole suspended from 04-29-83 to 05-05-83. The annulus was cemented to surface using REECo with 189 ft<sup>3</sup> of Redi-Mix (7 sk. mix). Calculated annular volume was 102 ft<sup>3</sup>. Hole suspended.
- 05-07-83 Hole suspended from 05-05-83 to 1600 hours, 05-07-83. Moved in Ideco #37, rig #85116 and Portadrill rig #85122. Drilled 2 anchor holes using Portadrill.
- 05-08-83 Drilled anchor holes #3 and #4. Cemented in anchors and moved out Portadrill. Set Ideco #37 over hole and started rigging up.
- 05-09-83 Rigged up and drilled mouse and rat holes using Dyna-Drill. Made trip in and cleaned out cement from 31' to 33.5'. Drilled 8-3/4" hole from 33.5' to 48' with conventional circulation, Dyna-Drill, and using air foam. Made trip to remove Dyna-Drill and drilled 8-3/4" hole from 48' to 80' using air foam. Made trip out to change drilling assembly.
- 05-10-83 Changed drilling assembly and made trip in. Drilled 8-3/4" hole from 80' to 230', hole sloughing badly. Conditioned hole at 194'.
- 05-11-83 Drilled 8-3/4" hole from 230' to 620'.
- 05-12-83 Drilled 8-3/4" hole from 620' to 992'.
- 05-13-83 Drilled 8-3/4" hole from 992' to 1154', drill collar pin broke, top of fish at 1075'. Made trip for overshot. Made trip out with fish. Made trip in with new bit and drilling assembly. Drilled 8-3/4" hole from 1154' to 1204'.
- 05-14-83 Drilled 8-3/4" hole from 1204' to 1667'. Small water inflow indicated at 1560'.
- 05-15-83 Drilled 8-3/4" hole from 1667' to 1680'. Made trip for 8-3/4" x 4" core bit and barrel. Reamed hole from 1610' to 1680' and conditioned hole. Made trip for core bit change and reamed hole from 1610' to 1680', hole sloughing. Washed and conditioned hole. Cut 8-3/4" core #1 from 1680' to 1688.9'.
- 05-16-83 Conditioned hole and ran Eastman gyroscopic survey to 1630' using Birdwell equipment. Made trip out, 100% core recovery, and laid down tools. Ran Westech TV camera to top of fluid at 1543'. Ran Dresser Atlas dielectric log to 1670' T.D. and spectrum-gamma ray log to 1670' T.D.

USW WT-1  
Hole History  
Page 2

- 05-17-83 Ran Birdwell fluid density log to 1671' T.D., checked fluid level at 1542'. Ran caliper log to 1665' T.D., borehole compensated density and gamma ray logs to 1666' T.D. (2 runs), and epithermal neutron porosity and gamma ray logs to 1663' T.D. Attempted to run induction electric survey, hit bridge at 116'. Unable to break thru bridge with sinker bar. Made trip with 8-3/4" bit and cleaned out hole to 171'. Ran induction electric log to bridge at 1579'. Made trip in with 8-3/4" rock bit to bridge at 1560', pumped in lithium bromide and cleaned out hole to 1688'. Conditioned hole and made trip out. Ran induction electric survey to 1677' T.D.
- 05-18-83 Laid down drill pipe. Ran and landed 1666.85' of 2-7/8", 8rd. EUE tubing at 1665.35'. Rigged down and moved out rig. Hole completed 05-18-83.
- 05-19-83 Moved out equipment.

USW WT-1  
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
05-10-83	194'	0° 31'
05-11-83	350'	0° 50'
	500'	1° 30'
05-12-83	650'	2° 0'
	800'	2° 45'
	835'	2° 45'
	883'	2° 45'
	914'	2° 30'
	946'	2° 30'
05-13-83	1000'	2° 30'
	1060'	2° 35'
05-14-83	1326'	3° 0'
	1500'	2° 15'

**USW WT-1**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 13.6 m (44.5') in a 375 mm (14-3/4") hole drilled to 13.7 m (45') with conventional circulation using Dyna-Drill, air and soap. The annulus was cemented to the surface with 2.29 m<sup>3</sup> (81 ft<sup>3</sup>) of Redi-Mix cement, 08-03-83. Calculated annular volume was 0.71 m<sup>3</sup> (25 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 440.7 m (1446'). Hydrologic test and gyroscopic survey were run during drilling, 08-06-83. One core was cut from 438.9 m (1440') to 440.7 m (1446'). Gyroscopic survey, gamma ray spectrum, dielectric, TV camera, caliper, fluid density, electric, epithermal neutron-gamma, compensated density-gamma logs, and vibroseis survey, logged from 437.4 m (1435') to 15.2 m (50') on 15.2 m (50') stations were run 08-07-83 and 08-08-83. Fluid density log indicated fluid level at 363.6 m (1193'). The average curve on caliper log run #1 indicated several eroded zones with maximum hole enlargements to 533 mm (21") at 130.5 m (428'), 457 mm (18") at 246.9 m (810'), and 362 mm (14-1/4") at 371.2 m (1218'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 416.1 m (1365'). Hole completed 08-09-83.

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

Approved: *Gregg D. Corvington*  
Date: *April 14, 1986*

Hole No.: USW WT-2 | Type Hole: Water Table Test Hole  
 User: USGS | Area: Off Site | Site Prep. W.O. #:  
 Location: NTS | County: Nye | W.O. #: 3404-158  
 Surface Coordinates: N 760,660.54' E 561,923.56'  
 Ground Elev.: | Pad Elev.: | Top Casing Elev.: 4269.68'  
 Bottom Hole Coord: N 760,599.94' E 561,871.88' @ 2000'MD | Ref: Gyro 07-12-83  
 Rig On Location: 07-07-83 | Spudded: 07-08-83 | Completed: 07-16-83  
 Circulating Media: Air Foam  
 Main Rig & Contractor: Ideco #37/REECO  
 No. Of Compressors & Capacity: 1-2/Atlas 1200

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	58'	14-3/4"	10-3/4"	40.50#	.35"	0'	58'	101
58'	2060'	8-3/4"	2-7/8"*			0'	2040'	

Total Depth: 2060' | Plugs:

Junk:  
 Logging Data: Gyroscopic survey, Dielectric, Gamma ray spectrum, Fluid density, Caliper, Density-gamma ray, Electric, Epithermal neutron-gamma ray, Vibroseis survey

Rigs Used							
Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location	
85116	Ideco #37	III	9.37			9.37	

Remarks: \* Tubing with 12' screen sub on bottom of tubing.

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

**TIME BREAKDOWN**

**MAIN HOLE CONSTRUCTION**

Hole No.: USW WT-2

Drilling Operation Time (DOT)		Other Scheduled Time (OST)		Operational Delay Time (ODT)	
Drill	3.86	Mobe & Demobe	2.52	Rig Repairs	0.06
Trips	0.25	Core	0.35	W.O. Equipment	
Dress Drilling		Log	1.19	Fish	
Assembly		Unload Hole		Clean Out Fill	
Fluid Probe		Run Mandrel		Ream Hole	
Connections		Hydrological		Plug Back	
Open Hole		Tests		Drill Out Plugs	
		TV Camera	0.25	Secured W/Crews	
		Survey	0.29		
		Bail Water Sample	0.04		
<b>Main Hole DOT 4.11 Days</b>					
<b>Casing Operation Time (COT)</b>					
Run Casing	0.04				
Run Tubing	0.27				
Cement Casing	0.25				
Cement Casing					
Drill Out Shoe					
<b>Main Hole COT: 0.56 Days</b>		<b>Main Hole OST: 4.64 Days</b>		<b>Main Hole ODT: 0.06 Days</b>	
<b>Total Main Hole Construction Time: 9.37 Days</b>					

Remarks:

**TOTAL ELAPSED TIME**

Total Site Prep. Time		Days	Remarks:
Total Main Hole Construction	9.37	Days	
Secured W/O Crew Site Prep.		Days	
Secured W/O Crew Main Hole Const.		Days	
Total Suspended Time (No Rig)		Days	
<b>TOTAL ELAPSED TIME</b>	<b>9.37</b>	<b>Days</b>	

USW WT-2  
HOLE HISTORY

- 07-05-83 Moved in Failing 1500 rig #85133 and rigged up to drill anchor holes. Drilled one 14-1/4" x 7' anchor hole.
- 07-06-83 Drilled 14-1/4" anchor holes #2 and #3 to 9'. Operation shut down at 1600 hours for rig repair.
- 07-07-83 Rig secured to 0900 hours. Left 14-1/4" bit in anchor hole #3, unable to recover bit. Drilled 14-1/4" anchor hole #4 to 9' and set anchors in the holes. Moved out Failing 1500 rig. Moved in Ideco #37, rig #85116 and started rigging up.
- 07-08-83 Drilled 14-3/4" surface hole from 0' to 26' with conventional circulation using air foam. Drilled 9-7/8" mouse and rat holes using Dyna-Drill and set in pipe. Drilled 14-3/4" surface hole from 26' to 58' with Dyna-Drill using air foam and laid down tools. Ran and set 10-3/4", 40.50# casing at 58'. Poured 10 ft<sup>3</sup> of sand down the casing. Cemented the annulus to 3' using Halliburton with 100 ft<sup>3</sup> of neat cement + 3% CaCl<sub>2</sub>. CIP at 1630 hours. Cemented the annulus to surface with 1.23 ft<sup>3</sup> (1 sack) of Cal-Seal. Total calculated annular volume was 32.7 ft<sup>3</sup>. Made trip in with 8-3/4" bit on 4-1/2" drill pipe and cleaned out sand to 58'. Drilled 8-3/4" hole from 58' to 89' using air foam with good returns.
- 07-09-83 Drilled 8-3/4" hole from 89' to 488'. Metal in cuttings noted at 152', made trip and checked bit, bit good.
- 07-10-83 Drilled 8-3/4" hole from 488' to 990'.
- 07-11-83 Made trip for bit change and removed roller reamer. Drilled 8-3/4" hole from 990' to 1389' with good returns.
- 07-12-83 Drilled 8-3/4" hole from 1389' to 2050'. Conditioned hole and made trip for 8-3/4" core bit and barrel. Cleaned out hole from 1190' to bottom and started cutting 8-3/4" core #1 from 2050'.
- 07-13-83 Cut 8-3/4" core #1 from 2050' to 2060'. Ran Eastman gyroscopic survey in and out using Birdwell equipment. Made trip out, recovered 6.5' of core. Dumped 10 gallons of Magconal down hole. Ran Westech TV camera, fluid level indicated at 1873' with foam above. Dumped 5 gallons of defoamer and 10 gallons of water down hole. On second TV camera run, loose rocks were indicated at 972'. Ran Dresser Atlas dielectric log to 2051' T.D. and gamma ray spectrum log to 2050' T.D.
- 07-14-83 Ran Birdwell fluid density log to 2047' T.D., checked fluid level at 1873'. Ran caliper log to 2048' T.D., compensated density-gamma ray log to 2048' T.D., induction electric log to 2046', and epithermal neutron-gamma ray log to 2045' T.D. Ran vibroseis

USW WT-2  
Hole History  
Page 2

07-14-83 survey to 2033' T.D., logged from 2025' to 100' on 50' stations. (Cont.) Ran Birdwell bailer for water sample. Slipped and cut off 350' of drilling line.

07-15-83 Laid down drill pipe and drilling assembly. Rigged up to run tubing. Ran and landed 2-7/8", 8rd., EUE, J-55 tubing with 12' screen sub on bottom at 2039.78'. Started rigging down.

07-16-83 Rigged down and moved out rig. Continued moving out equipment. Hole completed 07-16-83.

07-17-83 Continued moving out equipment.

07-18-83 Moved out equipment.

USW WT-2  
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
07-09-83	272'	1° 30'
	416'	1° 35'
07-10-83	579'	1° 15'
	740'	2° 30'
	825'	3° 0'
	856'	3° 0'
07-11-83	1110'	3° 30'
	1292'	2° 20'
07-12-83	1522'	2° 10'
	1820'	1° 0'

**USW WT-2**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 17.7 m (58') in a 375 mm (14-3/4") hole drilled to 17.7 m (58') with conventional circulation using Dyna-Drill and air foam. The annulus was cemented to the surface in 2 stages with 2.86 m<sup>3</sup> (101 ft<sup>3</sup>) of neat cement + 3% CaCl<sub>2</sub> and Cal-Seal, 07-08-83. Calculated annular volume was 0.93 m<sup>3</sup> (33 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 627.9 m (2060') using air foam. One core was cut from 624.8 m (2050') to 627.9 m (2060'). Gyroscopic survey, TV camera, dielectric, gamma ray spectrum, fluid density, caliper, density-gamma ray, electric, epithermal neutron-gamma ray logs and vibroseis survey, logged from 617.2 m (2025') to 30.5 m (100') on 15.2 m (50') stations were run 07-13-83 and 07-14-83. The average curve on caliper log run #1 indicated hole erosion between 61.0 m (200') and 396.2 m (1300') with several eroded zones, maximum hole enlargements to 559 mm (22") at 238.4 m (782'), 464 mm (18-1/4") at 305.1 m (1001'), 419 mm (16-1/2") at 338.3 m (1110'), and an eroded zone below 591.3 m (1940') with maximum hole enlargement to 419 mm (16-1/2") at 621.8 m (2040'). Fluid density log #1 indicated fluid level at 570.9 m (1873'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 621.8 m (2040'). Hole completed 07-16-83.

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

Approved: Garry Hall Covington  
Date: April 14, 1986

Hole No.: USW WT-7 | Type Hole: Water Table Test Hole  
 User: USGS | Area: Off Site | Site Prep. W.O. #:  
 Location: NTS | County: Nye | W.O. #: 3404-174  
 Surface Coordinates: N 755,569.8' E 553,891.3'  
 Ground Elev.: 3927.2' | Pad Elev.: | Top Casing Elev.: 3928.8'  
 Bottom Hole Coord: N 755,553.08' E 553,893.12' @ 1525' MD | Ref: Gyro 07-23-83  
 Rig On Location: 07-18-83 | Spudded: 07-19-83 | Completed: 07-26-83  
 Circulating Media: Air and Soap  
 Main Rig & Contractor: Ideco #37/REECO  
 No. Of Compressors & Capacity: 1-2/Atlas 1200

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	53'	14-3/4"	10-3/4"	40.50#	.35"	0'	52'	162
53'	1610'	8-3/4"	2-7/8"*			0'	1579'	

Total Depth: 1610' | Plugs:  
 Junk:  
 Logging Data: Gyroscopic survey, Dielectric, Gamma ray spectrum, Fluid density, Caliper, Compensated density-gamma ray, Epithermal neutron-gamma ray (2), Vibroseis survey

Rigs Used						
Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85116	Ideco #37	III	8.33			8.33

Remarks: \* Tubing with 12' screen sub on bottom of tubing

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



**USW WT-7**  
**HOLE HISTORY**

- 07-18-83 Moved in Ideco #37, rig #85116 and started rigging up. Moved in CP rig #85128 and drilled four 12-1/4" x 10' anchor holes. Set anchors and moved out CP rig.
- 07-19-83 Rigged up. Drilled 14-3/4" surface hole from 0' to 33' with conventional circulation using air and soap. Drilled 9-7/8" rat and mouse holes using a Dyna-Drill and set rat and mouse hole pipe.
- 07-20-83 Drilled 14-3/4" hole from 33' to 53'. Laid down tools. Ran and set 2 joints of 10-3/4" casing at 52'. Cemented the annulus to surface using REECo truck with 162 ft<sup>3</sup> of Redi-Mix cement. CIP at 1150 hours. Calculated annular volume was 29 ft<sup>3</sup>. Made trip in with Dyna-Drill and 8-3/4" bit. Drilled 8-3/4" hole from 53' to 221' using air foam.
- 07-21-83 Made trip to install 8-3/4" Servco stabilizers. Rotated to 85', tools torqued up. Made trip to reposition drill collars and stabilizers. Cleaned and washed hole to 221', hole sloughed. Drilled 8-3/4" hole from 221' to 428'. Encountered hard formation from 230' to 246', had fill on connections and stabilizer was hanging up to 366'.
- 07-22-83 Drilled 8-3/4" hole from 428' to 1133'.
- 07-23-83 Drilled 8-3/4" hole from 1133' to 1600'. Made trip for 8-3/4" core bit and barrel and cleaned out 18' fill. Cut 8-3/4" core #1 from 1600' to 1610'. Ran Eastman gyroscopic survey in and out using Birdwell equipment.
- 07-24-83 Made trip out, recovered 10' core. Ran Dresser Atlas dielectric and gamma ray spectrum logs to 1600' T.D. Ran Westech TV camera to 1450', unable to get picture below fluid level at 1380'. Ran Birdwell fluid density log, checked fluid level at 1380'. Ran caliper log to 1597' T.D.
- 07-25-83 Made 2 runs with induction tools, no satisfactory logs. Ran compensated density-gamma ray log to 1592' T.D., epithermal neutron-gamma ray log to 1588' T.D., and vibroseis survey to 1588' T.D., logged from 1575' to 100' on 50' stations. Reran epithermal neutron-gamma ray log with different skid to 950'. Ran Birdwell water sample tool. Made trip and laid down drilling tools. Rigged up to run tubing.
- 07-26-83 Ran and landed 2-7/8", 8rd., EUE tubing with 12' screen sub on bottom at 1579', top of screen at 1567'. Rigged down and moved out. Hole completed 07-26-83.

**MUD REPORT**  
**Mud Plant Records**

<u>Date</u>	<u>Detergent Barrels</u>
07-19-83	55

**USW WT-7**  
**Deviation Survey**

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
07-21-83	273'	0° 30'
07-22-83	485'	0° 15'
	700'	1° 0'
	858'	1° 25'
	1045'	1° 0'
07-23-83	1240'	1° 0'

**USW WT-7**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 15.8 m (52') in a 375 mm (14-3/4") hole drilled to 16.2 m (53') with conventional circulation using air and soap. The annulus was cemented to the surface with 4.59 m<sup>3</sup> (162 ft<sup>3</sup>) of Redi-Mix cement, 07-20-83. Calculated annular volume was 0.82 m<sup>3</sup> (29 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 490.7 m (1610') using air foam. One core was cut from 487.7 m (1600') to 490.7 m (1610'). Gyroscopic survey, dielectric, gamma ray spectrum, TV camera, fluid density, caliper, compensated density, epithermal neutron logs, and vibroseis survey, logged from 480.1 m (1575') to 30.5 m (100') on 15.2 m (50') stations, were run between 07-23-83 and 07-25-83. Fluid density log indicated fluid level at 420.6 m (1380'), no TV camera picture below fluid level. The average curve on caliper log run #1 indicated hole erosion to 393.8 m (1292') with maximum hole enlargements to 749 mm (29-1/2") at 64.6 m (212') and 508 mm (20") at 251.5 m (825'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 481.3 m (1579'). Hole completed 07-26-83.

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

Approved: Jerry Nell Covington  
 Date: Feb 14, 1986

Hole No.: USW WT-10 | Type Hole: Water Table Test Hole  
 User: USGS | Area: Off Site | Site Prep. W.O. #:  
 Location: NTS | County: Nye | W.O. #: 3404-171  
 Surface Coordinates: N 748,770.9' E 553,302.1'  
 Ground Elev.: 3686.0' | Pad Elev.: | Top Casing Elev.: 3686.9'  
 Bottom Hole Coord: N 748,766.59' E 553,284.87'@1350'MD | Ref: Gyro 07-30-83  
 Rig On Location: 07-26-83 | Spudded: 07-26-83 | Completed: 08-02-83  
 Circulating Media: Air Foam  
 Main Rig & Contractor: Ideco #37/REECO  
 No. Of Compressors & Capacity: 1-2/Atlas 1200

Bore Hole Record				Casing Record				
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	116'	14-3/4"	10-3/4"	40.50#	.35"	0'	114'	378
116'	1413'	8-3/4"	2-7/8"*			0'	1321'	

Total Depth: 1413' | Plugs:

Junk:

Logging Data: Gyroscopic survey, Dielectric, Gamma ray spectrum (2), Caliper, Fluid density, Epithermal neutron-gamma ray, Compensated density-gamma ray (2) Electric, Vibroseis survey

Rigs Used							
Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location	
85116	Ideco #37	III	7.67			7.67	

Remarks: \* Tubing with 12' screen sub on bottom of tubing

Prepared By: JRG:LLF:ps

Time Breakdown on Next Page



**USW WT-10**  
**HOLE HISTORY**

- 07-26-83 Moved in Ideco #37 rig #85116 and rigged up. Drilled 9-7/8" mouse and rat holes using Dyna-Drill and set in pipe. Drilled 14-3/4" surface hole from 0' to 34' with Dyna-Drill using air foam.
- 07-27-83 Drilled 14-3/4" hole from 34' to 116.21'. Hole unstable to 91' and stable to bottom. Made trip out. Ran and set 10-3/4" O.D., 40.50# casing at 113.62'. Poured 10 ft<sup>3</sup> of sand plug down the casing. Cemented the annulus to surface using REECO trucks with 378 ft<sup>3</sup> of Redi-Mix cement. CIP at 1330 hours. Calculated annular volume was 63 ft<sup>3</sup>. Laid down Dyna-Drill and made up 8-3/4" drilling assembly.
- 07-28-83 Made trip in and cleaned out sand plug from 90' to 116'. Drilled 8-3/4" hole from 116' to 784' with conventional circulation using air foam. Rotating head and surface casing turned 1/4 turn at 155'.
- 07-29-83 Drilled 8-3/4" hole from 784' to 1400'. Made trip for 8-3/4" core assembly.
- 07-30-83 Cleaned out fill from 1383' to 1400'. Cut 8-3/4" core #1 from 1400' to 1402', tools torqued up. Ran Eastman gyroscopic survey in and out using Birdwell equipment. Made trip out, no core recovery. Ran Westech TV camera, no picture below 1141' due to fluid. Ran Dresser Atlas dielectric log to 1396' T.D. and gamma ray spectrum log to 1399' T.D. Made trip in with 8-3/4" core assembly and washed hole from 1391' to 1402'.
- 07-31-83 Cut 8-3/4" core #2 from 1402' to 1412'. Made trip out, recovered 1.5' of core. Ran Dresser Atlas gamma ray spectrum log to 1393' T.D. Ran Birdwell caliper log to 1389' T.D. Ran fluid density log, checked fluid level at 1140'. Ran epithermal neutron-gamma ray, compensated density-gamma ray, induction-electric logs to 1387' T.D., and took water sample. Ran vibroseis survey to 1387' T.D., logged from 1375' to 62' on 50' stations.
- 08-01-83 Removed stabilizers from drilling assembly and made trip in with 8-3/4" bit to fill at 1385'. Cleaned out fill to 1412', conditioned hole and made trip for 8-3/4" core assembly. Cut 8-3/4" core #3 from 1412' to 1413'. Made trip out, no core recovery. Tools indicated possible junk in hole. Laid down drill pipe. Made trip in with 12.10' screen sub on 2-7/8", 8rd. tubing. Landed tubing at 1321.08' with top of screen at 1308.98' and fluid level at 1140'. Started rigging down.
- 08-02-83 Rigged down moved out. Hole completed 08-02-83.

**USW WT-10**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 34.7 m (114') in a 375 mm (14-3/4") hole drilled to 35.4 m (116') with Dyna-Drill using air foam. The annulus was cemented to the surface with 10.70 m<sup>3</sup> (378 ft<sup>3</sup>) of Redi-Mix cement, 07-27-83. Calculated annular volume was 1.78 m<sup>3</sup> (63 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 430.7 m (1413') with conventional circulation using air foam. Three cores were cut between 426.7 m (1400') and 430.7 m (1413'). Gyroscopic survey, TV camera, dielectric, gamma ray spectrum, caliper, fluid density, epithermal neutron-gamma ray, compensated density-gamma ray, electric logs, and vibroseis survey, logged from 419.1 m (1375') to 18.9 m (62') on 15.2 m (50') stations, were run 07-30-83 and 07-31-83. Fluid density log indicated fluid level at 347.5 m (1140'), no TV camera picture below fluid level. The average curve on caliper log run #1 indicated a slightly eroded hole with maximum hole enlargements to 438 mm (17-1/4") below surface casing at 42.4 m (139') and 438 mm (17-1/4") at 384.7 m (1262'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 402.6 m (1321'). Hole completed 08-02-83.

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

Approved: Gerry Hill Covington  
 Date: July 14, 1986

Hole No.: USW WT-11 | Type Hole: Water Table Test Hole  
 User: USGS | Area: Off Site | Site Prep. W.O. #:  
 Location: NTS | County: Nye | W.O. #: 3404-175  
 Surface Coordinates: N 739,070.4' E 558,376.8'  
 Ground Elev.: 3590.5' | Pad Elev.: | Top Casing Elev.: 3591.4'  
 Bottom Hole Coord: N 739,041.06' E 558,390.54' @ 1375' MD | Ref: Gyro 08-08-83  
 Rig On Location: 08-02-83 | Spudded: 08-03-83 | Completed: 08-09-83  
 Circulating Media: Air and soap  
 Main Rig & Contractor: Ideco #37/REECO  
 No. Of Compressors & Capacity: 1-2/Atlas

Bore Hole Record			Casing Record					
From	To	Size	O.D.	Wt/Ft.	Wall	From	To	Ft <sup>3</sup> Cement
0'	45'	14-3/4"	10-3/4"	40.50#	.35"	0'	44.5'	81
45'	1446'	8-3/4"	2-7/8"			0'	1365'	

Total Depth: 1446' | Plugs:

Junk:

Logging Data: Gyroscopic survey (2), Gamma ray spectrum, Dielectric, Caliper, Fluid density, Electric, Epithermal neutron-gamma, Compensated density-gamma, Vibroseis survey

**Rigs Used**

Rig No.	Name	Class	Days Operating	Sec. W/Crew	Sec. W/O Crew	Total Days On Location
85116	Ideco #37	III	7.58			7.58

Remarks: \* Tubing with 12' screen sub on bottom.

Prepared By: JRG:LLF:ps

Time Breakdown on Next Page



**USW WT-11**  
**HOLE HISTORY**

- 08-02-83 Moved in Ideco #37, rig #85116 and rigged up. Made up 14-3/4" drilling assembly.
- 08-03-83 Drilled 14-3/4" hole from 0' to 10' with conventional circulation using air and soap. Drilled 9-7/8" rat and mouse holes using Dyna-Drill and set in pipe. Drilled 14-3/4" surface hole from 10' to 44.8' using Dyna-Drill and made trip out. Made trip for bit change at 31'. Ran and set 10-3/4" O.D., 40.50#, J-55 casing with bottom belled at 44.5'. Poured sand plug inside the casing to 34'. Cemented the annulus to surface using REECo truck with 81 ft<sup>3</sup> of Redi-Mix cement. CIP at 1945 hours. Calculated annular volume was 25 ft<sup>3</sup>.
- 08-04-83 Installed surface equipment. Made trip in and cleaned out hole to 44.8'. Drilled 8-3/4" hole from 44.8' to 207' using air and soap. Made trip to add second stabilizer 61' above bit at 92'.
- 08-05-83 Drilled 8-3/4" hole from 207' to 927'. Made trip for bit change at 237'.
- 08-06-83 Drilled 8-3/4" hole from 927' to 1340'. Ran USGS hydro test, no fluid indicated. Drilled 8-3/4" hole from 1340' to 1440', no fluid indicated. Ran Eastman multi-shot gyroscopic survey at 1390'. Made trip out for core bit and barrel.
- 08-07-83 Made trip in with 8-3/4" core bit and 30' conventional core barrel. Cut 8-3/4" core #1 from 1440' to 1446'. Ran Eastman gyroscopic survey in and out. Made trip out, recovered 6' core. Ran Dresser Atlas gamma ray spectrum log to 1445' T.D. and dielectric log to 1443' T.D. Ran Westech TV camera to fluid at 1199'. Attempted to run wet hole camera, no picture.
- 08-08-83 Ran Birdwell caliper, fluid density and electric logs to 1444' T.D., checked fluid level at 1193'. Ran epithermal neutron-gamma, compensated density-gamma ray logs and vibroseis survey to 1245' T.D. Logged survey from 1435' to 50' on 50' stations. Ran fluid sample tool to 1250'. Laid down drill pipe and drilling assembly.
- 08-09-83 Ran and landed 2-7/8" O.D., 8rd., EUE, J-55 tubing with 12' screen sub on bottom at 1365.26'. Fluid level was at 1193'. Rigged down and moved out. Hole completed 08-09-83.

**MUD REPORT**  
**Mud Plant Records**

<u>Date</u>	<u>Detergent Barrels</u>
08-03-83	50

USW WT-11  
Deviation Survey

<u>Date</u>	<u>Depth</u>	<u>Deviation</u>
08-04-84	109'	0° 30'
08-05-84	330'	0° 15'
	540'	1° 45'
	695'	0° 30'
	821'	1° 30'
08-06-84	1049'	1° 45'
	1351'	3° + (offscale 3° camera)
	1382'	2° 50'

**USW WT-11**  
**REVIEW OF HOLE CONDITIONS**

273 mm (10-3/4") casing was set at 13.6 m (44.5') in a 375 mm (14-3/4") hole drilled to 13.7 m (45') with conventional circulation using Dyna-Drill, air and soap. The annulus was cemented to the surface with 2.29 m<sup>3</sup> (81 ft<sup>3</sup>) of Redi-Mix cement, 08-03-83. Calculated annular volume was 0.71 m<sup>3</sup> (25 ft<sup>3</sup>). 222 mm (8-3/4") hole was drilled to a total depth of 440.7 m (1446'). Hydrologic test and gyroscopic survey were run during drilling, 08-06-83. One core was cut from 438.9 m (1440') to 440.7 m (1446'). Gyroscopic survey, gamma ray spectrum, dielectric, TV camera, caliper, fluid density, electric, epithermal neutron-gamma, compensated density-gamma logs, and vibroseis survey, logged from 437.4 m (1435') to 15.2 m (50') on 15.2 m (50') stations were run 08-07-83 and 08-08-83. Fluid density log indicated fluid level at 363.6 m (1193'). The average curve on caliper log run #1 indicated several eroded zones with maximum hole enlargements to 533 mm (21") at 130.5 m (428'), 457 mm (18") at 246.9 m (810'), and 362 mm (14-1/4") at 371.2 m (1218'). 73 mm (2-7/8") tubing with 3.7 m (12') screen sub on bottom was landed at 416.1 m (1365'). Hole completed 08-09-83.

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 1

HOLE: UE-25WT#3

WATER TABLE 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	5/24//83	Birdwell	1,124'	10'
Density-Borehole Compensated	(1,2)	1	5/24/83	Birdwell	1,130'	25'
Fluid Density for Water Location	(1,5)	1	5/24/83	Birdwell	1,010'	930'
Epithermal Neutron	(2,5)	1	5/24/83	Birdwell	1,130'	25'
Gamma Ray	(2,5)	1	5/24/83	Birdwell	1,115'	25'
Gamma Ray	(1,2)	2	5/24/83	Birdwell	1,115'	25'
Spectralog Gamma Ray (2")	(3,2)	1	5/23/83	Dresser Atlas	1,130'	0'
Spectralog Gamma Ray (5")	(3,3)	1	5/23/83	Dresser Atlas	1,130'	0'
Induction Electric	(2,1)	1	5/24/83	Birdwell	1,126'	25'
Dielectric	(2,3)	1	5/24/83	Dresser Atlas	1,126'	40'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: UE-25WT#4

WATER TABLE 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	6/2/83	Birdwell	1,562'	10'
Density-Borehole Compensated	(1,3)	1	6/2/83	Birdwell	1,571'	30'
Density-Borehole Compensated	(1,5)	2	6/5/83	Birdwell	1,567'	30'
Fluid Density for Water Location	(3,3)	1	6/3/83	Birdwell	1,460'	1,400'
Fluid Density for Water Location	(3,4)	2	6/5/83	Birdwell	1,460'	1,400'
Epithermal Neutron	(3,5)	1	6/3/83	Birdwell	1,565'	29'
Epithermal Neutron	(4,2)	2	6/5/83	Birdwell	1,565'	30'
Gamma Ray	(1,3)	1	6/2/83	Birdwell	1,555'	30'
Gamma Ray	(3,5)	2	6/3/83	Birdwell	1,550'	15'
Gamma Ray	(1,5)	3	6/5/83	Birdwell	1,552'	30'
Gamma Ray	(4,2)	4	6/5/83	Birdwell	1,551'	30'
Spectralog (2")	(4,4)	1	6/2/83	Dresser Atlas	1,571'	0'
Spectralog (5")	(4,5)	1	6/2/83	Dresser Atlas	1,571'	0'
Dielectric	(3,1)	1	6/2/83	Dresser Atlas	1,567'	48'
Induction Electric	(2,2)	1	6/3/83	Birdwell	1,561'	30'
Induction Electric	(2,4)	2	6/5/83	Birdwell	1,560'	30'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: UE-25WT#6

WATER TABLE 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>
Caliper	(1,1)	1	6/28/83	Birdwell	1,233'	200'
Density-Borehole Compensated	(1,3)	1	6/28/83	Birdwell	1,241'	190'
Fluid Density for Water Location	(2,4)	1	6/28/83	Birdwell	1,120'	850'
Epithermal Neutron	(2,5)	1	6/28/83	Birdwell	1,241'	200'
Gamma Ray	(1,3)	1	6/28/83	Birdwell	1,226'	210'
Gamma Ray	(2,5)	2	6/28/83	Birdwell	1,227'	205'
Spectralog (2")	(3,2)	1	6/28/83	Dresser Atlas	1,242'	0'
Spectralog (5")	(3,3)	1	6/28/83	Dresser Atlas	1,242'	0'
Dielectric	(2,2)	1	6/28/83	Dresser Atlas	1,242'	250'
Induction Electric	(1,5)	1	6/28/83	Birdwell	1,235'	230'
Geophone Survey (VSP)	(3,4)	1	6/28/83	Birdwell	1,235'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: UE-25WT#12

WATER TABLE 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	8/15/83	Birdwell	1,292'	30'
Density-Borehole Compensated	(1,3)	1	8/15/83	Birdwell	1,298'	40'
Fluid Density for Water Location	(2,4)	1	8/15/83	Birdwell	1,150'	1,070'
Epithermal Neutron	(2,5)	1	8/15/83	Birdwell	1,297'	30'
Gamma Ray	(2,5)	1	8/15/83	Birdwell	1,283'	30'
Spectralog (2")	(3,2)	1	8/15/83	Dresser Atlas	1,305'	0'
Spectralog (5")	(3,3)	1	8/15/83	Dresser Atlas	1,305'	0'
Dielectric (5")	(1,5)	1	8/15/83	Dresser Atlas	1,300'	70'
Induction Electric	(2,2)	1	8/15/83	Birdwell	1,292'	50'
Geophone Survey (VSP)	(3,4)	1	8/15/83	Birdwell	1,280'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: UE-25WT#13

WATER TABLE 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	7/5/83	Birdwell	1,123'	50'
Density-Borehole Compensated	(1,3)	1	7/6/83	Birdwell	1,130'	190'
Fluid Density for Water Location	(2,2)	1	7/6/83	Birdwell	1,020'	951'
Epithermal Neutron	(2,3)	1	7/6/83	Birdwell	1,128'	180'
Gamma Ray	(1,3)	1	7/6/83	Birdwell	1,115'	176'
Gamma Ray	(2,3)	2	7/6/83	Birdwell	1,114'	166'
Spectralog (2")	(2,5)	1	7/6/83	Dresser Atlas	1,130'	0'
Spectralog (5")	(3,1)	1	7/6/83	Dresser Atlas	1,130'	0'
Dielectric	(1,5)	1	7/5/83	Dresser Atlas	1,126'	222'
Induction Electric	(3,3)	1	7/6/83	Birdwell	1,124'	200'
Geophone Survey (VSP)	(3,2)	1	7/6/83	Birdwell	1,125'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: UE-25WT#14

WATER TABLE 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	9/26/83	Birdwell	1,296'	70'
Density-Borehole Compensated	(1,3)	1	9/26/83	Birdwell	1,303'	100'
Fluid Density for Water Location	(1,5)	1	9/26/83	Birdwell	960'	880'
Fluid Density for Water Location	(2,1)	2	9/27/83	Birdwell	1,160'	1,100'
Spectralog (2")	(3,3)	1	9/26/83	Birdwell	1,303'	118'
Spectralog (5")	(3,4)	1	9/26/83	Birdwell	1,303'	118'
Epithermal Neutron	(3,1)	1	9/27/83	Birdwell	1,302'	125'
Gamma Ray	(1,3)	1	9/26/83	Birdwell	1,288'	85'
Gamma Ray	(3,1)	2	9/27/83	Birdwell	1,289'	125'
Dielectric	(2,4)	1	9/27/83	Dresser Atlas	1,300'	120'
Induction Electric	(2,2)	1	9/27/83	Birdwell	1,297'	110'
Geophone Survey (VSP)	(4,1)	1	9/27/83	Birdwell	1,290'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: UE-25WT#15

WATER TABLE 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>
Caliper	(1,1)	1	11/20/83	Birdwell	1,341'	80'
Density-Borehole Compensated	(1,3)	1	11/20/83	Birdwell	1,348'	110'
Fluid Density for Water Locator	(4,3)	1	11/21/83	Birdwell	1,180'	1,100'
Water Locator	(1,5)	1	11/19/83	Water Well Surveys	1,350'	0'
Epithermal Neutron	(2,5)	1	11/20/83	Birdwell	1,348'	110'
Gamma Ray	(3,2)	1	11/20/83	Birdwell	1,347'	100'
Gamma Ray	(1,3)	2	11/20/83	Birdwell	1,332'	110'
Gamma Ray	(2,5)	3	11/20/83	Birdwell	1,334'	110'
Spectralog (2")	(3,4)	1	11/20/83	Dresser Atlas	1,348'	0'
Spectralog (5")	(3,5)	1	11/20/83	Dresser Atlas	1,348'	0'
Dielectric	(2,3)	1	11/20/83	Dresser Atlas	1,344'	127'
Induction	(2,1)	1	11/20/83	Birdwell	1,345'	120'
Geophone Survey (VSP)	(4,2)	1	11/21/83	Birdwell	1,335'	97'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: UE-25WT#16

WATER TABLE 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	11/8/83	Birdwell	1,686'	50'
Density-Borehole Compensated	(1,3)	1	11/8/83	Birdwell	1,689'	90'
Fluid Density for Water Location	(2,4)	1	11/8/83	Birdwell	1,580'	1,471'
Epithermal Neutron	(2,5)	1	11/8/83	Birdwell	1,689'	108'
Gamma Ray	(2,5)	1	11/8/83	Birdwell	1,676'	108'
Gamma Ray	(1,3)	2	11/8/83	Birdwell	1,673'	90'
Spectralog (5")	(3,2)	1	11/7/83	Birdwell	1,702'	0'
Dielectric	(2,2)	1	11/7/83	Dresser Atlas	1,698'	100'
Induction Electric	(1,5)	1	11/8/83	Birdwell	1,687'	59'
Geophone Survey (VSP)	(3,4)	1	11/8/83	Birdwell	1,680'	80'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 1

HOLE: UE-25WT#17

WATER TABLE 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>
Caliper	(1,1)	1	10/27/83	Birdwell	1,384'	1'
Density-Borehole Compensated	(1,3)	1	10/27/83	Birdwell	1,390'	88'
Fluid Density for Water Location	(1,5)	1	10/27/83	Birdwell	1,310'	1,250'
Water Locator	(2,1)	1	10/26/83	Water Well Surveys	1,422'	20'
Epithermal Neutron	(3,1)	1	10/28/83	Birdwell	1,387'	30'
Gamma Ray	(1,3)	1	10/27/83	Birdwell	1,374'	88'
Gamma Ray	(3,1)	2	10/28/83	Birdwell	1,372'	30'
Spectralog (2")	(3,3)	1	10/27/83	Dresser Atlas	1,392'	0'
Spectralog (5")	(3,4)	1	10/27/83	Dresser Atlas	1,392'	0'
Dielectric	(2,4)	1	10/27/83	Dresser Atlas	1,382'	55'
Induction Electric	(2,2)	1	10/27/83	Birdwell	1,385'	40'
Geophone Survey (VSP)	(4,1)	1	10/27/83	Birdwell	1,375'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

PAGE 1 of 1

HOLE: UE-25WT#18

WATER TABLE 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	5/21/84	Birdwell	2,012'	30'
Density-Borehole Compensated	(1,5)	1	5/22/84	Birdwell	1,965'	60'
Fluid Density for Water Location	(1,4)	1	5/21/84	Birdwell	1,859'	1,812'
Fluid Density for Water Location	(2,3)	2	5/21/84	Birdwell	1,840'	1,800'
Fluid Density for Water Location	(2,4)	3	5/22/84	Birdwell	1,880'	1,800'
Fluid Density for Water Location	(2,5)	4	5/22/84	Birdwell	1,880'	1,800'
Epithermal Neutron	(3,5)	1	5/21/84	Birdwell	1,965'	60'
Gamma Ray	(3,5)	1	5/21/84	Birdwell	1,950'	60'
Gamma Ray	(1,5)	2	5/22/84	Birdwell	1,950'	60'
Spectralog (2")	(4,2)	1	5/18/84	Dresser Atlas	2,017'	86'
Spectralog (5")	(4,5)	1	5/18/84	Dresser Atlas	2,017'	86'
Dielectric	(3,1)	1	5/18/84	Dresser Atlas	2,014'	86'
Induction	(3,3)	1	5/21/84	Birdwell	1,965'	70'
Geophone Survey (VSP)	(4,3)	1	5/22/84	Birdwell	1,950'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: USW WT-1

WATER TABLE 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	5/17/83	Birdwell	1,664'	10'
Density Borehole Compensated	(1,3)	1	5/17/83	Birdwell	1,660'	20'
Fluid Density for Water Location	(1,5)	1	5/17/83	Birdwell	1,570'	1,500'
Gamma Ray	(2,1)	1	5/17/83	Birdwell	1,650'	20'
Gamma Ray	(1,3)	2	5/17/83	Birdwell	1,646'	20'
Spectralog Gamma Ray (5")	(3,1)	1	5/16/83	Dresser Atlas	1,668'	0'
Spectralog Gamma Ray (2")	(2,5)	1	5/16/83	Dresser Atlas	1,668'	0'
Epithermal Neutron Porosity	(2,1)	1	5/17/83	Birdwell	1,663'	20'
Induction Electric	(2,3)	1	5/17/83	Birdwell	1,577'	20'
Induction Electric	(2,3)	2	5/17/83	Birdwell	1,672'	1,490'
Dielectric Log (5")	(3,3)	1	5/16/83	Dresser Atlas	1,664'	30'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: USW WT-2

WATER TABLE 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	7/14/83	Birdwell	2,040'	5'
Density Borehole Compensated	(1,4)	1	7/14/83	Birdwell	2,047'	34'
Fluid Density for Water Location	(2,1)	1	7/14/83	Birdwell	1,900'	1,822'
Gamma Ray	(1,4)	1	7/14/83	Birdwell	2,032'	36'
Gamma Ray	(3,4)	2	7/14/83	Birdwell	2,031'	50'
Spectralog Gamma Ray (5")	(3,2)	1	7/13/83	Dresser Atlas	2,048'	0'
Epithermal Neutron Porosity	(3,4)	1	7/14/83	Birdwell	2,045'	50'
Induction Electric	(2,5)	1	7/14/83	Birdwell	2,040'	36'
Dielectric Log (5")	(2,2)	1	7/13/83	Dresser Atlas	2,045'	60'
Geophone Survey (SVC)	(4,2)	1	7/14/83	Birdwell	2,025'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: USW WT-7

WATER TABLE 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>
Caliper	(1,1)	1	7/24/83	Birdwell	1,587'	0'
Density Borehole Compensated	(1,3)	1	7/25/83	Birdwell	1,590'	35'
Fluid Density for Water Location	(1,5)	1	7/24/83	Birdwell	1,400'	1,330'
Gamma Ray	(1,3)	1	7/25/83	Birdwell	1,576'	35'
Gamma Ray	(2,5)	2	7/25/83	Birdwell	1,573'	28'
Gamma Ray	(2,5)	3	7/25/83	Birdwell	937'	27'
Epithermal Neutron Porosity	(2,5)	1	7/25/83	Birdwell	1,586'	41'
Epithermal Neutron Porosity	(2,5)	2	7/25/83	Birdwell	947'	39'
Spectralog (5")	(3,4)	1	7/24/83	Dresser Atlas	1,599'	0'
Spectralog (2")	(3,3)	1	7/24/83	Dresser	1,599'	0'
Induction Electric	(2,1)	1	7/24/83	Birdwell	1,586'	44'
Dielectric Log (5")	(2,3)	1	7/24/83	Dresser Atlas	1,594'	52'
Geophone Survey (SVC)	(4/1)	1	7/25/83	Birdwell	1,575'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: USW WT-10

WATER TABLE 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>
Caliper	(1,1)	1	7/31/83	Birdwell	1,382'	50'
Density Borehole Compensated	(1,3)	1	7/31/83	Birdwell	1,385'	90'
Density Borehole Compensated	(1,3)	2	7/31/83	Birdwell	1,370'	90'
Fluid Density for Water Location	(1,5)	1	7/31/83	Birdwell	1,170'	950'
Gamma Ray	(3,1)	1	7/31/83	Birdwell	1,371'	30'
Spectralog Gamma Ray (5")	(2,5)	1	7/30/83	Dresser Atlas	1,392'	0'
Epithermal Neutron Porosity	(3,1)	1	7/31/83	Birdwell	1,386'	30'
Induction Electric	(2,3)	1	7/31/83	Birdwell	1,380'	90'
Dielectric Log (5")	(2,1)	1	7/30/83	Dresser Atlas	1,394'	113'
Geophone Survey (SVC)	(3,3)	1	7/31/83	Birdwell	1,375'	100'

GEOPHYSICAL LOGS RUN IN DRILL HOLE

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HOLE: USW WT-11

WATER TABLE 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	8/8/83	Birdwell	1,437'	20'
Density-Borehole Compensated	(1,3)	1	8/8/83	Birdwell	1,444'	30'
Fluid Density for Water Location	(1,5)	1	8/8/83	Birdwell	1,210'	1,110'
Epithermal Neutron	(3,3)	1	8/8/83	Birdwell	1,444'	30'
Gamma Ray	(3,3)	1	8/8/83	Birdwell	1,430'	30'
Gamma Ray	(1,3)	2	8/8/83	Birdwell	1,429'	30'
Spectralog (2")	(2,5)	1	8/7/83	Dresser Atlas	1,444'	0'
Spectralog (5")	(3,1)	1	8/7/83	Dresser Atlas	1,444'	0'
Induction Electric	(2,3)	1	8/8/83	Birdwell	1,439'	30'
Dielectric	(2,1)	1	8/7/83	Dresser Atlas	1,443'	38'
Geophone Survey (SVC)	(3,5)	1	8/8/83	Birdwell	1,435'	50'

VIDEO TAPES RUN IN DRILL HOLES

<u>Hole</u>	<u>Run #</u>	<u>From</u>	<u>To</u>
UE-25 WT #3	1	40'	843'
	2	843'	W.L.
	3	Foam Run	
UE-25 WT #4	1	0'	1450'
	2	Below fluid, fluid too murky	
UE-25 WT #6	1	0'	640'
	2	640'	873'
UE-25 WT #12	1	0'	503'
	2	503'	996'
UE-25 WT #14	1	0'	695'
	2	695'	1131'
UE-25 WT #15	1	0'	905'
	2	905'	1155'
UE-25 WT #16	1	0'	866'
	2	866'	1543'
UE-25 WT #17	1	1292'	971'
	2	971'	1292'
UE-25 WT #18	1	0'	850'
	2	850'	1650'
	3	0'	1600'
USW WT-1	1	0'	671'
	2	671'	1331.5'
	3	1331.5'	1689'
USW WT-2	1	0'	575'
	2	575'	1004'
	3	1004'	1798'
	4	1798'	1873'
USW WT-7	1	0'	651'
	2	651'	1258'
	3	1258'	1380'
USW WT-10	1	0'	824'
	2	824'	616'
	3	616'	100'
USW WT-11	1	0'	544'
	2	544'	893'
	3	893'	1199'