

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 0.0 To 60 (T.D. 2500) Page 1 of 42

Driller Gene Smith/Neil Hale, Earl Start Date/Time 12-10-98 11:00 End Date/Time 1-20-99 1408
(0-32') (32'+) Mangum, Mike Boyd

Drilling Equip./Method 0-32' 6.0' x 1.8' Auger Sampling Equip./Method Cyclone/splitter
32-2500 Schramm T685 DHH 32-105' Air Hammer RC
105-2500' Tricone RC

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
0	BCS00000 951	Fine sand to silt. Light yellowish grey (5Y 8/1); some places are rain crusted on surface; poorly consolidated.		Qsd	
5	BCS00000 952				
	BCS00000 953				
10	BCS00000 954	Some gravel mixed with fine silt/spring deposit material. Gravel is angular.			
15	BCS00000 955				
20	BCS00000 956				
25	BCS00000 957	Drill encountered hard surface - unable to auger drill. Moved on Schramm T685 DHH - started drilling 03:00 on 12-11-98			Logging by Jamie Walker MOVED ON SCHRAMM T685 DHH STARTED DRILLING 0300HRS ON 12-11-98
30	BCS00000 958				
35	BCS00000 959				
40	BCS00000 960	Spring deposits, clay-rich, yellowish grey (5Y 8/1). Unit coarsens with depth and grades into alluvial gravels by 65'. Unit contains 2 to 10 mm pebbles in a matrix of silty clay			
45	BCS00000 961				
50	BCS00000 962				
55	BCS00000 963	--- Static Water Level - 56.62'			

Prepared By Michael Cline Date 12-10-98 Checked By BENT ARQUIST Date 1-4-99
Jamie Walker 12-11-98

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 60 To 120 Page 2 of A2

Driller Neil Hale Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH / REVERSE CIRCULATION Sampling Equip./Method Wet/Buckets/Olefin bags/chiptrays

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes		
65	BCS 00000 964	<p>Hit water; water in return cuttings at ~64'</p> <p>Alluvial gravels; brownish grey (54R 4/1), poorly sorted cobbly gravels with a coarse sand matrix. Mostly reddish-grey volcanic clasts. Clay coating (similar to spring deposits) to ~80'.</p>		Q _{sd}	<p>Stopped drilling at 63.91' due to water. Static water level at 56.25' 12-11-98 05:20</p>		
	BCS 00000 965						
70	BCS 00000 966						
75	BCS 00000 967						
80	BCS 00000 968						
85	BCS 00000 969						
90	BCS 00000 970						
95	BCS 00000 971						
100	BCS 00000 972						
105	BCS 00000 973						
110	BCS 00000 974			<p>--- hard ground - slow drilling</p> <p>Obvious caliche</p>			
115	BCS 00000 975						

Prepared By JAMIE WALKER Date 12-11-98 Checked By ARTHUR J. MENDENHALL 12/11/98

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 120 To 180 Page 3 of A2

Driller EARL MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAM T685 DHA/AEVEASE Sampling Equip./Method CYCLONE/SAMPLE SPLITTER CIRCULATION

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
125	BCS 00000 976	Sand and gravel, as from 64' --- Lost return, tripped out; cleaned bit/exchange sand and gravel as above.		Qg	resumed drilling @ 23:40 on 12-11-98
135	BCS 00000 977				
135	BCS 00000 978				
140	BCS 00000 979	becomes sandy;			
140	BCS 00000 980	COARSE GRAVEL AND SAND			plugged bit (air) on pipe #8 add 140' DRILLED 12-12-98 DAYSHIFT LOGGED BY BENT ARQUIST
145	BCS 00000 981				
150	BCS 00000 982				
165	BCS 00000 983	GRAVEL - ABOUT 90% WELDED CRYSTAL TUFF AND 10% DARK GRAY DOLOMITE FRAGMENTS			
160	BCS 00000 984	BEDROCK AT 161' WELDED CRYSTAL TUFF, LIGHT BROWN (5YR 6/4) 3-5% QUARTZ PHENOCRYSTS 1mm OR LESS, BIOTITE < 170, ABOUT 1mm FELDSPAR PHENOCRYSTS 5-1070, 1mm LOCAL MAFIC PHENOCRYSTS < 1mm, < 170 DENSELY WELDED		Qs Twt	
165	BCS 00000 985				
170	BCS 00000 986				
175	BCS 00000 987				

Prepared By JAMIE WALKER Date 12-11-98 (NIGHT) Checked By BENT ARQUIST Date 1-4-99
BENT ARQUIST 12-12-98 (DAY) ARTHUR J. MENDENHALL 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-107 Drill Depth From 180 To 240 Page 4 of 42

Driller EARL MANGUM / NIEL HALE Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 / REVERSE CIRCULATION Sampling Equip./Method WET/BUCKETS/OLEFIN BAGS/CHIPTRAYS

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
185	BCS 00000 988	WELDED CRYSTAL TUFF AS ABOVE BUT PALE YELLOWISH BROWN (10 YR 6/2)	W W	TWT	
190	BCS 00000 989		W W		
195	BCS 00000 990		W W		
200	BCS 00000 991		W W		
205	BCS 00000 992		W W		
210	BCS 00000 993	205 - 220 WELDED CRYSTAL TUFF AS ABOVE BUT LIGHT BROWN (5 YR 6/4)	W W		
215	BCS 00000 994		W W		
220	BCS 00000 995		W W		BROKEN GROUND AT 217' WITH WATER PUMPED > 100 GAL/MIN FROM 1115 TO 1135 HRS.
225	BCS 00000 996		W W		Air pumped well communicate with surface.
230	BCS 00000 997		W W		
235	BCS 00000 998		W W		
240	BCS 00000 999	harder, less fractured	W W		Water sample taken by Don Stelling from sample splitter-240'

Prepared By BENT ANQUIST (DAY) Date 12-12-98 Checked By BENT ANQUIST Date 1-4-99
JAMIE WALKER (NIGHT)

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 240 To 300 Page 5 of 42

Driller NIEL HALE Start Date/Time 12-12-98 1800 End Date/Time 12-13-98 0600

Drilling Equip./Method SCHRAMM T685DMM / REVERSE CIRCULATION Sampling Equip./Method CYCLONE, SAMPLE SPLITTER

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
240	BGS 0000 1000	Welded Tuff, as above, from 161' on	w w	Twt	
245	BGS 0000 1001				
250	BGS 0000 1002				
255	BGS 0000 1003				
260	BGS 0000 1004				
265	BGS 0000 1005				
270	BGS 0000 1006				
275	BGS 0000 1007				
280	BGS 0000 1008				
285	BGS 0000 1009				
290	BGS 0000 1010				
295	BGS 0000 1011				
300					

..... Unit changes color to pale purple-grey (SRP 6/2 to SR 6/2)

Prepared By JAMIE WALKER Date 12-12-98 (NIGHT) Checked By ARTHUR J. MENNENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10A Drill Depth From 300 To 360 Page 6 of 42

Driller NEIL HALE Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE, SAMPLE SPLITTER

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes	
300	BCS 0000 1012	Welded Tuff, as above, from 161' on. Tuff, ash fall, green, clay-altered. Very soft, strongly clay altered aphyric aphanitic ash unit. Color varies from greyish yellow green (5G4 7/2) to dusky yellow green (5G4 5/2). Unit consists mostly of wet soft green clay but locally has fine chips of reddish-brown tuff (as above) generally less than 5% (possibly contamination). Unit grades into more competent rock beyond ~360', where the color become greyish yellowgreen (5G4 7/2) to pale greenish yellow (104 2/2)	W, W W W W W W W W W W W W W W	Twt		
305	BCS 0000 1013					
310	BCS 0000 1014			+ + + + +	Taf	
315	BCS 0000 1015			+ + + + + + + + + + + + + + + + + +		
320	BCS 0000 1016			+ + + + + + + + +		
325	BCS 0000 1017			+ + + + + +		
330	BCS 0000 1018			+ + + + + +		
335	BCS 0000 1019			+ + + + + +		
340	BCS 0000 1020			+ + + + + +		
345	BCS 0000 1021			+ + + W +		
350	BCS 0000 1022			+ + + + + +		
355	BCS 0000 1023			+ + + W + W		

Prepared By SAMIE WALKER

Date 12-12-98

Checked By ARTHUR J. MENDENHALL

Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID AK-EWDP-1DX Drill Depth From 360 To 420 Page 7 of 42
 Driller NIEL HALE Start Date/Time 12-12-98/1800 End Date/Time 12-13-98/0600
 Drilling Equip./Method SCHRAMM 685 DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE / SPLITTER

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
360		Green clay-altered ash, as above, from 311' on	+ +		
BCS			+ +		
0000			W W		
1024		gradational contact	+ +		
265			+ +		
BCS			+ +		
0000		Tuff, ash fall, as described above, less altered section. Soft, yellowish green, aphyric, aphanitic tuffaceous volcanic (weakly welded). Unit becomes harder with depth, suggesting increasing welding.	W W		
1025			+ +		
270			+ +		
BCS			+ +		
0000			W W		
1026			+ +		
375			+ +		
BCS			+ +		
0000			W W		
1027			+ +		
380			+ +		
BCS			+ +		
0000			W W		
1028			+ +		
385			+ +		
BCS			+ +		
0000			W W		
1029			+ +		
390			+ +		
BCS			+ +		
0000			W W		
1030			+ +		
395			+ +		
BCS			+ +		
0000			W W		
1031			+ +		
400			+ +		
BCS		TUFF, ASHFALL, PALE YELLOWISH BROWN, MOSTLY PUMICE, DEVITRIFIED	+ +		
0000			+ +		
1032			+ +		
405			+ +		
BCS			+ +		
0000			W W		
1033		TUFF, ASHFLOW, DARK YELLOWISH ORANGE 10YR 6/6, MODERATELY WELDED, PHENOCRYSTS - 10% QUARTZ, 5% SANDINE, 1% BIOTITE	+ +		
410			+ +		
BCS			+ +		
0000			W W		
1034		SILTSTONE, MED. DARK GRAY (50% LIGHT OLIVE GRAY 10-4R) MINOR (10%) TUFF, ASHFLOW, GRAYISH BROWN 5YR 3/2 FRAGMENTS THROUGHOUT (LACUSTRINE/PLAYA)	- -		
415			- -		
BCS			- -		
0000			- -		
1035			- -		
420			- -		

Prepared By JAMIE WALKER / ARTHUR Date 12-12-98 (NIGHT) Checked By B. L. Wick Date 5/24/00
J. MENDENHALL

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID AK-EWDP-1DX Drill Depth From 420 To 480 Page 8 of 42

Driller NIEL HALE Start Date/Time 12/12/98/1000 End Date/Time 12-13-98/0600

Drilling Equip./Method SCHRAMM T685 DHH / REVEAS Sampling Equip./Method CYCLONE / SPLITTER
CIRCULATION

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
420 BCS 0000 1036		SILTSTONE, AS ABOVE, from 410' on			
425 BCS 0000 1037					
430 BCS 0000 1038					
435 BCS 0000 1039					
440 BCS 0000 1040					
445 BCS 0000 1041					
450 BCS 0000 1042					
455 BCS 0000 1043					
460 BCS 0000 1044					
465 BCS 0000 1045					
470 BCS 0000 1046		1% LIGHT GRAY SILTSTONE IN ROCK			
475 BCS 0000 1047					
480					

Prepared By JAMIE WALKER / ARTHUR Date 12-12-98 (NIGHT) Checked By B. W. [Signature] Date 5/24/00
J. MENDENHALL

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 480 To 540 Page 9 of 42

Driller NIEL HALE Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAMM T685 DHH/REVERSE CIRCULATION Sampling Equip./Method CYCLONE/SAMPLE SPLITTER

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
480 BCS 0000 1048		SILTSTONE, AS ABOVE, from 410' on.			
485 BCS 0000 1049					
490 BCS 0000 1050					
495 BCS 0000 1051					
500 BCS 0000 1052					
505 BCS 0000 1053					
510 BCS 0000 1054					
515 BCS 0000 1055					
520 BCS 0000 1056					
525 BCS 0000 1057					
530 BCS 0000 1058					
535 BCS 0000 1059					
540					

Prepared By ARTHUR J. MENDENHALL Date 12-13-98 Checked By B.W.J. Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-107 Drill Depth From 540 To 600 Page 10 of 42

Driller EARL HANGMAN Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH/ Sampling Equip./Method CYCLONE/SAMPLE SPLITTED
REVERSE CIRCULATION

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
540	BCS 0000 1060	SILTSTONE AS ABOVE YELLOWISH GRAY (5Y 7/2) From 410' on.			VERY SLOW DRILLING BINDING DRILL RODS
545	BCS 0000 1061	545' TO 555' OLIVE GRAY (5Y 3/2)			
550	BCS 0000 1062	555' TO 560' YELLOWISH GRAY (5Y 7/2)			
555	BCS 0000 1063	SILTSTONE WITH SAND, MIXED LITHOLOGY WITH MINOR WELDED TUFF MIX OF COLORS			
560	BCS 0000 1064	CLAY VERY MINOR SAND FRAGMENTS PALE OLIVE (10Y 6/2)			
565	BCS 0000 1065	SILTSTONE FRAGMENTS WITH MUCH CLAY MOST CLAY WASHED OUT WITH DRILL WATER SILTSTONE GRAYISH OLIVE (10Y 4/2)			
570	BCS 0000 1066				
575	BCS 0000 1067				
580	BCS 0000 1068				
585	BCS 0000 1069				
590	BCS 0000 1070				
595	BCS 0000 1071				
600					

Prepared By BENT AARQUIST

Date 12-13-96

Checked By ARTHUR J. MENDENHALL

Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-ENDE-10X Drill Depth From 600' To 660' Page 11 of 42

Driller EARL HANGLUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH/ Sampling Equip./Method CYCLONE/SAMPLE SPLITTER
REVERSE CIRCULATION

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
605	BCS 0000 1072	SILTSTONE, as above, clay-rich, very soft, light greenish grey (5G 8/1) to light blueish grey (5B 7/1). Local sections with darker tuffaceous? beds.			
610	BCS 0000 1073				
615	BCS 0000 1074				
620	BCS 0000 1075				
625	BCS 0000 1076				
630	BCS 0000 1077				
635	BCS 0000 1078				
640	BCS 0000 1079				
645	BCS 0000 1080				
650	BCS 0000 1081				
655	BCS 0000 1082				- 648' END OF DAYSHIFT 12-13-98 slow drilling - bit is "mudding up", very soft clay-rich rock.
660	BCS 0000 1083				

Prepared By JAMIE WALKER Date 12-13-98 (NIGHT) Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NG-EWDP-IDX Drill Depth From 660' To 720' Page 12 of 42

Driller Neil Hice Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DMH/REVEALS CIRCULATION Sampling Equip./Method WET/CYCLONE/SPLITTER/BUCKETS/OLEFIN BAGS

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
660	BCS 0000 1084	SILTSTONE, as above, becoming slightly harder, more competent, generally light blueish grey (SB F/i)			
665	BCS 0000 1085				
670	BCS 0000 1086				
675	BCS 0000 1087				
680	BCS 0000 1088				
685	BCS 0000 1089				
690	BCS 0000 1090				
695	BCS 0000 1091				
700	BCS 0000 1092				
705	BCS 0000 1093				
710	BCS 0000 1094				
715	BCS 0000 1095				
720					

Drilling speed increasing but still slow.

1% TUFF, AS BELOW
50% TUFF, ASH FALL/REWORKED, WHITE GN, MOSTLY VITRIC PUMICE
10% TUFF, AS ABOVE

Prepared By JAMIE WALKER / ARTHUR J. MENDENHALL Date 12-13-98 (NIGHT) Checked By B. J. Walker Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

NC-EWDP-10X
 Borehole ID _____ Drill Depth From 720 To 780 Page 13 of 42

Driller _____ Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH Sampling Equip./Method CYCLONE - SAMPLE SPLITTER
REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes	
720	BCS 0000 1096	SILTSTONE, AS ABOVE, MEDIUM BLUISH GRAY SB 5/1 VARIES FROM POORLY TO MODERATELY CONSOLIDATED				
725	BCS 0000 1097					
730	BCS 0000 1098					
735	BCS 0000 1099					
740	BCS 0000 1100					
745	BCS 0000 1101					
750	BCS 0000 1102					750'-755' SILTSTONE WITH CLAY, YELLOWISH GRAY SY 7/2
755	BCS 0000 1103					SILTSTONE AS ABOVE 750', BLUISH GRAY SB 5/1
760	BCS 0000 1104					
765	BCS 0000 1105					
770	BCS 0000 1106				DAILING RATE INCREASED	
775	BCS 0000 1107					
780						

Prepared By ARTHUR J. MENDENHALL Date 12/13/98 (NIGHT) Checked By B.W. Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

NC-EWOP-1DX
 Borehole ID _____ Drill Depth From 780 To 840 Page 14 of 42

Driller NIEL HALE Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAUMIT 685 DHH/REVERSE Sampling Equip./Method CYCLONE + SAMPLE SPLITTER
CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
780	BCS 0000 1108	SILTSTONE, LACUSTRINE/PLAYA, MEDIUM BLUISH GRAY 5B 5/1, AS ABOVE, from 410'. WHEN DRY - LIGHT GRAY N7			
785	BCS 0000 1109				
790	BCS 0000 1110				
795	BCS 0000 1111				
800	BCS 0000 1112				
805	BCS 0000 1113				
810	BCS 0000 1114				
815	BCS 0000 1115				
820	BCS 0000 1116				
825	BCS 0000 1117				
830	BCS 0000 1118				
835	BCS 0000 1119				
840					

Prepared By ARTHUR J. MENDENHALL Date 12/13/98 (NIG-DT) Checked By BW Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWPP-10X Drill Depth From 840' To 900 Page 15 of 42

Driller EARL HANUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH/ Sampling Equip./Method CYCLONE/SAMPLE SPLITTER
REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
845'	BCS 0000 1120	SILTSTONE AS ABOVE BECOMES LIGHT GRAY N7 WHEN DRY, from 410' on.	[Hand-drawn lithologic column with horizontal dashes]		
850'	BCS 0000 1121		[Hand-drawn lithologic column with horizontal dashes]		
855'	BCS 0000 1122		[Hand-drawn lithologic column with horizontal dashes]		
860'	BCS 0000 1123		[Hand-drawn lithologic column with horizontal dashes]		
865'	BCS 0000 1124	CLAY RICH SILTSTONE, COARSE FRAGMENTS ARE LIGHT GRAY N7 TO YELLOWISH GRAY SY 8/1	[Hand-drawn lithologic column with horizontal dashes]		CLAY RICH ZONE - RODS BINDING - ONLY MINOR COARSE RETURN
870'	BCS 0000 1125	SILTSTONE AS ABOVE 860'	[Hand-drawn lithologic column with horizontal dashes]		
875'	BCS 0000 1126		[Hand-drawn lithologic column with horizontal dashes]		
880'	BCS 0000 1127		[Hand-drawn lithologic column with horizontal dashes]		
885'	BCS 0000 1128		[Hand-drawn lithologic column with horizontal dashes]		
890'	BCS 0000 1129		[Hand-drawn lithologic column with horizontal dashes]		
895'	BCS 0000 1130		[Hand-drawn lithologic column with horizontal dashes]		
900'	BCS 0000 1131	MINOR FRAGMENTS OF WELDED TUFF WITH SILTSTONE	[Hand-drawn lithologic column with horizontal dashes]		

Prepared By JAMIE WALKER Date 12/14/98 (MGT) Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDF-10X Drill Depth From 900 To 960 Page 16 of 42

Driller EARL MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE / SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
905'	BCS 0000 1132	SILTSTONE, as above, blueish grey (5B5/1)			905'-908' DRILL WATER WAS RUSTY BROWN AT 908' IT BECAME GRAY AGAIN
910'	BCS 0000 1133				
915'	BCS 0000 1134				
920'	BCS 0000 1135				
925'	BCS 0000 1136				
930'	BCS 0000 1137	Soft, clay-rich section			
935'	BCS 0000 1138				
940'	BCS 0000 1139				
945'	BCS 0000 1140				
950'	BCS 0000 1141				
955'	BCS 0000 1142	Soft, clay-rich section 945-960'			
960'	BCS 0000 1143				

end of day shift 12-14-98

Prepared By JAMIE WALKER Date 12/14/98 (MONT) Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10X Drill Depth From 960 To 1020 Page 17 of 42

Driller NIEL HALE Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE / SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
965'	BCS 0000 1144	SILTSTONE, as above, bluish-grey (SB 511)			Start of night shift 12-14-98 - 960' to
970'	BCS 0000 1145				consistent drilling speed.
975'	BCS 0000 1146				
980'	BCS 0000 1147				
985'	BCS 0000 1148				
990'	BCS 0000 1149				
995'	BCS 0000 1150				
1000'	BCS 0000 1151				
1005'	BCS 0000 1152				
1010'	BCS 0000 1153				
1015'	BCS 0000 1154				
1020'	BCS 0000 1155				

Prepared By JAMIE WALKER
ARTHUR J. MENDENHALL

Date 12/14/98 (NIGHT)
12/14/98 (NIGHT)

Checked By R. Walker

Date 5/24/00

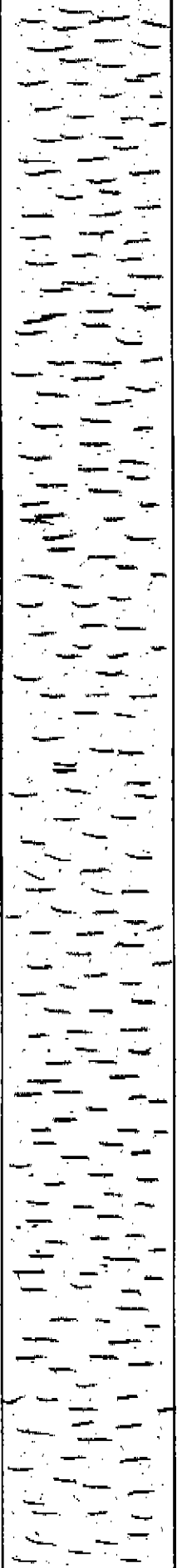
NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10X Drill Depth From 1020 To 1080 Page 18 of 42

Driller MIEL HALE Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH / Sampling Equip./Method CYCLONE / SAMPLE SPLITTER
REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1025'	BCS 0000 1156	SILTSTONE, AS ABOVE, MEDIUM BLUISH GRAY SB 5/1 10% SILTSTONE, LACUSTRINE/PALYA, DUSKY YELLOW GREEN 56Y 5/2			
1030'	BCS 0000 1157				
1035'	BCS 0000 1158				
1040'	BCS 0000 1159				
1045'	BCS 0000 1160	90% SILTSTONE, AS ABOVE, MEDIUM BLUISH GRAY SB 5/1 10% SILTSTONE, LACUSTRINE/PALYA, DUSKY YELLOW GREEN 56Y 5/2			
1050'	BCS 0000 1161				
1055'	BCS 0000 1162				
1060'	BCS 0000 1163				
1065'	BCS 0000 1164				
1070'	BCS 0000 1165				
1075'	BCS 0000 1166				
1080'	BCS 0000 1167				

Prepared By ARTHUR J. MENDEZ Date 12/14/90 (MIGHT) Checked By B.W.M. Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10 Drill Depth From 1080 To 1140 Page 19 of 42

Driller NIEL HALE / EARL MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAAMM T685 DHH / REVERS CIRCULATION Sampling Equip./Method CYCLONE / SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1085	BCS 0000 1168	SILTSTONE, AS ABOVE, MEDIUM BLuish GRAY SB 5/1 10% SILTSTONE, LACUSTRINE/PLAYA, DUSKY YELLOW GREEN 5GY 5/2			
1090	BCS 0000 1169				
1095	BCS 0000 1170	SILTSTONE, AS ABOVE, MEDIUM DARK GRAY N4			
1100	BCS 0000 1171				
1105	BCS 0000 1172	FROM 1100-1165 1 TO 30% SILTSTONE, AS ABOVE, DUSKY YELLOW GREEN 5GY 5/2 TO MODERATE YELLOW GREEN 5GY 7/4.			
1110	BCS 0000 1173				
1115	BCS 0000 1174				
1120	BCS 0000 1175				
1125	BCS 0000 1176				
1130	BCS 0000 1177				
1135	BCS 0000 1178				
1140	BCS 0000 1179				

Prepared By ARTHUR J. MENDENTHAL Date 12/14/90 (NIGHT) / 12/15/90 (NIGHT) Checked By B. W. [Signature] Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10X Drill Depth From 1140 To 1200 Page 20 of 42

Driller EARL MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T695 DHH Sampling Equip./Method CYCLONE / SPLITTER
REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1145	BCS 0000 1180	SILTSTONE, AS ABOVE, MEDIUM GRAY NS TO MEDIUM BLuish GRAY SB S/1. clay rich area			
1150	BCS 0000 1181				
1155	BCS 0000 1182				
1160	BCS 0000 1183				
1165	BCS 0000 1184				
1170	BCS 0000 1185				
1175	BCS 0000 1186				
1180	BCS 0000 1187				
1185	BCS 0000 1188				
1190	BCS 0000 1189				
1195	BCS 0000 1190	TUFF, ASH FLOWS OR ASH FLOW GRAVELS, ASH FALL, OR RE-WORKED ASH FALL, GRAYISH BROWN 5YR 3/2, VERY PALE ORANGE 10YR 8/2, DARK YELLOWISH ORANGE 10YR, PALE REDDISH BROWN 10R 5/4	+ + + + +		1187 TO 1259 VERY LIKELY REWORKED ASH FLOWS AND ASH FALLS.
1200	BCS 0000 1191				

Prepared By ARTHUR J. MENDENHALL Date 12/15/98 (NIGHT) Checked By B. Wilk Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 1200 To 1260 Page 21 of 42

Driller EARL MAINGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAM T695 DHH/REVERSE CIRCULATION Sampling Equip./Method CYCLONE/SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1205	BCS 0000 1192	TUFF, AS ABOVE, CONTINUED; PUMICE, WHITE; PENCOCYSTS, 1% SANDINE, 1% BIOTITE. ↑ VERY PALE ORANGE 10YA 8/2 TO PALE YELLOWISH ORANGE 10YA 8/6 ↓	+ +		FROM 1200' TO 1260' DRILL WATER VARIED FROM YELLOW TO BROWN TO RUSTY RED
1210	BCS 0000 1193				
1215	BCS 0000 1194				
1220	BCS 0000 1195				
1225	BCS 0000 1196				
1230	BCS 0000 1197				
1235	BCS 0000 1198				
1240	BCS 0000 1199				
1245	BCS 0000 1200				
1250	BCS 0000 1951				
1255	BCS 0000 1952		+ +		@ 1253' DRILL RATE SLOWED
1260	BCS 0000 1953		+ +		DRILL WATER DARK GRAY

Prepared By ARTHUR J. MENDENHALL Date 12/15/98 (NIGHT) Checked By BWJ Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ~~IDNC-EWDP-107~~ Drill Depth From 1260 To 1320 Page 22 of 42

Driller EAL MANGUM / MIKE BOYD Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAUM T 605 DHH / RELEASE CIRCULATION Sampling Equip./Method CYCLONE / SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1265	BCS 0000 1954	SILTSTONE, LACUSTRINE/PLAYA, MEDIUM BLuish GRAY 5B 5/1 TO GREENISH BLACK 5G 2/1.			SILTSTONE TENDS TO BE HARDER THAN SILTSTONES ABOVE VOLCANIC INTERVAL 1197 TO 1259 FT.
1270	BCS 0000 1955				
1275	BCS 0000 1956				
1280	BCS 0000 2050				
1285	BCS 0000 1957	SILTSTONE, LACUSTRINE/PLAYA, MEDIUM BLuish GRAY 5B 5/1, OLIVE GRAY 5Y 3/2, DARK GREENISH GRAY 5G 4/1 LAMINAE EVIDENT IN SOME CHIPS			SOFTER SILTSTONE ASH FLOW FRAGMENTS
1290	BCS 0000 1958				
1295	BCS 0000 1959				
1300	BCS 0000 1960				
1305	BCS 0000 1961				
1310	BCS 0001 1962				
1315	BCS 0000 1963				
1320	BCS 0000 1964	Tuff, ash flows or reworked, mottled light bluish grey (5B 7/1) to medium bluish grey. 20% lighter colored pumice and local fine (<1mm) sanidine phenocrysts to 2%.	+ + + + + + + + +		

Prepared By ARTHUR J. MENDENHALL Date 12/15/98 (MINT) Checked By R.W. Date 5/24/05

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole IDNC-EWDP-1DX Drill Depth From 1320 To 1380 Page 23 of 42

Driller BOYD/MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAUM T (RSDH)/REVERS CIRCULATION Sampling Equip./Method CYCLONE/SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1325	BCS 0000 1965	Tuff, as above, bluish grey. 5BG 8/6 as from 1314'	+ +		
			+ +		
			+ +		
1330	BCS 0000 1966		+ +		
			+ +		
			+ +		
1335	BCS 0000 1967		+ +		
			+ +		
1340	BCS 0000 1968		+ +		
			+ +		
1345	BCS 0000 1969	+ +			
		+ +			
1350	BCS 0000 1970	+ +			
		+ +			
1355	BCS 0000 1971	+ +			
		+ +			
1360	BCS 0000 1979	Trace PY.	+ +		
		+ +			
1365	BCS 0000 1980	Vitrophyric Tuff, brownish grey (SUR 411), homogeneous, <1% fine brassy pyrite as drusy linings on fractures. LOCALLY 1-2% PY AS A CEMENT IN MICRO BRECCIAS, LOCAL v.f.g. GRAINY TEXTURE - MAY BE A SILICEOUS SILTSTONE	v + +		
			+ +		
1370	BCS 0000 1981		v + +		
			+ +		
			v + +		
1375	BCS 0000 1982	+ v +			
		v + v			
1380	BCS 0000 1983	+ v +			
		v + v			

Prepared By JAMIE WALKER

Date 12-15-98 (NIGHT)

ARTHUR J.

Checked By MENDEHALL

Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 1380 To 1440 Page 24 of 42

Driller BOYD/MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAMM T685 DHH REVERSE CIRC. Sampling Equip./Method CYCLONE/SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1380	BCS 0000 1984	Vitrophyric Tuff, as above.	V + V + V + + V +		
1385	BCS 0000 1985		+ V + + V + + V +		
1390	BCS 0000 1986		Tuff, reworked ash fall, very light grey (NB) to white N9.	+ V + + + + + + +	
1395	BCS 0000 1987	INTERBEDDED FINE SANDSTONE VERY LIGHT GRAY (NB) TO MED. LIGHT GRAY (NG), WITH GREENISH GRAY (SG 7/1) SILTSTONE TO CLAY. SANDSTONE GRAINS ARE ANGULAR COMPOSED OF FELDSPAR, QUARTZ & MAFICS, SIMILAR COMPOSITION AS OVERLYING TUFFS.	- -		
1400	BCS 0000 1988				
1405	BCS 0000 1989				
1410	BCS 0000 1990				
1415	BCS 0000 1991				
1420	BCS 0000 1992				
1425	BCS 0000 1993				
1430	BCS 0000 1994				
1435	BCS 0000 1995				
1440					

Prepared By Juanita Wecker/Lent August Date 12-16-98 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10X Drill Depth From 1440 To 1500 Page 25 of 42

Driller BOUD / MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE / SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1445	BCS 0000 1996	<p>SANDSTONE, SILTSTONE & CLAY AS ABOVE, from 1395</p> <p>Clay is usually Dark greenish gray (SGY)</p> <p>siltstone is usually Dark Grey (N3)</p> <p>Sandstone is usually Medium light Grey (N6)</p>			
1450	BCS 0000 1997				
1455	BCS 0000 1998				
1460	BCS 0000 1999				
1465	BCS 0000 2000				
1470	BCS 0000 2001				
1475	BCS 0000 2002				
1480	BCS 0000 2003				
1485	BCS 0000 2004				
1490	BCS 0000 2005				
1495	BCS 0000 2006				
1500	BCS 0000 2007				

Prepared By BENT HAQUIST

Date 12-16-98

Checked By ARTHUR J. MENDENHALL

Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 1500' To 1560' Page 26 of 42

Driller BOYD/MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH/ Sampling Equip./Method CYCLONE/SAMPLE SPLITTER
REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1505	BCS 0000 2008	SANDSTONE, SILTSTONE & CLAY, from 1395' Dark Greenish Gray (56.4%)	[Hand-drawn lithologic column with alternating horizontal lines and dots representing different rock layers]		RETURN WATER 33.2°C
1570	BCS 0000 2009	1508' - 1510' CLAY RICH ZONE			
1515	BCS 0000 2010				
1520	BCS 0000 2011				
1525	BCS 0000 2012	1523' - 1528' CLAY RICH ZONE			
1530	BCS 0000 2013				
1535	BCS 0000 2014				
1540	BCS 0000 2015				
1545	BCS 0000 2016				RETURN WATER 28.0°C
1550	BCS 0000 2017				
1555	BCS 0000 2018				
1560	BCS 0000 2019				

Prepared By BENT AAGUIST Date 12-16-98 Checked By ARTHUR J. MENDENTHAL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-104 Drill Depth From 1560 To 1620 Page 27 of 42

Driller BOYD/MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685DHH/ Sampling Equip./Method CYCLONE/SAMPLE SPLITTER
REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1565	BCS 0000 2020	SANDSTONE, SILTSTONE & CLAY AS ABOVE, from 1395'			RETURN WATER 39.5°C
1570	BCS 0000 2021				
1575	BCS 0000 2022				
1580	BCS 0000 2023				
1585	BCS 0000 2024				
1590	BCS 0000 2025				
1595	BCS 0000 2026				
1600	BCS 0000 2027				
1605	BCS 0000 2028				
1610	BCS 0000 2029				
1615	BCS 0000 2030	Medium Grey (N5) 1595'-1600' MOSTLY CLAY			
1620	BCS 0000 2031				

Prepared By BENT AARVIST Date 12-16-98 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10X Drill Depth From 1620' To 1680' Page 28 of 42

Driller MIKE BOYD/EARL MANEUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAMM T685 DHH/NEWEASE CIRCULATION Sampling Equip./Method CYCLONE/SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes				
1625	BCS 0000 2032	SANDSTONE, SILTSTONE & CLAY AS ABOVE, from 1395', LOCAL WHITE TUFF FRAGMENTS 1620'-1630'							
1630	BCS 0000 2033								
1635	BCS 0000 2034								
1640	BCS 0000 2035								
1645	BCS 0000 2036								
1650	BCS 0000 2037								
1655	BCS 0000 2038								
1660	BCS 0000 2039					SANDSTONE, VOLCANIC SOURCE, PALE YELLOWISH BROWN 10YA G/2 (1665 TO 1710), 1-10% SILTSTONE, LACUSTAINING/PLAYA, MEDIUM DARK GRAY N4			
1665	BCS 0000 2040								
1670	BCS 0000 2041								
1675	BCS 0000 2042								
1680	BCS 0000 2043								

Prepared By BENT ARQUIST Date 12-16-98 Checked By [Signature] Date 5/24/00
ARTHUR J. MENDENHALL 12-16-98

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10X Drill Depth From 1680' To 1740' Page 29 of 42

Driller EARL MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHAUM T605 DHH, REVERSE CIRCULATION Sampling Equip./Method CYCLONE/SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1685	BCS 0000 2044	SANDSTONE, YELLOWISH BROWN 10YR 6/2, 1-10% SILTSTONE MEDIUM DARK GRAY N4 AS ABOVE from 1655'	[Dotted pattern]		
	BCS 0000 2045				
1690	BCS 0000 2046				
1695	BCS 0000 2047				
1700	BCS 0000 2051				
1705	BCS 0000 2052	1710-1790 SANDSTONE, VOLCANIC SOURCE, MEDIUM GRAY N5 TO DARK GRAY N3, POORLY SORTED, 10-4% SILTSTONE, LACUSTRINE/PLAYA, MEDIUM DARK GRAY N4.	[Dotted pattern]		
1710	BCS 0000 2053				
1715	BCS 0000 2054				
1720	BCS 0000 2055				
1725	BCS 0000 2056				
1730	BCS 0000 2057				
1735	BCS 0000 2058				
1740					

Prepared By ARTHUR J. MENDENHALL Date 12-16-98 Checked By [Signature] Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-IDX Drill Depth From 1740' To 1800' Page 30 of 42

Driller EARL MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685/REVERSE CIRCULATION Sampling Equip./Method CYCLONE AND SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1745	BCS 0000 2059	SANDSTONE, MEDIUM GRAY N5 TO DARK GRAY N3, 10-40% SILTSTONE MEDIUM DARK GRAY N4 AS ABOVE, from 1695'			
1750	BCS 0000 2060				
1755	BCS 0000 2061				
1760	BCS 0000 2062				
1765	BCS 0000 2063				
1770	BCS 0000 2064				
1775	BCS 0000 2065				
1780	BCS 0000 2066				
1785	BCS 0000 2067				
1790	BCS 0000 2068				
1795	BCS 0000 2069	SANDSTONE, VOLCANIC SOURCE, MEDIUM GRAY N5, POORLY SORTED BIOTITE, SARDINE, AND QUARTZ.			
1800	BCS 0000 2070	50% SILTSTONE, LACUSTRINE/PALYA, DARK GRAY N3, 50% SANDSTONE, MEDIUM GRAY N5 AS ABOVE			

SOMEWHAT CLAYISH

MODERATELY CLAYISH

Prepared By ARTHUR J. MENDENHALL Date 12-16-98 Checked By B.W. Date 5/24/00

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-10X Drill Depth From 1800 To 1860 Page 31 of 42

Driller M. Boyd Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 - RC Tricone Sampling Equip./Method Wet Splitter/Buckets/Olefin bags

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1800	BCS 0000 2071	Sandstone, as above, from 1655' 1800-1805 50% siltstone, dark grey (N3)			
1805	BCS 0000 2072				
1810	BCS 0000 2073				
1815	BCS 0000 2074				
1820	BCS 0000 2075				
1825	BCS 0000 2076				
1830	BCS 0000 2077				
1835	BCS 0000 2078				
1840	BCS 0000 2079				
1845	BCS 0000 2080				
1850	BCS 0000 2081	siltstone, lesser fine sandstone, lacustrine, dark grey (N3). Obvious interbedded sandstone, as above, less than 10%. Clay beds evident during drilling but poorly represented in chip trays (only as clay balls)			clay beds are washed into fines in return water.
1855	BCS 0000 2082				

Prepared By JAMIE WALKER Date 12-18-98 Checked By Mike Chin Date 1-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 1860 To 1920 Page 32 of 42

Driller M. Boyd Start Date/Time _____ End Date/Time _____

Drilling Equip./Method Schramm T685 - RC Tricone Sampling Equip./Method Wet Splitter / Buckets / Olefin bags

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1860	BCS 0000 2083	Siltstone, as above, from 1822'			
1865	BCS 0000 2084	Sandstone, lacustrine, volcaniclastic, med. to dark grey (N3-N4). Generally fine grained mottled textures. Approx. 40% quartz, 50% feldspar and 10% dark minerals? biotite.			
1870	BCS 0000 2085				
1875	BCS 0000 2086				
1880	BCS 0000 2087	Sandstone, yellowish-grey (S4 F/Z)			Clay beds - mostly washed out in fines.
1885	BCS 0000 2088	Sandstone/Siltstone, interbedded, as described above. Clay evident in upper 5'. Approximately 30% siltstone.			
1890	BCS 0000 2089	Med to dark grey (N3-N4)			
1895	BCS 0000 2090				
1900	BCS 0000 2091				
1905	BCS 0000 2092				
1910	BCS 0000 2093				mainly sandstone >90% .5 - 1mm grains
1915	BCS 0000 2094				

Prepared By JAMIE WALKER Date 12-18-98 Checked By Mike Chen Date 1-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 1920 To 1980 Page 33 of 42

Driller BOYD/MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE / SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1925'	BCS 0000 2095	SANDSTONE, SILTSTONE, INTERBEDDED, AS ABOVE	[Hand-drawn lithologic column with dots and dashes]		
1930'	BCS 0000 2096		[Hand-drawn lithologic column with dots and dashes]		>50% siltstone 1925-1930
1935'	BCS 0000 2097		[Hand-drawn lithologic column with dots and dashes]		
1940'	BCS 0000 2098		[Hand-drawn lithologic column with dots and dashes]		>80% sandstone
1945'	BCS 0000 2099	Dark Grey to Grayish black (wcl) (N3-N2)	[Hand-drawn lithologic column with dots and dashes]		
1950'	BCS 0000 2100	SILTSTONE, LACUSTRINE	[Hand-drawn lithologic column with dots and dashes]		
1955'	BCS 0000 2101		[Hand-drawn lithologic column with dots and dashes]		10% LACUSTRINE SANDSTONE BEDS.
1960'	BCS 0000 2102		[Hand-drawn lithologic column with dots and dashes]		
1965'	BCS 0000 2103		[Hand-drawn lithologic column with dots and dashes]		
1970'	BCS 0000 2104		[Hand-drawn lithologic column with dots and dashes]		
1975'	BCS 0000 2105		[Hand-drawn lithologic column with dots and dashes]		
1980'	BCS 0000 2106		[Hand-drawn lithologic column with dots and dashes]		

Prepared By Michael Cline Date 1.13.99

Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-IDX Drill Depth From 1980 To 2040 Page 34 of 42

Driller BOUD/MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685/REVERSE Sampling Equip./Method CYCLONE/SAMPLE SPLITTER
CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1985	BCS 0000 2107	SILTSTONE, AS ABOVE, from 1922'	[Hand-drawn lithologic column with horizontal dashes]		50% CLAY
1990	BCS 0000 2108		[Hand-drawn lithologic column with horizontal dashes]		
1995	BCS 0000 2109		[Hand-drawn lithologic column with horizontal dashes]		
2000	BCS 0000 2110	SANDSTONE, LACUSTRINE	[Hand-drawn lithologic column with dots]		silty sandstone
2005	BCS 0000 2111		[Hand-drawn lithologic column with dots]		
2010	BCS 0000 2112		[Hand-drawn lithologic column with dots]		
2015	BCS 0000 2113	SANDSTONE ^{LACUSTRINE} Light gray to Med light gray (N7-N6)	[Hand-drawn lithologic column with dots]		<20% siltstone
2020	BCS 0000 2114		[Hand-drawn lithologic column with dots]		>95% sandstone med gray NS
2025	BCS 0000 2115		[Hand-drawn lithologic column with dots]		
2030	BCS 0000 2116	Poorly Sorted Sandstone, siltstone, clay	[Hand-drawn lithologic column with dots]		ABUNDANT CLAY
2035	BCS 0000 2117		[Hand-drawn lithologic column with dots]		
2040	BCS 0000 2118	Siltstone ^{LACUSTRINE} with Fine <1m laminae Brownish Gray 5YR 4/1 Some Sandstone	[Hand-drawn lithologic column with dots]		

Prepared By Michael Cline

Date 1-13-99

Checked By ARTHUR J. MENDENHALL

Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID ENC-EMDP-10X Drill Depth From 2040 To 2100 Page 35 of 42

Driller MIKE BOYD Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T695 DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE / SAMPLE SPLITTER

Depth (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	Graphic Log	Lithologic Unit	Notes
2045	BCS 0000 2119	NO SAMPLE			No return after extended break. 12-19-98 → 1-7-99
2050	BCS 0000 2120	SANDY SILTSTONE, GRAYISH BLACK N2, AND SILTY SANDSTONE, MEDIUM GRAY N5, LACUSTRINE/PLAYA			TRACE GYPSUM
2055	BCS 0000 2121				
2060	BCS 0000 2122				
2065	BCS 0000 2123				
2070	BCS 0000 2124				
2075	BCS 0000 2125				
2080	BCS 0000 2126				
2085	BCS 0000 2127				
2090	BCS 0000 2128				
2095	BCS 0000 2129				
2100	BCS 0000 2130	SILTY SANDSTONE BECOMMING DARKER (GRAYISH BLACK N2) WITH DEPTH			TRACE GYPSUM TRACE PYRITE

Prepared By ARTHUR J. MENDENHALL Date 1-13-99 Checked By Mike Chase Date 1-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 2100 To 2160 Page 36 of 42

Driller LAUNE - BOYD Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SARAFIM 7685 P/AH/REVERSE CIRCULATION Sampling Equip./Method WET/CYCLONE/OLEFIN BAG

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
2105	B.C.S. 0000 2131	Sandy siltstone, greyish black (N2) and silty sandstone, med. dark grey (N4), lacustrine. Dark sandy siltstone predominates with beds of lighter silty sandstone. (As above) 2100-2105 obvious contamination with "pink" volcanic chips <5%.			
2110	B.C.S. 0000 2132				
2115	B.C.S. 0000 2133				
2120	B.C.S. 0000 2134	Fine silty bed, medium grey (N5)			
2125	B.C.S. 0000 2135				
2130	B.C.S. 0000 2136				
2135	B.C.S. 0000 2137	as above			
2140	B.C.S. 0000 2138				
2145	B.C.S. 0000 2139				
2150	B.C.S. 0000 2140	Silty sandstone, greenish grey (SG4 611)			
2155	B.C.S. 0000 2141				
2160	B.C.S. 0000 2142				

Prepared By JAMIE WALKER Date 1-19-99 Checked By M/c Clue Date 1-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDD-1DX Drill Depth From 2160 To 2220 Page 37 of 42

Driller LAYNE - BOND Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DTH / REVERSE CIRCULATION Sampling Equip./Method WET / CYCLONE / OLEFIN BAGS

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
	BCS 0000 2143	As above Sandstone, fine, med. light grey (N6) homogeneous, lacustrine. Possible fine reworked top to unit below.			
	BCS 0000 2144				
	BCS 0000 2145	Sandstone, fine feldspathic (arkose), light grey (N7), homogeneous. Local ? beds of dark grey siltstone. Unit appears to coarsen down-hole. lacustrine. Volcaniclastic, predominantly fine white and grey feldspar with poss. clay cement. Compositionally immature, texturally mature/sorted.			
	BCS 0000 2146				
	BCS 0000 2147				
	BCS 0000 2148				
	BCS 0000 2149				
	BCS 0000 2150				
	BCS 0000 2151	10% dark grey siltstone.			
	BCS 0000 2152				
	BCS 0000 2153				
	BCS 0000 2154				

Prepared By JAMIE WALKER Date 1-19-99 Checked By Mike Chue Date 1-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP Drill Depth From 2220 To 2280 Page 38 of 42
- 1DX

Driller LAYNE - BOND/MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685DHH/REVERSE Sampling Equip./Method CYCLONE/SAMPLE SPLITTER
CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
2225	BCS 0000 2155	Sandstone, as above, arkosic			
2230	BCS 0000 2156				
2235	BCS 1000 2157				
2240	BCS 0000 2158				
2245	BCS 0000 2159				
2250	BCS 0000 2160				
2255	BCS 0000 2161				
2260	BCS 0000 2162				
2265	BCS 0000 2163				
2270	BCS 0000 2164				
2275	BCS 0000 2165				
2280	BCS 0000 2166				

Prepared By JAMIE WALKER Date 1-19-99 Checked By Mike Chan Date 1-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 2280 To 2340 Page 39 of 42

Driller LAYNE-MANGUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T650DHH/REVERSE CIRCULATION Sampling Equip./Method CYCLONE/SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
	BCS 0000	Sandstone, as above, fine feldspathic.			
2285	2167	Siltstone, greyish-black (N2), cherty. Unit marks contact.			
2290	BCS 0000 2162	Sandstone, as 2172-2283, fine feldspathic, light grey (N7) to medium grey (N5). Local sections with clay beds, light grey (N7)			
2295	BCS 0000 2169				
2300	BCS 0000 2170	Clay in returns			
2305	BCS 0000 2171				
2310	BCS 0000 2172				
2315	BCS 0000 2173	Clay-rich zone, difficult drilling			
2320	BCS 0000 2174				Gypsum in cuttings
2325	BCS 0000 2279	Siltstone, finely laminated (0.5-2mm) to unlaminated local < 1' thick sandstone beds as above. Generally light brownish grey (SYR 6/1) to brownish grey			Finished drilling 1125 on 1-14-99 Started drilling 2320 on 1-19-99
2330	BCS 0000 2280				drill shift change 2328'
2335	BCS 0000 2175				
2340	BCS 0000 2176	Clay rich zone			

Prepared By JAMIE WALKER Date 1-19-99 Checked By Michael Choe Date 1-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-FWDP-1DX Drill Depth From 2280 To 2340 Page 40 of 42

Driller Maugum Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685DHH / REVERSE CIRCULATION Sampling Equip./Method CYCLONE / SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
2345	BCS 0000 2177	Siltston varies in color from Pale yellowish orange (10YR 8/6) to Moderate greenish Yellow (10Y 7/4)			
2350	BCS 0000 2178	Clay rich zone			
2355	BCS 0000 2179				
2360	BCS 0000 2180				
2365	BCS 0000 2181	more Homogeneous color. Dark gray (N3)			
2370	BCS 0000 2182				
2375	BCS 0000 2183	30% Dusky yellow (5Y 5/4) siltstone fragments in dark gray (N3) Siltstone			
2380	BCS 0000 2184				
2385	BCS 0000 2185				
2390	BCS 0000 2186				
2395	BCS 0000 2187	Sandstone, buffaceous. Med. gray (N5) to med. Dark gray (N4). Similar to 2285-2320; feldspathic, arkosic volcaniclastic.			
2400	BCS 0000 2188				

Prepared By Mike Cline

Date 1-20-99

Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 2400 To 2460 Page 41 of 42

Driller LAYNE-MANLUM Start Date/Time _____ End Date/Time _____

Drilling Equip./Method SCHRAMM T685 DHH - #450 / REVERSE CIRCULATION Sampling Equip./Method WET/CYCLONE

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
2405	BCS 0000 2189	10% siltstone, brownish grey, as above			
2410	BCS 0000 2190	Unit becomes clay-rich > 30-50%, with light grey (N7) clay "balls" in sample.			
2415	BCS 0000 2191				
2420	BCS 0000 2192				
2425	BCS 0000 2193	Siltstone, weakly laminated, similar to section 2320-2391.			
2430	BCS 0000 2194				
2435	BCS 0000 2195	Sandstone, feldspathic with interbedded fine sandstone and lesser siltstone. Sandstone as 2285-2320, light (N7) to med. light grey (N6). Interbeds of dark grey (N3) siltstone			
2440	BCS 0000 2196				
2445	BCS 0000 2197	5% dark grey siltstone (N3)			
2450	BCS 0000 2198				
2455	BCS 0000 2199				
2460	BCS 0000 2200				

Prepared By JAMIE WALKER

Date 1-20-99

Checked By ARTHUR J. MENDENHALL

Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-1DX Drill Depth From 2460' To 2500' (T.D.) Page 42 of 42

Driller LAYNE-MANGUM/BOYD Start Date/Time _____ End Date/Time _____

Drilling Equip./Method RC-SHRAMM T685PHH-#450 / Sampling Equip./Method CYCLONE/SAMPLE SPLITTER
REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
2465	BCS 0000 2201				
2470	BCS 0000 2202				
2475	BCS 0000 2203				
2480	BCS 0000 2204	95% coarse grained Sandstone			
2485	BCS 0000 2205				
2490	BCS 0000 2206				
2495	BCS 0000 2207	30% siltstone			
2500	BCS 0000 2208				
		T.D. at 2500.00 1.20.99 @ 1408			

Prepared By Michael Clive

Date 1-23-99

Checked By ARTHUR J. MENDENHALL Date 3-23-99