

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-35 Drill Depth From 0 To 60 (T.D. 550.0) Page 1 of 10

Driller BRYAN MORRIS / BOYLES BROS Start Date/Time 2-6-99 / 0942 End Date/Time 3-2-99 / 1513

Drilling Equip./Method AP-1000 / 11" CROWD-OUT BIT Sampling Equip./Method CUTTINGS / CYCLONE / SPLITTER
TR TH 75E / RC Hammer 293.3 - 550.0'

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
5	BCS 0000 1751 (1 MIN)	SILTY SAND: Some fine angular gravel, trace clay fine sand, very pale orange (10YR 8/2)			Weak reaction to 10% HCl
	BCS 0000 1752 (2 MIN)	Decrease in amount of gravel			Strong reaction to 10% HCl
10	BCS 0000 1753 (2 MIN)				Moderate reaction to 10% HCl
15	BCS 0000 1754 (2 MIN)	Trace of coarse angular gravel			Moderate reaction to 10% HCl
20	BCS 0000 1755 (3 MIN)	SILTY GRAVELLY SAND: Fine angular gravel, medium - coarse angular sand, very pale orange (10YR 8/2)			Moderate reaction to 10% HCl
25	BCS 0000 1756 (1 MIN)				Moderate reaction to 10% HCl
30	BCS 0000 1757 (2 MIN)				Moderate reaction to 10% HCl
35	BCS 0000 1758 (3 MIN)	SILTY GRAVELLY SAND: Fine angular gravel, coarse angular sand, gray orange (10YR 7/4)			Moderate-weak reaction to 10% HCl
40	BCS 0000 1759 (3 MIN)				Moderate-weak reaction to 10% HCl
45	BCS 0000 1760 (4 MIN)				Moderate reaction to 10% HCl
50	BCS 0000 1761 (3 MIN)				Strong reaction to 10% HCl
55	BCS 0000 1762 (5 MIN)	Decrease in amount of silt. Some coarse angular gravel.			Moderate reaction to 10% HCl
60					

NOTE: TIME FOR 5' RUN IN () IN 2ND COLUMN

Prepared By KEN DONNELSON Date 2-6-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-ENBP-35 Drill Depth From 60 To 120 Page 2 of 10

Driller BRYAN MORRIS / BOYLES BROS Start Date/Time 2-6-99 / 0942 End Date/Time _____

Drilling Equip./Method AP-1000 / 11" CROWD-OUT BIT Sampling Equip./Method CUTTINGS / CYCLONE
DRILLED WITH AIR

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
65	BCS 6000 1763 (6 MIN)	SANDY GRAVEL: Some cobbles, trace silt, coarse angular sand, angular - subangular gravel, gray red (10R 4/2). Gravel consist predominantly of welded tuff. Predom. fine gravel.			Strong reaction to 10% HCl
70	BCS 6000 1764 (6 MIN)				Strong reaction to 10% HCl
75	BCS 0000 1765 (3 MIN)	Decrease in amount of silt Increase in amount of coarse sand			Moderate reaction to 10% HCl
80	BCS 0000 1766 (5 MIN)	Pale Red (10R 6/2)			Weak reaction to 10% HCl
85	BCS 0000 1767 (4 MIN)	Decrease in amount of silt			No reaction to 10% HCl
90	BCS 0000 1768 (4 MIN)	Some coarse gravel			No reaction to 10% HCl
95	BCS 0000 1769 (4 MIN)	Increased amount of coarse angular gravel			No reaction to 10% HCl
100	BCS 0000 1770 (4 MIN)				Weak reaction to 10% HCl
105	BCS 0000 1771 (5 MIN)	Boulder, may be 3' thick, consist of welded tuff (Bu (frog), Gray orange pink (10R 5/2)			No reaction to 10% HCl
110	BCS 0000 1772 (47 MIN)				No reaction to 10% HCl
115	BCS 0000 1773 (5 MIN)	BEDDED TUFF: Tuffaceous sandstone, very fine - fine grained, weakly cemented, vitric, yellowish gray (5Y 7/2 - 8/1)			No reaction to 10% HCl
120	BCS 0000 1774 (9 MIN)	Some fine welded tuff fragments.			No reaction to 10% HCl Moist

NOTE: TIME FOR 5' RUN IN () IN 2ND COLUMN

Prepared By KEN DONNELSON Date 2-6-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

Drilling Equip./Method AP-1000/11" CROWD-OUT BIT Sampling Equip./Method CUTTINGS/CYCLOWE
DEWED WITH AIR

Note: Time for s'run in () in 2nd column.

Prepared By K. DOWNELSON Date 2-6-99 Checked By ARTHUR J. MENDELHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-35 Drill Depth From 180 To 240 Page 4 of 10

Driller BRYAN MORRIS/BOYLES BROS Start Date/Time 2-6-99/0942 End Date/Time _____

Drilling Equip./Method AP-1000/11" CROWD-OUT BIT Sampling Equip./Method CUTTINGS/CYCLONE
DRILLED WITH AIR

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
185	BCS 0000 1787 (6 MIN)	BEDDED TUFF, AS ABOVE	<div></div>		No reaction to 10% HCl from 180-200' INJECTED H2O FROM 185-190'
190	BCS 0000 1788 (7 MIN)				
195	BCS 0000 1789 (7 MIN)				
200	BCS 0000 1790 (7 MIN)				
205	BCS 0000 1791 (19 MIN)	Some gray orange (10YR 6/4) high plasticity sandy clay. Increased cementation	<div></div>		2-6-99, 1604 2-7-99, 0654 NO REACTION TO 10% HCl FROM 200-220' INJECTED WATER FROM 200-210'
210	BCS 0000 1792 (11 MIN)				
215	BCS 0000 1793 (6 MIN)	"lumpy" cuttings, becoming more "lumpy" with depth	<div></div>		
220	BCS 0000 1794 (7 MIN)				
225	BCS 0000 1795 (9 MIN)	Color changes to Gray orange (10YR 6/4)	<div></div>		
230	BCS 0000 1796 (12 MIN)				
235	BCS 0000 1797 (5 MIN)	Color change due to limonitic mottling. May be approaching groundwater.	<div></div>		INJECTED WATER INTERMITTENTLY FROM 225-235'
240	BCS 0000 1798 (9 MIN)				

NOTE: DRILL TIME FOR 5' RUN IN () IN 2ND COLUMN

Prepared By K. FOWNELSON Date 2-7-99 Checked By ARTHUR J. MENDEMHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-35 Drill Depth From 240 To 300 Page 5 of 10

Driller BRYAN MORRIS / BOYLES BROS Start Date/Time 2-6-99/0942 End Date/Time _____

Drilling Equip./Method AP-1000 / 11" CROWD-OUT BIT Sampling Equip./Method CUTTINGS / CYCLONE
DRILLED WITH AIR / I-R TH 75 E / REVERSE CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
	BCS 0000 1799	BEDDED TUFF, AS ABOVE	+ + + +		NO REACTION 10% HCl FROM 240 - 290'
245	(4 MIN)		+ + + +		
	BCS 0000 1800	Some hard silica layers or nodules, cryptocrystalline (opaline?) Pale yellow brn (10YR 6/2) & white	+ + + +		
250	(8 MIN)		+ + + +		
	BCS 0000 1801	Decrease in amount of limonite	+ + + +		
255	(8 MIN)		+ + + +		
	BCS 0000 1802	Decrease in amount of limonite & increase in amount of silica cement. Yel gry (5Y 7/2) - Very light gray (N8).	+ + + +		
260	(9 MIN)		+ + + +		
	BCS 0000 1803	Increase in amount of silica cement	+ + + +		
265	(9 MIN)		+ + + +		
	BCS 0000 1804	Strong limonitic haloes (6mm) around siliceous nodules? Very fine grained sandstone	+ + + +		2-7-99, 1222 2-12-99, 0930 SAMPLES WET- NOT INJECTING WATER. START INJECTING WATER @ 293' REFUSED @ 293.29' 1038 2-12-99
270	(13 MIN)		+ + + +		
	BCS 0000 1805	Softer. No limonite.	+ + + +		
275	(4 MIN)		+ + + +		
	BCS 0000 1806	Very hard, silicified, resembles quartzite	+ + + +		
280	(29 MIN)		+ + + +		
	BCS 0000 1807	Yellow gray (5Y 8/1). Very silty	+ + + +		
285	(26 MIN)		+ + + +		
	BCS 0000 1808	Pale yellow orange (10YR 8/6) - Gray yellow (5Y 7/4) & yellow gray (5Y 8/1). Silty	+ + + +		
290	(21 MIN)	Some "cherty" & silicified v. fine grained sandstone with bentonitic clay layers & trace of calcite veins. Sandstone is very thin bedded.	+ + + +		
	BSC 0000 1808 (68 MIN)	293.29' TO 295.00' DILLED 2-25-99 START 0135, FINISH 0720. 295.00' START 3-2-99 0555	+ + + +		
295	NO SAMPLE				
	BCS 0000 1810	60% TUFF, ASH FLOW, WELDED, PALE REDDISH BROWN 10R 5/4, DARK REDDISH BROWN 10R 3/4, OR GRAYISH ORANGE PINK, 0 TO 20% PHENOCRYSTS OF BIOTITE AND FELDSPARS / QUARTZ.	W W W W W W		ZERO TO STRONG REACTION TO 10% HCl WELD ASH FLOW TUFF MAY BE GRAVELS DUE TO THEIR COARSE NATURE.
300		SILTSTONE, LACUSTRINE, MEDIUM DARK GRAY NA, CALCAROUS 40%	- - - -		

NOTE: DRILL TIME FOR 5' RUN IN () IN 2ND COLUMN

Prepared By KEN DONNELSON Date 2-12-99 Checked By JAMIE WALKER Date 5-18-00
ARTHUR J. MENDENHALL 3-2-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-3S Drill Depth From 300 To 360 Page 6 of 10

Driller DAVE HOLQUIN Start Date/Time 2-6-99/0942 End Date/Time _____

Drilling Equip./Method INTEGRAAL-BAND TH75 E/ REVERSE Sampling Equip./Method CUTTINGS/CYCLONE/SAMPLE SPLITTER
CIRCULATION

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
305	BCS 0000 1811	NO SAMPLE ↓			NO SAMPLE 300-320
310	BCS 0000 1812				
315	BCS 0000 1813				
320	BCS 0000 1814				
325	BCS 0000 1815	SILT, LACUSTINE, MEDIUM DARK GRAY N4, CALCAREOUS			STRONG REACTION TO 10% HCL
330	BCS 0000 1816	NO SAMPLE ↓			NO SAMPLE 325-345
335	BCS 0000 1817				
340	BCS 0000 1818				
345	BCS 0000 1819				
350	BCS 0000 1820	20% SILTSTONE, LACUSTINE, DARK GRAY N3, CALCAREOUS 80% TUFF, ASH FALL, MEDIUM LIGHT GRAY N6 OR VERY LIGHT GRAY N8, 0-5% SMALL BIOTITE PHENOCRYSTS	=====		STRONG REACTION TO 10% HCL
355	BCS 0000 1821		+++++		NO REACTION TO 10% HCL 20% LIGHT BROWN 5YR 6/4 TUFF IN 345-360 INTERVAL SUGGEST A WEATHERING SURFACE AT CONTACT.
360	BCS 0000 1822				

NOTE: DRILL TIME FOR S' RUN IN() IN 2ND COLUMN.

Prepared By ARTHUR J. MENDEHALL Date 3-2-99 Checked By JAMIE WALKER Date 5-18-00

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-35 Drill Depth From 360 To 420 Page 7 of 10
Driller DAVE HOLQUIN/STEVE CLEVER Start Date/Time 2-6-99/0942 End Date/Time _____
Drilling Equip./Method I-R TH 75 E / REVERSE CIRCULATION Sampling Equip./Method CUTTINGS / CYCLONE / SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
365	BCS 0000 1823	TUFF, ASH FALL, AS ABOVE, from 346'	+++++		
370	BCS 0000 1824		+++++		
375	BCS 0000 1825		+++++		
380	BCS 0000 1826	TUFF, ASH FALL, PINKISH GRAY SR 8/2, 0-5% BIOTITE AND QUARTZ PHENOCYSTS.	+++++		VERY FINE CUTTINGS (NOT WASHED?)
385	BCS 0000 1827		+++++		VERY FINE CUTTINGS (NOT WASHED?)
390	BCS 0000 1828		+++++		
395	BCS 0000 1829		+++++		
400	BCS 0000 1830	10% SILTSTONE, LACUSTRINE, DARK GRAY N3, CALCAREOUS, 397' INCREASE IN WATER RETURN	+++++		10% SILTSTONE IN 390-395 AND 395-400 INTERVALS
405	BCS 0000 1831	10% SILTSTONE, LACUSTRINE, DARK GRAY N3, CALCAREOUS	+++++		
410	BCS 0000 1832		+++++		
415	BCS 0000 1833		+++++		
420	BCS 0000 1834		+++++		

CUTTINGS SAMPLE LOG

Borehole ID NCE-EWDP-39 Drill Depth From 420 To 480 Page 8 of 10

Driller _____ Start Date/Time 2-6-99/0942 End Date/Time _____

Drilling Equip./Method L-R TH 75E/REVERSE CIRCULATION Sampling Equip./Method CUTTINGS/CYCLONE/SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
425	BCS 0000 1835	ASH FLOW TUFF, MED LIGHT GRAY NG, 1% BIOTITE PHENOCRYSTS 2-4% QUARTZ PHENOCRYSTS 10% FRAGMENTS OF ABOVE UNIT POSSIBLE REWORKED ASH FLOW	+++++		
			+++++		
			+++++		
			+++++		
			+++++		
430	BCS 0000 1836		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
435	BCS 0000 1837		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
440	BCS 0000 1838		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
445	BCS 0000 1839		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
450	BCS 0000 1840	445-450 FINE GRAINED UNIT OF ABOVE WITH 10% QUARTZ CRYSTALS	+++++		
			+++++		
			+++++		
			+++++		
			+++++		
455	BCS 0000 1841		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
460	BCS 0000 1842		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
465	BCS 0000 1843	460-465 10% PORPHYRITIC CLASTS GRAYISH ORANGE PINK 10R 8/2	+++++		
			+++++		
			+++++		
			+++++		
			+++++		
470	BCS 0000 1844		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
475	BCS 0000 1845		+++++		
			+++++		
			+++++		
			+++++		
			+++++		
480	BCS 0000 1846	475-480 PINKISH GRAY 5YR 7/1	+++++		
			+++++		
			+++++		
			+++++		
			+++++		

Prepared By BENT AAQUIST Date 3-3-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-35 Drill Depth From 480 To 540 Page 9 of 10

Driller _____ Start Date/Time 2-6-99/6942 End Date/Time _____

Drilling Equip./Method I-RTH 75E/REVERSE CIRCULATION Sampling Equip./Method CUTTINGS/CYCLONE/SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
485	BCS 0000 1848	ASH FLOW TUFF - REMARKED, AS ABOVE	+++++		
	BCS 0000 1848				
490	BCS 0000 1849				
495	BCS 0000 1850				
500	BCS 0600 3351	490-495 HAS 10% MODERATE ORANGE PINK CLASTS 5YR 8/4	+++++		
505	BCS 0600 3352				
510	BCS 0600 3353				
515	BCS 0600 3354				
520	BCS 0600 3355	510-515 - 5% WHITE N9 CLAY ALTERATION	+++++		
525	BCS 0600 3356				
530	BCS 0600 3357				
535	BCS 0600 3358				
540		SILTSTONE MED DARK GRAY N4 TO FINE GRAINED SANDSTONE, COMPOSITIONALLY SIMILAR TO ABOVE ASH FLOW UNIT.	-----		
		535-540 MINOR CALCAREOUS CLAY	-----		

Prepared By BENT AAQUIST Date 3-3-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-35 Drill Depth From 540 To 550 Page 10 of 10

Driller _____ Start Date/Time 2-6-99/0942 End Date/Time 3/2/99 1513

Drilling Equip./Method ERTH 75E/REVERSE CIRCULATION Sampling Equip./Method CUTTINGS/CYCLONE/SAMPLE SPLITTER

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
545	BCS 0000 3359	CLAY DARK GRAY N3, VERY CALCAREOUS			
550	BCS 0000 3360	SANDSTONE, FINE TO MED GRAINED, MEDIUM GRAY N5 WITH CALCAREOUS CLAY 10% WHITE N9 TO YELLOWISH GRAY 5Y9/1 GRAINS			
	T.D. 3-2-99 1513				

Prepared By BENT AAGUIST Date 3-3-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99