

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EMWP-2DB Drill Depth From 503 To 560 Page 1 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
		BOTTOM OF 16" CASING			0920 07-13-00 START DRILLING
505	BCS0000 7401 3 MIN	SANDY GRAVEL: gravel composed of welded tuff fragments, colors range from pale red (10R6/2), grayish red (10R4/6) and light gray (N7), gravel size varies with depth and ranges from 2-6 mm; no fines are present			No Sample
510	BCS0000 7402 6 MIN				No Sample ~2' Sample Lag due to retention of sample on shaker screen. No Fines.
515	BCS0000 7403 6 MIN				No HCl reaction
520	BCS0000 7404 7 MIN				No HCl reaction
525	BCS0000 7405 5 MIN				No HCl reaction
530	BCS0000 7406 7 MIN				Lost circulation at 531'
535	BCS0000 7407 15 MIN	SANDY CLAY: moderate yellowish brown (10YR 5/4), 10-20% sand, moderate to high plasticity			No HCl reaction
540	BCS0000 7408 7 MIN	Description same as at 505' Decreased clast size, 2-3 mm			1206 07-13-00 STOP DRILLING 0722 07-14-00 START DRILLING
545	BCS0000 7409 7 MIN				No HCl reaction
550	BCS0000 7410 7 MIN	Increased clast size, 2-6 mm			Hard Drilling @ 549'
555	BCS0000 7411 8 MIN	Increased clast size, 2-4mm			No HCl reaction
560	BCS0000 7412 7 MIN	Decreased clast size			Poor Recovery
	BCS0000 7413				No HCl reaction

Revised By \_\_\_\_\_  
 Prepared By Bob Wilcox Date 5-26-01 Checked By J.S. Walker Date 8/30/07  
 AMENDED BY KAD 8-15-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDF-2DB Drill Depth From 560 To 625 Page 2 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
565	1 MIN BCS0000 7413	SANDY GRAVEL: gravel composed of welded tuff fragments, colors range from pale red (10R 4/6) and light gray (N7), gravel size varies with depth and ranges from 2-20mm, No fines are present.			Overlap on pages No HCl Reaction throughout 560 - 625'
570	5 MIN BCS0000 7414				
575	6 MIN BCS0000 7415				
580	6 MIN BCS0000 7416	Decreased clast size, 2-3mm			
585	4 MIN BCS0000 7417	Rounded gravel. Less than 5% highly plastic clay.			
590	6 MIN BCS0000 7418				
595	3 MIN BCS0000 7419				
600	7 MIN BCS0000 7420	CLAYEY SANDY GRAVEL: grayish orange (10YR 7/4) to moderate yellowish brown (10YR 5/4), predominantly coarse gravel, multi-colored; less than 20% clay, clay content increases with depth to less than 40%, clay is highly plastic			
605	3 MIN BCS0000 7421				
610	5 MIN BCS0000 7422				
615	6 MIN BCS0000 7423	GRAVELLY SAND: pale yellowish brown (10YR 6/2) coarse sand, gravel size indeterminate.			Hole deviation = 0°  Lost Circulation @ 625'
620	6 MIN BCS0000 7424				
625	6 MIN BCS0000 7425				

REVISION BY  
Prepared By BWS Wilcoxon Date 5-26-01 Checked By J.S. Welch Date 8/30/01  
Amended by KDD 8-15-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWD P-2-DB Drill Depth From 625 To 690 Page 3 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
630	7 MIN BCS0000 7426	GRAVELLY SAND: pale yellowish brn (10YR 6/2). Less than 15% clay. SAND WITH GRAVEL: Sand is pale yellowish brown (10YR 6/2), well sorted, coarse grained; contains less than 5% gravel			Lost circulation at 629'±
635	4 MIN BCS0000 7427	CLAYEY GRAVELLY SAND: predominantly well sorted coarse sand; sand is pale yellowish brown (10YR 6/2); contains less than 30% clay, clay has moderate to high plasticity; gravels are fine			
640	4 MIN BCS0000 7428	SAND: grayish orange (10YR 7/4) to pale yellowish brown (10YR 6/2), fine grained, well sorted			No recovery
645	2 MIN BCS0000 7429	CLAYEY SAND & GRAVEL: pale brown (10YR 6/2) clay, grayish red (10R 4/2) gravel, high plasticity, 40% sand, 40% gravel & 20% clay			
650	12 MIN BCS0000 7430	Amount of clay decreases to less than 10%			Poor recovery
655	5 MIN BCS0000 7431	Amount of clay decreases to less than 5%			
660	4 MIN BCS0000 7432	Amount of clay increases to less than 10%			Poor recovery
665	4 MIN BCS0000 7433	SAND: pale brown (10YR 6/2), well sorted, fine grained; contains minor clay (<5%)			
670	9 MIN BCS0000 7434	CLAYEY SAND & GRAVEL: pale brown (10YR 6/2) & grayish red (10R 4/2), 40% fine sand, 40% gravel & 20% clay.			7-14-00, 1632 7-15-00, 0644 Poor recovery
675	7 MIN BCS0000 7435	SILTSTONE: pale yellowish brown (10YR 6/2), indurated, minor MnOx on fracture surfaces; contains very fine grained sand and less than 10% clay; siltstone appears to be tuffaceous.			
680	8 MIN BCS0000 7436				7-14-00, 1632 7-15-00, 0644 Poor recovery
685	9 MIN BCS0000 7437	SILTY CLAY: pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), moderately to highly plastic, contains minor fragments of indurated siltstone			
690	5 MIN BCS0000 7438	Amount of sand increases to less than 15%.			

Revised By \_\_\_\_\_ Prepared By Bob Wilcox Date 5-26-01 Checked By J.S. Walker Date 8/30/01

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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 690 To 755 Page 4 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
695	BCS0000 7439 13 MIN	SANDY SILTY CLAY: pale yellowish brown (10YR 6/2) with yellowish gray (5Y 7/2) mottling; SAND content is less than 10%; clay has moderate to high plasticity			No HCl reaction
700	BCS0000 7440 11 MIN	No mottling. Some fragments of moderate yellowish brown (10YR 5/4) sandy siltstone.			Weak HCl reaction
705	BCS0000 7441 10 MIN				Weak HCl reaction
710	BCS0000 7442 6 MIN	Less than 15% grayish red (10R 4/2) welded tuff.			Weak HCl reaction Hole deviation = 3/4° @ 710'
715	BCS0000 7443 6 MIN	Amount of gravel decreases to less than 10%			Weak HCl reaction
720	BCS0000 7444 13 MIN	Amount of sand, silt & gravel decreases. High plasticity.			Moderate HCl reaction
725	BCS0000 7445 9 MIN	Amount of sand & silt increases to less than 15%. Less than 5% gravel.			Moderate HCl reaction
730	BCS0000 7446 7 MIN				Strong HCl reaction
735	BCS0000 7447 34 MIN				Moderate HCl reaction
740	BCS0000 7448 22 MIN	Light brown (5YR 5/6)			Strong HCl reaction
745	BCS0000 7449 13 MIN				Moderate HCl reaction Hole deviation = 1/2° @ 740'
750	BCS0000 7450 15 MIN				Strong HCl reaction
755	BCS0000 7451 17 MIN				Strong HCl reaction

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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DR Drill Depth From 755 To 820 Page 5 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
760	BCS0000 7452 12 MIN	SANDY SILTY CLAY: Light brown (SYR 5/6) Amount of sand & fine gravel increases to less than 20%			Strong HCl reaction
765	BCS0000 7453 10 MIN	Amount of sand & fine gravel decreases to less than 10%			Strong HCl reaction
770	BCS0000 7454 11 MIN	SILTY SANDY CLAY: Grayish orange (10YR 7/4) + yellowish gray (5Y 7/2); clay has moderate plasticity; sand is well sorted and fine grained; both sand and silt content decrease with depth; over all color of unit varies with depth			Moderate HCl reaction
775	BCS0000 7455 7 MIN				Weak HCl reaction
780	BCS0000 7456 11 MIN	Light brown (SYR 6/4)			Weak HCl reaction
785	BCS0000 7457 46 MIN	Light to moderate brown (SYR 5/6 - 4/4)			No HCl reaction
790	BCS0000 7458 14 MIN	Light brown (SYR 5/6)			No HCl reaction
795	BCS0000 7459 14 MIN				Weak HCl reaction
800	BCS0000 7460 11 MIN				Moderate HCl reaction from 795 - 810'
805	BCS0000 7461 9 MIN	CLAY: light brown (SYR 6/4), soft, highly plastic; appearance of minor sand and silt with depth and occurrence of yellowish gray (5Y 7/2) mottling with depth.			
810	BCS0000 7462 4 MIN				strong HCl reaction
815	BCS0000 7463 4 MIN				7-15-00, 1645
820	BCS0000 7464 3 MIN				7-16-00, 0735 Moderate HCl reaction

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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 820 To 885 Page 6 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
825	BCS0000 7465 3 MIN	CLAY: Light brown (5YR 6/4) with yellowish gray (5Y 7/2) mottling, soft, high plasticity, Increased amount of silt.			Moderate HCl reaction
830	BCS0000 7466 3 MIN	Increased amount of sand (less than 10% and 5% fine gravel).			No HCl reaction
835	BCS0000 7467 11 MIN	Decreased amount of sand (less than 5%)			No HCl reaction
840	BCS0000 7468 8 MIN	Light brown (5YR 6/4 - 5/6)			Strong HCl reaction
845	BCS0000 7469 7 MIN	GRAVELLY SANDY CLAY: light brown (5YR 6/4 - 5/6), clay has moderate plasticity; sand content is less than 20%, sand is well sorted and fine grained; gravels are well sorted and fine grained			Samples from 840-855' may be contaminated due to cleaning sample hopper.
850	BCS0000 7470 6 MIN				No HCl reaction
855	BCS0000 7471 12 MIN				Hole deviation = 2/3° @ 850'
860	BCS0000 7472 4 MIN				Strong HCl reaction
865	BCS0000 7473 7 MIN	CLAYEY SANDY GRAVEL: multi-colored gravels ranging from pale red (10R 6/2), moderate red (5R 5/4), and medium light gray (NG); gravels are fine grained and coarsens with depth; clay content is less than 15% and increases with depth to 25%; clay is grayish-orange pink (5YR 7/2); clay has low plasticity; clay, sand, and gravel content all increase with depth			No HCl reaction from 855-885'
870	BCS0000 7474 7 MIN				
875	BCS0000 7475 8 MIN				
880	BCS0000 7476 7 MIN				
885	BCS0000 7477 7 MIN				

Revision BY \_\_\_\_\_  
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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-9WDP-2DB Drill Depth From 885 To 950 Page 7 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes	
890	BCS0000 7478 8 MIN	CLAYEY SANDY GRAVEL: multi-colored gravels ranging from palered (10R 6/12), moderate red (5R 5/4), and medium light gray (N6). Clay is grayish orange pink and has low plasticity.  Amount of clay increasing below 900'			Hard drilling @ 889.5' No HCl reaction	
	BCS0000 7479				No HCl reaction	
895	7 MIN BCS0000 7480				No HCl reaction	
900	9 MIN BCS0000 7481				Weak HCl reaction	
905	7 MIN BCS0000 7482				Moderate HCl reaction	
910	6 MIN BCS0000 7483	SANDY CLAY: clay has moderate to high plasticity; gravels are multi-colored ranging from grayish orange (10YR 7/4) to pale red (5R 4/2)			Weak HCl reaction	
915	6 MIN BCS0000 7484				Moderate HCl reaction	
920	5 MIN BCS0000 7485				Moderate HCl reaction	
925	7 MIN BCS0000 7486				GRAVELLY COBBLES AND BOULDERS WITH SANDY CLAY: clasts are monolithic and multi-colored, colors range from grayish red (10R 4/2), very dusky red (10R 2/2), and medium to dark gray (N4-N3); clast lithology is welded tuff; content of sandy clay is less than 5% with clay content increasing to 40% at depth, sandy clay is moderate orange pink (10R 7/4) to grayish orange (10YR 7/4)	Predominantly monolithic clasts. No HCl reaction
930	14 MIN BCS0000 7487					Moderate HCl reaction
935	10 MIN BCS0000 7488	Strong HCl reaction from 935-950'				
940	10 MIN BCS0000 7489					
945	6 MIN BCS0000 7490					
950	7 MIN					

Revisions By \_\_\_\_\_  
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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-ELWDP-2DB Drill Depth From 950 To 1015 Page 8 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
955	BCS0000 7491 6 MIN	GRAVELLY COBBLES & BOULDERS with sandy clay; multi-colored monolithic clasts. Sandy clay is moderate orange pink (10R 7/4) to grayish orange (10YR 7/4)			Strong HCl reaction from 950-970'
960	BCS0000 7492 7 MIN	Amount of clay increased to less than 40% below 960'			
965	BCS0000 7493 5 MIN				
970	BCS0000 7494 9 MIN	CLAYEY SANDY GRAVEL: well indurated gravels in a clayey sandy matrix; gravels are grayish red (10R 4/2), greater than 3/16", composed of welded volcanic lithology; gravel content is less than 50% at top of unit and increases gradationally to 75% at base; clayey sandy matrix consists of fine to medium sand, dark yellowish orange (10YR 6/6), possibly cemented?; unit becomes clay-rich from 992-990 ft.; this unit could possibly consist of interbeds of clay, sand, and gravel			Trip out with bit. Hard drilling @ 971' 7-16-00, 1521
975	BCS0000 7495 10 MIN				Fishing operation, new bit until 7-29-00. Resume drilling on 7-29-00 @ 1120.
980	BCS0000 7496 20 MIN	Amount of clay decreases to less than 5%. 50% of gravels are rounded and well graded. Gravel clasts composed of welded ash flow tuff. Strongly cemented fine-medium sand.			No HCl reaction
985	BCS0000 7497 17 MIN				Hole deviation = 1/2" @ 980' weak HCl reaction
990	BCS0000 7498 11 MIN	INTERBEDDED SANDSTONE, SILTSTONE & CLAYSTONE: light brown (5YR 5/6) well graded sand, soft sandy clay, pale olive (10Y 6/2) siltstone, finely laminated; pale orange (10YR 8/2) thinly bedded sandstone.			No HCl reaction
995	BCS0000 7499 10 MIN				
1000	BCS0000 7500 9 MIN	Amount of clay decreases to less than 5%. 50% of gravels are rounded and well graded. Gravel clasts composed of welded ash flow tuff. Strongly cemented fine-medium sand.			Fines suspended in mud; consequently not well represented in sample. Drilling induced fragmentation of cobbles. Strong HCl reaction.
1005	BCS0000 7501 17 MIN				
1010	BCS0000 7502 13 MIN	INTERBEDDED SANDSTONE, SILTSTONE & CLAYSTONE: light brown (5YR 5/6) well graded sand, soft sandy clay, pale olive (10Y 6/2) siltstone, finely laminated; pale orange (10YR 8/2) thinly bedded sandstone.			Cementation of siltstone & sandstone may be post-depositional.
1015	BCS0000 7503 25 MIN				

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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-CWDP-20B Drill Depth From 1015 To 1086 Page 9 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
7504	BCS0000	INTERBEDDED Sandstone, siltstone, CLAY WITH PRONOUNCED CHANGE IN COLOR: Grayish yellow (5Y 8/4) TO PALE GREENISH YELLOW (10Y 8/2); Material is VERY SOFT 5% STRONGLY oxidized REDDISH BROWN, possible pale soil weathering sandstone and siltstone as in above interval. Properties of sand, silt, and clay are roughly equal. Siltstone and sandstone fragments are angular to fine induced chips. Few well rounded gravels (22%) derived from conglomeratic sandstone.			SOME sandstone derived gravel reacts strongly to HCL
7505	BCS0000	1020-1025 AS ABOVE. SAMPLE TRAY CONTAINS A GOOD EXAMPLE OF SILTSTONE/SANDSTONE BEDDING CONTACT. CLAY IS STICKY AND SOFT. FRACTURES IN SANDSTONE CONTACT RARE GLAUS PRESERVED OF LOW-MODERATE CEMENTED CLAY.			NO HCL REACTION
7506	BCS0000	1025-1030 AS ABOVE			
7507	BCS0000	1030-1035 AS ABOVE. FIRST APPEARANCE OF MODERATE R.S.D. (SR 4.5/5) FINE SANDSTONE.			
7508	BCS0000	Interbedded sandstone, siltstone, and clay, as above. Increased variety of lithologies. Multi-colored sandstone fragments. Ranging from moderate red (SR 4.5/5), moderate orange pink (10R 7/4), pale greenish yellow (10Y 7/2), and grayish orange pink (10R 8/2).			
7509	BCS0000	AS ABOVE			
7510	BCS0000	AS ABOVE WITH REDUCTION IN SIZE AND QUANTITY OF PALE YELLOWISH GREEN FRAGMENTS. STILL MULTIVARIABLE. MOSTLY ANGULAR DRILLING INDUCED FRAGMENTS AND MINOR ROUNDED GRAVELS.			
7511	BCS0000	AS ABOVE. INCREASE SIZE OF ROUNDED GRAVELS TO 1".			
7512	BCS0000	AS ABOVE			
7513	BCS0000	AS ABOVE. FIRST APPEARANCE OF LIGHT BROWN (5YR 5/4) FINELY LAMINATED SILTSTONE. CONSTITUTES 5-8% OF MATERIAL; SHARP ANGULAR FRAGMENTS			NO HCL REACTION
7514	BCS0000	Interbeds as above with reduced percentage AND size of gravel components. CLAY CONSTITUTES 30% OF MATERIAL WHEREAS ABOVE. SILTSTONE/SANDSTONE/CLAY WERE PRESENT IN ROUGHLY EQUAL PROPORTIONS			@ 1060 SAMPLER IS MODIFIED WITH A DIVERTER TO REDUCE QUANTITY. (SEE SCIENCE NOTEBOOK PAGE 47) SHOULD NOT AFFECT QUALITY OF SAMPLE
7515	BCS0000	AS ABOVE WITH INCREASED SIZE OF GRAVEL TO 1". RATIO OF COMPONENTS RETURN TO EQUAL AMOUNTS CHIPS IN SAMPLE TRAY DISPLAY SANDSTONE/SILTSTONE BEDDING			
7516	BCS0000	AS ABOVE. STILL PRODUCING ANGULAR DRILLING INDUCED CHIPS OF SANDSTONE AND SILTSTONE. ROUNDED GRAVELS UP TO 1" SUGGEST THAT THE SANDSTONE IS CONGLOMERATIC. CLAY CONSTITUTES 75% OF MATERIAL			
7517	BCS0000	CONGLOMERATIC RED SANDSTONE, DARK REDDISH BROWN (10R 3/4), SAND IS DEEPLY WEATHERED, SAND IS MOD-COARSE GRAINED			NO HCL REACTION

Prepared By BOB WILCOX Date 7-29-00 Checked By J.S. Walker Date 8-30-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 1080 To 1145 Page 10 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1085	BCS0000 7517 27 MIN	INTERBEDDED SANDSTONE AND CLAYSTONE; moderate red (SR 4/6), clay is moderately plastic; sandstone is fine to medium grained			Change shift 7-29-00 1005, 7-30-00 Strong HCl reaction
1090	BCS0000 7518 11 MIN	INTERBEDDED SANDSTONE, CLAYSTONE, AND SILTSTONE; moderate red (SR 5/4) to very pale orange (10YR 8/2); 25% clay content, clay has moderate plasticity			Moderate HCl reaction
1095	BCS0000 7519 19 MIN				Moderate HCl reaction
1100	BCS0000 7520 28 MIN	SANDY CLAYSTONE; moderate brown (SR 4/4), clay has moderate plasticity; sand is fine grained			Weak HCl reaction
1105	BCS0000 7521 31 MIN				Hole deviation = 3/4° @ 1100' Weak HCl reaction
1110	BCS0000 7522 18 MIN				Weak HCl reaction
1115	BCS0000 7523 30 MIN	INTERBEDDED CLAYSTONE AND SANDSTONE; moderate red (SR 5/4) to moderate reddish brown (10R 4/6), clay has moderate to high plasticity; sand is fine grained and becomes finer with depth; unit appears to be weathered and contains MnOx dendrites at the base			Moderate HCl reaction from 1110-1125'
1120	BCS0000 7524 19 MIN				
1125	BCS0000 7525 15 MIN				Moderate-weak HCl reaction from 1125-1145'
1130	BCS0000 7526 35 MIN				
1135	BCS0000 7527 32 MIN				
1140	BCS0000 7528 23 MIN	SANDSTONE WITH MINOR CLAYSTONE; moderate red (SR 5/4) to moderate reddish brown (10R 4/6), sand is very fine grained; clay has low to moderate plasticity; unit has weathered appearance and contains MnOx dendrites on sandstone			
1145	BCS0000 7529 15 MIN				

Revision By \_\_\_\_\_  
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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWNP-2DB Drill Depth From 1145 To 1210 Page 11 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1150	BCS0000 7530 25 MIN	SANDSTONE WITH MINOR CLAYSTONE: moderate red orange (10R 6/6) and moderate reddish brown (10R 4/6)			Weak HCl reaction
1155	BCS0000 7531 43 MIN				Weak HCl reaction
1160	BCS0000 7532 15 MIN	INTERBEDDED CLAYSTONE, SILTSTONE, AND SANDSTONE: fine grained sandstone with lesser claystone and siltstone; siltstone is very pale orange (10YR 8/2) Unit contains fragments of crystal-rich tuff, color of tuff is moderate red (5R 5/4), tuff contains abundant biotite and a white opaque mineral; this unit could possibly be a deeply weathered and altered tuff		TRAM	Hole deviation = 1/2° @ 1160'. Weak HCl reaction
1165	BCS0000 7533 15 MIN				
1170	BCS0000 7534 21 MIN				
1175	BCS0000 7535 24 MIN				
1180	BCS0000 7536 27 MIN				
1185	BCS0000 7537 5 MIN	ASHFLOW TUFF: moderate reddish brown (10R 4/6); deeply altered and oxidized to red clay; primary volcanic texture partially preserved: pumice rich (10%), pumice is white (N9) to very light gray (N8), flattened as much as 10:1, 1mm length; ashflow is crystal rich; felsic/mafic ratio is 1:1; mafics are predominantly fresh unaltered biotite and rare dendritic manganese oxide. No lithics present.			7:30-00 Shift change, 1200 Trip part way out. Add 2' jet sub @ 942.44'.
1190	BCS0000 7538 20 MIN	Preserved ashflow fragments become dusky red (5R 3/4). Pumice is white and flattened.			1185-1205' very little sample return
1195	BCS0000 7539 15 MIN	Two types of ashflow tuff: dusky red (5R 3/4) & pale red (10R 6/2). Both display primary volcanic texture			Weak to no HCl reaction. Minor contamination from uphole siltstone & sandstone.
1200	BCS0000 7540 15 MIN				
1205	BCS0000 7541 5 MIN	Pale red component appears to be bleached equivalent of dusky red material - monolithic.		TRAM	
1210	BCS0000 7542 40 MIN	INTERBEDDED CLAYSTONE AND SILTSTONE: siltstone ranges in color from moderate reddish brown (10R 4/6) to grayish orange (10YR 7/4), siltstone is finely laminated (1-5mm) and present as angular drilling induced fragments; fragments of altered ashflow are present and are probably contamination from above			Weak HCl reaction, possibly from carbonate cementation of siltstone.

Revisions BY \_\_\_\_\_  
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**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-SWDP-2DB Drill Depth From 1210 To 1275 Page 12 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1215	BCS0000 7543 60 MIN	INTERBEDDED CLAYSTONE & SILTSTONE; moderate reddish brown (10R 4/6) and grayish orange (10YR 7/4), strongly cemented; minor contamination from altered tuff above (<5%) & 75% clay.			Drill rate slows to 12 min/ft. Altered ashflow tuff from 1155-1205' interval is very soft & sloughing down hole, resulting in minor contamination of sample. No HCl reaction from 1220-1240'
	BCS0000 7544	Platy siltstone chips.			
1220	30 MIN	Platy chips with coring induced surfaces. Predominantly grayish orange (10YR 7/4) & moderate orange pink (10R 4/7), finely laminated (1-5mm), 75% clay. Increased thickness of siltstone bedding. Decreased amount of clay (35-40%)			
1225	BCS0000 7545 70 MIN				
	BCS0000 7546				
1230	50 MIN	SILTSTONE: grayish orange (10YR 7/4) & moderate orange pink (10R 7/4), very hard, platy, thinly bedded (2-5 mm), no clay; trace of very fine grained sandstone, pale red (10R 6/2), very hard. Trace of clay below 1235'			Shift change 7-30-00, 2400 7-31-00, 0000
1235	BCS0000 7547 60 MIN				
	BCS0000 7548	Some moderate orange (10R 6/6) & moderate red (5R 4/6) welded tuff & pale reddish brown (10R 5/4) hard siltstone below 1235'			Poor recovery
1240	BCS0000 7549 72 MIN	Amount of clay increasing below 1240'			
1245	34 MIN				No recovery
	BCS0000 7550				
1250	26 MIN	INTERBEDDED CLAYSTONE AND SILTSTONE; siltstone with lesser claystone, color is mottled with moderate pink (5R 7/4), moderate orange pink (10R 7/4), grayish orange (10YR 7/4), and moderate reddish brown (10R 4/6); clay has moderate plasticity; minor welded tuff fragments appear in the unit (possible contaminant from up-hole)			Moderate HCl reaction
1255	BCS0000 7551 43 MIN				
	BCS0000 7552				Moderate HCl reaction Hole deviation = 1/2" @ 1260' Weak to no HCl reaction
1260	50 MIN				
	BCS0000 7553	INTERBEDDED SILTSTONE AND CLAYSTONE; claystone with lesser siltstone, color is mottled with pale reddish brown (10R 5/4), moderate reddish brown (10R 4/6) and grayish orange (10YR 7/4); material displays moderate to high plasticity; 20% siltstone content; unit contains tuff fragments (possible contaminant from up-hole)			
1265	24 MIN				
	BCS0000 7554				
1270	24 MIN				
	BCS0000 7555				
1275	16 MIN				

Revisions By \_\_\_\_\_  
 Prepared By BOB WILCOX Date 5-30-01 Checked By J.S. Well Date 8/30/07  
 Amended by KDD 8-16-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID Nc-EWDP-2DB Drill Depth From 1275 To 1340 Page 13 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1280	BCS0000 7556 22 MIN	SILTSTONE & SANDSTONE: pale yellowish brown (10YR 6/2), calcareous, soft, very fine sandstone & moderate red (5R 5/4) to grayish red (10R 4/2) silicified, hard siltstone?			Strong HCl reaction from 1275-1305'
1285	BCS0000 7557 29 MIN	INTERBEDDED SILTSTONE AND CLAYSTONE: claystone with lesser siltstone. Color is mottled with moderate reddish pink (10R 7/4); clay has moderate to high plasticity; unit contains weathered tuff fragments (possible contamination from above)			Add PAC-L to drilling fluid to encapsulate clay.
1290	BCS0000 7558 26 MIN	In the lower 3-4 feet of unit is the appearance of moderate orange pink (10R 7/4) calcareous silty sandstone and moderate reddish brown (10R 4/6) claystone.			Poor recovery
1295	BCS0000 7559 37 MIN	INTERBEDDED SILTSTONE, CLAYSTONE & SANDSTONE: moderate red (5R 5/4) fine grained sandstone, dark yellowish orange (10YR 6/5) to dusky yellow (5Y 6/4) siltstone & highly plastic clay with moderate reddish brown (10R 4/6) mottling.			Copious returns
1300	BCS0000 7560 37 MIN				
1305	BCS0000 7561 28 MIN	INTERBEDDED SANDSTONE AND CLAYSTONE WITH GRAVEL: Claystone is moderate reddish orange (10R 6/6) to moderate reddish brown (10R 4/6); clay has moderate plasticity; gravels include minor subrounded quartzite; unit contains pale reddish brown (10R 5/4) welded tuff fragments and a trace of yellowish gray (5Y 7/2) siltstone.			Moderate-strong HCl reaction.
1310	BCS0000 7562 46 MIN				Shift change 7-31-00 7-31-00, 1200
1315	BCS0000 7563 38 MIN	SANDY GRAVEL AND COBBLES: medium light gray (N6) and dark gray (N3) chert & quartz; the cobbles, moderate red (5R 4/6) welded tuff cobbles, moderate reddish brown (10R 4/6) claystone & siltstone. Largest gravel clast 1 1/4" x 3/4"			Moderate HCl reaction
1320	BCS0000 7564 37 MIN	Moderate reddish brown (10R 4/6) siltstone with medium plasticity from 1318-1321.			Weak HCl reaction
1325	BCS0000 7565 47 MIN	Dark gray (N3) chert & quartzite cobbles become predominant.			No HCl reaction (clay)
1330	BCS0000 7566 50 MIN	Rare limestone cobble.			No HCl reaction, except for rare fragments.
1335	BCS0000 7567 101 MIN	SILTSTONE: moderate reddish brown (10R 4/6); material is moderately plastic.			No HCl reaction, except for rare fragments.
1340	BCS0000 7568 71 MIN				Moderate HCl reaction
					No HCl reaction

Revisions By \_\_\_\_\_ Prepared By Bar Wilcox Date 5-30-01 Checked By J.S. Walker Date 8/30/01  
Amended by KDD 8-16-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 1340 To 1405 Page 14 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1345	BCS0000 7569 84 MIN	SILTSTONE: AS ABOVE - moderate reddish brown (10R 4/6), moderate plasticity	[Blank]	[Blank]	Strong HCl reaction from 1340-1365'
	BCS0000 7570				
1350	65 MIN				
	BCS0000 7571				
1355	63 MIN	1354-1364 color becomes grayish red (10R 4/2)	[Blank]	[Blank]	Hole deviation = 3/4° @ 1360'
	BCS0000 7572				
1360	60 MIN				
	BCS0000 7573				
1365	37 MIN	GRAVEL: Black (N1) chert & quartzite, moderate red (5R 4/6) tuff, light gray (N7) chert & quartzite cobbles.			
	BCS0000 7574				
1370	28 MIN	Predominantly dark gray (N3) to grayish black (N2) quartzite, chert, silicified siltstone & carbonates. Some greenish gray (5G 6/1) quartzite. Gravels are subrounded. Minor moderate orange pink (10R 7/4) siltstone & pale red (10R 6/2) tuff gravel.			
	BCS0000 7575				
1375	25 MIN				
	BCS0000 7576				
1380	30 MIN	Increased amount of quartzite gravel below 1380'.			
	BCS0000 7577				
1385	34 MIN	[Blank]			
	BCS0000 7578				
1390	60 MIN				
	BCS0000 7579				
1395	96 MIN	SANDY CLAYSTONE: moderate brown (5YR 4/4), well sorted coarse sand; trace of fine gravel; clay has moderate to high plasticity			
	BCS0000 7580				
1400	84 MIN	[Blank]			
	BCS0000 7581				
1405	104 MIN	[Blank]			

Revised By \_\_\_\_\_  
 Prepared By Bob Wilcox Date 5-30-01 Checked By J.S. Wood Date 8/30/01  
 Amended by KDD 8-16-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 1405 To 1470 Page 15 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1410	BCS0000 7582 120 MIN	SANDY CLAYSTONE: moderate brown (5YR 4/4) claystone, poorly graded, medium to coarse, subrounded to subangular sand. Mixed lithologies: tuffaceous, sandstone, siltstone, quartzite & carbonates			SHIFT CHANGE 8-1-00, 12:00 8-1-00, 12:00
1415	BCS0000 7583 150 MIN	SILTY & SANDY CLAYSTONE: pale yellowish brown (10YR 6/2) no quartzite or carbonates. Medium to fine sandstone siltstone & altered tuff. Trace fine rounded gravel. Tuff may be contamination from Trans fm at 1155-1205'			Clay has strong HCl reaction.
1420	BCS0000 7584 120 MIN	CLAYEY & SILTY SANDSTONE with minor fine gravel; pale yellowish brown (10YR 6/2); well graded sand composed of chert, siltstone, quartzite & altered tuff; 5% tuff gravels			Strong HCl reaction 8-1-00, 24:00
1425	BCS0000 7585 45 MIN	SILTY CLAYSTONE: medium light gray (N6) - medium gray (N5), well indurated, <10% very fine sand, moderate to high plasticity.			8-2-00, 0000. Start drilling @ 0630. change to long tooth bit. Strong HCl reaction from 1420-1440'.
1430	BCS0000 7586 65 MIN	SANDY CLAYSTONE: moderate brown (5YR 4/4 to 3/4), <20% sand, <15% fine gravel, fragments of moderate brown (5YR 3/4) silty sandstone & grayish reddish purple (5RP 4/2) siltstone & moderate sandstone.			
1435	BCS0000 7587 101 MIN	Increased amount of sand (<30%) & fine gravel (20%)			
1440	BCS0000 7588 77 MIN	Fragments of grayish brown (5YR 3/2) silty clay.			
1445	BCS0000 7589 60 MIN	SANDY & SILTY CLAYSTONE: Silt appears as light greenish gray (5GY 8/1) streaks in the moderate brown clay. Sand & gravel are hard & strongly cemented. Minor (<5%) fine gravels			Shift change 8-2-00, 12:00 8-2-00, 12:00
1450	BCS0000 7590 30 MIN	Light brown (5YR 6/4). Increased granularity; 20% sand, 25% silt, 40% clay with 15% fine gravel. Siltstone & sandstone grains are very hard.			Increased drilling may be due to increased granularity.
1455	BCS0000 7591 35 MIN	GRAVELLY & SANDY CLAYSTONE: 5% fine gravel, 35% well graded sand, 60% clay. Color is lighter than silty clays above. Grains are very hard, strongly cemented silts and sands. Also contains black chert.			Strong HCl reaction
1460	BCS0000 7592 25 MIN	Decrease in amount of gravel (<5%) & slightly less sand (20-25%)			Hole deviation = 1/2" @ 1462'
1465	BCS0000 7593 50 MIN	"Clay balls" amount increasing & granularity decreasing			
1470	BCS0000 7594 20 MIN				

Prepared By B. Sullivan Date 5-30-01 Checked By J.S. White Date 8/30/01

Amended by KDD 8-16-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EMP-2DB Drill Depth From 1470 To 1535 Page 16 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes	
1475	BCS0000 7595 25 MIN	SANDY CLAYSTONE: 25% well graded sand, < 5% fine gravels consisting of siltstone, sandstone & chert.			Strong HCl reaction from 1470-1535'	
	BCS0000 7596	Increased coarse grained fraction. Gravel size increases from 1/4" to 3/4". Composed predominantly of sandstone & quartzite (20%), subrounded to rounded. 25% sand & 55% clay.				
1480	BCS0000 7597 25 MIN	SANDY & SILTY CLAYSTONE: moderate brown (5YR 4/4) with gray (NG) streaks of silt, medium to coarse grained sand with minor (< 5%) fine gravel.				
1485	BCS0000 7598 50 MIN	No gravel.				
1490	BCS0000 7599 35 MIN	Trace of sand. no gravel.				
1495	BCS0000 7600 20 MIN	SILTY CLAYSTONE: moderate brown (5YR 4/4), decrease in silt amount, no sand or gravel, less gray, 85% clay, 15% silt, low to moderate plasticity, very soft				
1500	BCS0000 7601 35 MIN					
1505	BCS0000 7602 30 MIN	85% clay, 15% silt, sticky "fat" clay.				
1510	BCS0000 7603 20 MIN	CLAYSTONE: Light brown (5YR 6/4), sand-size drilling induced, homogeneous fragments of claystone, low plasticity due to fragments, clay is sticky.				Drilling rate decreases.
1515	BCS0000 7604 40 MIN					
1520	BCS0000 7605 55 MIN					
1525	BCS0000 7606 35 MIN					
1530	BCS0000 7607 40 MIN					
1535						

Prepared By Paul Wilcoxon Date 5-30-01 Checked By J.S. Walker Date 8/30/01

AMENDED BY KDD 8-16-01

REV. 1a



**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-SWDP-2DB Drill Depth From 1535 To 1600 Page 17 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1540	BCS0000 7608 45 MIN	CLAYSTONE: Light brown (5YR 6/4), moderate to high plasticity, "fat" & sticky, nonhomogeneous with drilling induced fragments. Same material since 1510'			Slow drilling Strong HCl reaction from 1535-1565'
1545	BCS0000 7609 50 MIN	Mottled with grayish brown (5YR 3/2). Fragments (3mm) of very light gray (N8) ash? scattered throughout claystone.			Shift change 8-2-00, 2400 8-3-00, 0000
1550	BCS0000 7610 40 MIN				
1555	BCS0000 7611 40 MIN				
1560	BCS0000 7612 18 MIN	Some fragments of very fine grained, very light gray (N8) sandstone from 1555-1560'			Hole deviation = 1/2" @ 1560'
1565	BCS0000 7613 11 MIN				
1570	BCS0000 7614 11 MIN	SANDY GRAVEL: Color of gravels range from dark gray (N8) to gray black (N2), lithologies of gravels are mixed and consist of chert, quartzite, siltstone, sandstone and carbonates (limestone and dolomite), gravels are fine and subrounded; sand is coarse, well sorted, and comprises less than 10% of unit			Gravel may be 5' higher due to sample lag time. Predominantly no HCl reaction except for strong reaction on carbonates
1575	BCS0000 7615 10 MIN				
1580	BCS0000 7616 20 MIN				
1585	BCS0000 7617 20 MIN				
1585	BCS0000 7618 20 MIN	Trace of clay from 1585-1587'			
1590	BCS0000 7619 27 MIN				
1595	BCS0000 7620 14 MIN	Trace of clay from 1596-1600'			Down for repairs 8-3-00, 0952 8-4-00, 1043 START DRILLING. NEW MUD PITS & MUD REGIME.
1600	21 MIN				

Prepared By B. S. Wilcox Date 5-30-01 Checked By J. S. Walk Date 8/30/01  
 AMENDED BY KOP 8-16-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWOP-2DB Drill Depth From 1600 To 1665 Page 18 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1605	BCS0000 7621 37 MIN BCS0000 7622	GRAVELS: fine subrounded, < 10% coarse sand, no fines, multiple lithologies.  slight increase in clay content (1-2%)			shift change 8-4-00, 1200
1610	35 MIN BCS0000 7623	GRAVELLY CLAYSTONE: Light brown (5YR 6/4), 15-20% fine gravel, rounded to subangular, variable lithologies: quartzite, chert, limestone, sandstone & siltstone. clay is sticky & moderate to high plasticity, less than 5% sand content.			Strong HCl reaction
1615	35 MIN BCS0000 7624				Dramatic reduction in drilling rate.
1620	160 MIN BCS0000 7625	SILTY & GRAVELLY SANDSTONE: moderate brown (5YR 4/4), minor clay (<5%), 30% fine to medium gravel composed of: tuffaceous fine sand, medium to light gray (N6); finely laminated sandstone, light olive gray (5Y 5/2); massive fine sandstone (moderate brown 5YR 3/4), trace of altered tuff, moderate red (5R 4/6).			Moderate HCl reaction from 1620 - 1655'
1625	2:25 MIN BCS0000 7626	SANDY & SILTY CLAYSTONE: pale yellowish brown (10YR 6/2) 50% clay, 40% silt, 10% sand.			
1630	4:5 MIN BCS0000 7627	SANDY CLAYSTONE: moderate brown (5YR 4/4), sticky, 30% sand well graded sand, rounded to subrounded mixed lithologies, low to moderate plasticity.			
1635	40 MIN BCS0000 7628	Decreased amount of sand (15-20%)			
1640	35 MIN BCS0000 7629	Amount of fine gravel increasing to 5%			
1645	60 MIN BCS0000 7630				
1650	22 MIN BCS0000 7631	SILTY CLAYSTONE: medium light gray (N6), < 10% fine sand, high plasticity. Abundant quartz & biotite (reworked tuff?)			shift change 8-4-00, 2400
1655	38 MIN BCS0000 7632	Light gray (N7) to medium light gray (N6). Increased amount of fine sand (<20%) & silt, moderate to high plasticity.			Strong HCl reaction
1660	45 MIN BCS0000 7633				Hole deviation = 3/4° @ 1660'
1665	52 MIN				Strong HCl reaction

Prepared By Bob Wilcox Date 5-30-01 Checked By J.S. Walker Date 2/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NY-ESDP-2DB Drill Depth From 1665 To 1730 Page 19 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1670	BCS0000 7634 32 MIN	SILTY CLAYSTONE: Light gray (N7) to medium gray (N6)			Strong HCl reaction
1675	BCS0000 7635 23 MIN				Strong HCl reaction
1680	BCS0000 7636 27 MIN	Increased amount of fine sand (<25%)			Moderate HCl reaction from 1675-1690'
1685	BCS0000 7637 26 MIN				
1690	BCS0000 7638 31 MIN	GRAVELLY CLAYEY SANDSTONE: Light gray (N7) to medium light gray (N6), well graded sand, <10% fine gravel, moderate plasticity, abundant quartz and biotite. (reworked?)			
1695	BCS0000 7639 34 MIN	SANDY CLAYSTONE: Light gray (N7) to medium light gray (N6) mottled with moderate reddish orange (10R 6/6) fine sand, <25% sand.			Weak HCl reaction
1700	BCS0000 7640 37 MIN	No mottling, increased amount of sand (<30%). Some gravel (<10%)			Weak HCl reaction
1705	BCS0000 7641 44 MIN				Moderate HCl reaction
1710	BCS0000 7642 48 MIN	GRAVELLY CLAYEY SANDSTONE: light brownish gray (5YR 6/1) to pale brown (5YR 5/2); predominantly fine sand; less than 15% fine gravel; clay has moderate plasticity			Strong HCl reaction from 1705-1720.
1715	BCS0000 7643 25 MIN	SANDY SILTY CLAYSTONE WITH Gravel: light olive gray (5Y 6/1) to greenish gray (5GY 6/1); less than 20% fine sand; less than 10% fine gravel; abundant quartz and biotite; interval contains numerous olive gray (5Y 4/1) siltstone fragments; clay has moderate to high plasticity			
1720	BCS0000 7644 32 MIN	CLAYEY SANDSTONE (weathered tuff?): Light gray (N7), moderate to low plasticity, abundant quartz and biotite.			
1725	BCS0000 7645 39 MIN	Some grayish red (10R 4/2) siltstone fragments			Moderate HCl reaction
1730	BCS0000 7646 28 MIN	SILTY CLAYSTONE: Light brownish gray (5YR 6/1) to brownish gray (5YR 4/1), <10% fine sand, high plasticity			Strong HCl reaction

Revised By \_\_\_\_\_  
 Prepared By B. J. Wilcox Date 6-2-01 Checked By J. S. Walker Date 8/30/01  
 Amended by KDB 8-20-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 1730 To 1795 Page 20 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1735	BCS 0000 7647 48 MIN	SILTY CLAYSTONE Med - high plasticity, moderate brn (SYR 4/4 - 3/4)			Strong HCl reaction
1740	BCS 0000 7648 57 MIN	Sandy claystone, med. brown (SYR 4/4), 5% fine-med sand, rounded to subangular; 95% clay, med. plasticity. Soft, homogeneous, sticky, trace silt			Shift Change 8-5-00, 1700 8-5-00, 1700
1745	BCS 0000 7649 67 MIN	High plasticity			STRONG HCL REACTION
1750	BCS 0000 7650 65 MIN	Decreased amount of sand (< 5%)			DEVIATION = 1 1/2' @ 1750' - skip barcode sequence
1755	BCS 0000 7777 60 MIN	Trace amount of fine to medium sand			
1760	BCS 0000 7778 50 MIN				STRONG HCL REACTION DEVIATION = 1' @ 1762'
1765	BCS 0000 7779 35 MIN	Trace amount of silt			
1770	BCS 0000 7780 48 MIN				strong HCL reaction
1775	BCS 0000 7781 42 MIN				Moderate HCl react
1780	BCS 0000 7782 82 MIN	Increased amount of sand (5%)			Moderate HCl react
1785	BCS 0000 7783 100 MIN				8-5-00, 2400 SHIFT CHANGE 8-6-00, 0000 Moderate HCl react
1790	BCS 0000 7784 68 MIN				Weak HCl reaction
1795	63 MIN				

Prepared By B. W. Walker / K. DONNELLY Date 8/5/00 - 8/6/00 Checked By J.S. Walker Date 8/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-SUNDP-2DB Drill Depth From 1795 To 1860 Page 21 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1800	BCS0000 7785 73 MIN	SANDY CLAYSTONE; moderate brown (5YR 4/4) scattered fragments and thin layers of pale yellowish green (10GY 7/2) to grayish green (5G 5/2) siltstone & sandstone.			Strong HCl reaction from 1795-1805
	BCS0000 7786	Decreased amount of sand below 1800'			
1805	53 MIN				Moderate HCl reaction
	BCS0000 7787				
1810	57 MIN				No HCl reaction from 1810-1820'
	BCS0000 7788				
1815	47 MIN				
	BCS0000 7789	SANDY CLAYSTONE WITH SILT: pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4); clay has low to moderate plasticity; sand is fine grained			
1820	34 MIN				Weak HCl reaction from 1820-1830'
	BCS0000 7790	SILTY CLAYEY SANDSTONE: pale yellowish brown (10YR 6/2); low plasticity; sand is fine grained			
1825	15 MIN				
	BCS0000 7791	increased coarse sand and fine gravel (<10%)			
1830	9 MIN				No HCl reactions weak reaction from 1830-1850'
	BCS0000 7792	SANDY GRAVEL AND COBBLES: multi-colored ranging from medium dark gray (N4), grayish black (N2), brownish gray (5YR 4/1), pale olive (10Y 6/2) and moderate yellowish brown (10YR 6/4); gravels are subrounded and composed of quartzite, chert, and carbonate; sand is fine grained			
1835	30 MIN				
	BCS0000 7793	From 1835-1840: increased moderate yellowish brown (10YR 6/2) gravel			
1840	16 MIN				
	BCS0000 7794				
1845	22 MIN				
	BCS0000 7795				
1850	51 MIN				Moderate HCl reaction.
	BCS0000 7796	CLAYSTONE: grayish brown (5YR 4/2), clay has high plasticity			
1855	59 MIN				
	BCS0000 7797	as above with a trace of reworked buff fragments			Shift change 8-5-00, 2400
1860	60 MIN				8-6-00, 0000

Revision 034  
 Prepared By Bob Wilcox Date 6-2-01 Checked By J.S. Walker Date 8/30/01

Amended KDP 8-20-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-611P-2DB Drill Depth From 1860 To 1925 Page 22 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes	
1865	BCS0000 7778 80 MIN	CLAYSTONE: Grayish brown (5YR 4/2), high plasticity			Add 2ft. jet sub between joints # 76 & 77 @ 1862.5'. Hole deviation = 1/4° @ 1862'. Moderate HCl reaction from 1860-1925'	
1870	BCS0000 7799 32 MIN	No discernible sand or silt				
1875	BCS0000 7800 25 MIN	Very sticky "clay balls"; trace of fine sand.				
1880	BCS0000 7801 39 MIN	Amount of sand increasing to 5% composed of quartzite, sandstone and rounded fragments of 1/8" tuff.				
1885	BCS0000 7802 39 MIN	Amount of sand increased from 5 to 10%.				
1890	BCS0000 7803 30 MIN					
1895	BCS0000 7804 29 MIN					
1900	BCS0000 7805 30 MIN	10% sand and 5% fine gravel (1/8" - 1/2"), subrounded, composed of dark yellowish orange (10YR 6/6), medium gray (N5) carbonate. Gravel and sand may be indicative of storm surge.				10' sample interval from 1900-1910'
1905	BCS0000 7806 30 MIN					
1910	BCS0000 7807 30 MIN	Amount of sand decreased to trace and gravel decreased to none. Claystone is sticky with high plasticity.				
1915	BCS0000 7808 35 MIN	No sand or gravel				
1920	BCS0000 7809 45 MIN					
1925	BCS0000 7810 50 MIN					

Prepared By Born Wilcox

Date 6/2/01

Checked By J.S. Walk

Date 8/30/01

Amended by KOD 8-26-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 1860 To 1990 Page 23 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
	BCS0000 7811	CLAYSTONE: Grayish brown (5YR 4/2), high plasticity			Weak HCl reaction
1930	39 MIN BCS0000 7812	Rare amounts of devitrified pumice <2mm diam.			SHIFT CHANGE 8-6-00, 2400 8-7-00, 0000 Weak HCl reaction
1935	41 MIN BCS0000 7813				Weak HCl reaction
1940	45 MIN BCS0000 7814	< 5% FINE SAND			Mod HCl reaction
1945	63 MIN BCS0000 7815	< 10% FINE SAND			Mod HCl reaction
1950	64 MIN BCS0000 7816	< 5% FINE SAND			Weak HCl reaction
1955	53 MIN BCS0000 7817	Grayish brown (5YR 4/2) to moderate brown (5YR 5/4)			No HCl reaction
1960	49 MIN BCS0000 7818				Mod HCl reaction
1965	48 MIN BCS0000 7819	Increased amount of silt			Mod HCl reaction
1970	54 MIN BCS0000 7820	Decreased amount of silt and sand			Mod HCl reaction
1975	46 MIN BCS0000 7821				Mod HCl reaction
1980	57 MIN BCS0000 7822	Moderate brown (5YR 4/4 - 3/4) Mostly clay,			Weak HCl reaction
1985	57 MIN BCS0000 7823	as above			
1990	60 MIN				SHIFT CHANGE 8-7-00, 1700 8-7-00, 1900

Prepared By K. DUNNELLSON

Date 8-7-00

Checked By J.S. Walsh

Date 8/30/07

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 1990 To 2055 Page 24 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
1995	BCS0000 7824 75 MIN	CLAYSTONE: moderate brown (SYR 4/4-3/4) sticky, high plasticity; no discernible sand			Moderate HCl reaction from 1990-2045'
2000	BCS0000 7825 85 MIN				
2005	BCS0000 7826 57 MIN				
2010	BCS0000 7827 50 MIN	Mottled moderate brown (SYR 4/4-3/4) and grayish brown (SYR 4/2)			
2015	BCS0000 7828 42 MIN	Washed cuttings composed of moderate brown (SYR 4/4-3/4), well indurated (but not lithified) 1/4"-1/2" claystone fragments and 30% greenish gray (SGY 6/1) fragments of reworked tuff. Fragments of weathered porphyritic tuffs (quartz-mica and mafics).			
2020	BCS0000 7829 36 MIN	Strong greenish gray (SGY 6/1) mottling. No sand. 50% weathered porphyritic tuff fragments from 2010-2015; trace devitrified pumice (quartz-phyrnic)			
2025	BCS0000 7830 30 MIN	No mottling, pure clay, no sand, no reworked tuff.			
2030	BCS0000 7831 54 MIN	5-10% fine (1/8"-3/8") subrounded gravel composed of light olive gray (SY 5/2) siltstone, very finely laminated (< 1mm), medium dark gray (N4) carbonate and trace of black (N1) chert.			
2035	BCS0000 7832 25 MIN	No gravel, clean clay with high plasticity. Drilling induced claystone fragments - strongly indurated to weakly lithified.			
2040	BCS0000 7833 55 MIN	Trace greenish gray (SGY 4/1) reworked tuff and moderate brown (SYR 4/4) claystone			
2045	BCS0000 7834 73 MIN				
2050	BCS0000 7835 56 MIN				
2055	BCS0000 7836 70 MIN				

SHIFT CHANGE  
8-7-00, 2900  
8-8-00, 0000

Prepared By Base Wilcox  
Amended by K00 8-20-01

Date 6-2-01

Checked By J.S. Wilcox Date 8/30/01



**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EW01P-2DB Drill Depth From 2055 To 2120 Page 25 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
7837	BCS0000 7837	CLAYSTONE; as from 1850'; moderate brown (5YR 4/4 to 3/4), highly plastic, trace fine sand (poss. reworked volcanic phenocrysts). Unit is cut into 2-10mm clots with wet plastic rinds and dry claystone cores.			SHIFT change 8/17/00 2400 8/18/00 0000 mod. HCL reaction
2060	75 MIN BCS0000 7838	Claystone, as above			down for 3HRS to repair "4" in return line. weak HCL reaction
2065	70 MIN BCS0000 7839	Claystone, as above, no discernable sand			no HCL reaction
2070	43 MIN BCS0000 7840	Claystone, as above, ?softer - faster drilling. Some ?beds of greenish-brown clay.			Drilling rate increasing no HCL reaction
2075	30 MIN	Sharp Contact			increase in drill rate before appearance of sand; unit suggests a ~10' lag. (60-75min)
2080	BCS0000 7841 29 MIN BCS0000 7842	CLAYEY SAND/SANDSTONE: Dark yellowish brown (10YR 4/2), fine sand with 20% clay, weakly indurated. Drilling creates 2-8mm subround balls of clayey sand. Weak-moderately plastic. Local <5% brown silty "chips" As above, increasing clay content to ~50%.			weak-mod HCL reaction weak HCL reaction
2085	20 MIN BCS0000 7843	Clayey Sand, as above, sand is very fine, poss. silty component.			weak HCL reaction
2090	23 MIN BCS0000 7844	Clayey sand, as above, fine sand, sett. Local silt chips as above, some pale green			no HCL reaction
2095	BCS0000 7845	Clayey sand, as above, a 10% med-coarse sand and gravel (N1-4). Unit drills much faster. Clay content decreasing to ~10%. Sand is unconsolidated.			fast drilling no HCL reaction
2100	13 MIN	Gradation Contact			
2105	BCS0000 7846 32 MIN BCS0000 7847	CLAYEY SAND AND GRAVEL: Unconsolidated, ~50% coarse sand and lesser gravel mixed with possible beds of clayey sand (as 2075-2100) ~20%. Sands consist of med-coarse light and dark colored sand (overall N4) and coarse cherty gravel (N3) as higher in hole. gradational contact @ 2105'			Finer sand fraction likely lost to drilling mud - clean tab below bucket 2105' on strong HCL reaction
2110	29 MIN BCS0000 7848	GRAVELLY SAND: fine to coarse, well graded sand, white-color quartz and grey cherty sand (N13 overall) coarser quartz (well indurated) greyish-red (10K 4/2) gravel of siltstone composition ~25% Gravelly sand, as above, gravel composition changes to predominate by chert (N2); finer sand decreasing			fine to med. sand caught in tub. strong HCL reaction
2115	31 MIN BCS0000 7849	Gravelly sand, as above			strong HCL reaction
2120	cont'd	SHARP CONTACT			

Prepared By J.S. WALKER Date 8-8-00 Checked By Kenneth D. Daniel Date 8-30-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 212.0 To 218.5 Page 26 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2125	60 MIN BCS0000 7850	FROM (2120-2150) SANDY SILTY CLAYSTONE WITH GRAVEL. Dark yellowish brown (10YR 4/2), 25% fine sand; 15% gravel, subrounded to subangular, composed predominantly of fragments of fine sandstone, dark gray (N3)			Drill rate decreasing as material becomes clay rich. <del>SHIFT CHANGE 8-15-00, 1425</del> Strong HCl reaction
2130	60 MIN BCS0000 7851	as above with decreasing coarse component (5%)			Strong HCl reaction
2135	60 MIN BCS0000 7852	Sandy silty clay as above, trace gravel, decreasing sand (5-10%)			Strong HCl reaction
2140	60 MIN BCS0000 7853	as above, sand 10-15%, rounded, absence of gravels			Weak HCl reaction
2145	30 MIN BCS0000 7854 30 MIN BCS0000 7855	as above, with increasing sand (40-50%), No gravel, sand is fine grained, well rounded, composed predominantly of quartz and clasts of fine sandstone, dark gray (N3), and trace of black chert (N1)			Mod HCl reaction Short sample 8-8-00, 1425. TRIP out 8-15-00, 1439 Long sample Strong HCl reaction
2150	75 MIN BCS0000 7856	@ 2142.5 Interbedded sandstone/claystone, 75% clay, thinly bedded (1-10mm), predominantly moderate brown (5YR 4/4) clay, pale green sandstone (5G 7/2); claystone is strongly indurated, sandstone is lithified.			Increased drill rate Strong HCl reaction
2155	35 MIN BCS0000 7857	SANDY CLAYEY GRAVELLY light gray quartzite gravel (N8) weathering light olive brown (5Y 5/6), 15%, rounded, (1/8-1/4") and black (N1) fine grained sandstone (maybe chert?), angular to subangular, (1/8-1/4"), 20%; claystone and sandstone fragments are as above.			Strong HCl reaction
2160	35 MIN BCS0000 7858	75% gravel, increasing chert, same gravel as above			Mod HCl reaction DEVIATION = 3/4 @ 2160'
2165	39 MIN BCS0000 7859	as above			Mod HCl reaction
2170	35 MIN BCS0000 7860	as above, increase gravel content ~ 85-90% (1/8-1/4"), same lithology as described @ 2150'			No HCl reaction
2175	30 MIN BCS0000 7861	as above with the appearance of subrounded gravels of reworked tuff, very hard, 2-3%, moderate brown (5YR 3/4) and appearance of angular to subangular fragments of very light gray (N8), salt and pepper texture, 1%			No HCl reaction
2180	40 MIN BCS0000 7862				SHIFT CHANGE 8-15-00, 2400
2185	83 MIN				8-16-00, 0000 Weak HCl reaction

Prepared By BOB WILCOX/IC, DONNELLY Date 8-8-00 To 8-16-00 Checked By J.S. Walker Date 8/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2185 To 2250 Page 27 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
	BCS0000 7863	SANDY GRAVEL: moderate brown (5YR 3/4) and very light gray (N8)			Weak HCl reaction
2190	57 MIN BCS0000 7864	SANDSTONE WITH MINOR GRAVEL: Light brown, fine to medium sand, < 5% gravel, mainly quartz & quartzite, medium gray (N4) - grayish black (N2), very pale orange (10YR 8 1/2) & grayish black (N2). Abundant clear subrounded quartz.			No HCl reaction except for strong reaction on fine sand from 2190-2250'
2195	57 MIN BCS0000 7865				
2200	60 MIN BCS0000 7866				
2205	45 MIN BCS0000 7867				
2210	56 MIN BCS0000 7868				
2215	59 MIN BCS0000 7869				
2220	52 MIN BCS0000 7870				
2225	42 MIN BCS0000 7871	Increased amount of fine sand			Poor recovery
2230	41 MIN BCS0000 7872				
2235	42 MIN BCS0000 7873				
2240	42 MIN BCS0000 7874	Increased amount gravel, 15-20%, fine to coarse, rounded to subangular, composed of: quartz (almost calcined), pinkish gray (5YR 9/1); finely laminated siltstone (possibly shale), grayish black (N2) with orange oxidized banding; and medium grained sandstone, olive gray (5Y 6/2). Note: coarse gravels may be contamination from above. Fine gravels are well sorted.			8-16-00 SHIFT CHANGE 12:00 8-16-00
2245	40 MIN BCS0000 7875	as above with reduction in gravel size - (1/8-3/8")			
2250	60 MIN				

Prepared By KENDON NELSON / BOB WILLIAMS Date 8-16-00 Checked By J.S. Walker Date 8/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2250 To 2315 Page 28 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2255	BCS0000 7876 50 MIN	(as above since 2190') Gravelly sand, light brown (5YR 6/4), fine to medium sand, grains predominantly quartz, quartzite, siltstone, fine-med sandstone, chert; variable colors: med dark gray (N4), gray black (N2), very pale orange (10YR 8/2), yellow gray (5Y 8/1). 15% fine gravel with 1% medium to coarse gravel, rounded to subangular well sorted.	10 0 0 0 0 0 0 0 0		Moderate to strong HCl reaction - by sandy component
2260	BCS0000 7877 55 MIN	gravel content decreasing (~5%), gravel size decreasing (1/8-1/4")	0 0 0 0 0 0 0 0 0		Moderate to strong HCl reactions as above
2265	BCS0000 7878 40 MIN	gravel content increases to 15-20%, size of quartzite gravels increase to 3/4" rounded, weathering to moderate yellow (5Y 8/6); claystone fragments up to 3/4" long axis, moderate indurated, <1% *note: fine gravels are well sorted. The coarse gravels are possibly contamination from above.	0 0 0 0 0 0 0 0 0		Moderate to strong HCl reaction, sand only
2270	BCS0000 7879 45 MIN	gravel decreasing in size (1/8-1/4")	0 0 0 0 0 0 0 0 0		as above, sand only
2275	BCS0000 7880 30 MIN	predominantly fine to medium sand, <5% fine gravel	0 0 0 0 0 0 0 0 0		as above, sand only
2280	BCS0000 7881 30 MIN	as above, slight increase in gravel content	0 0 0 0 0 0 0 0 0		as above, sand only
2285	BCS0000 7882 50 MIN	(as above since 2190') Gravelly sand, 50-55% sand, fine to medium; gravels are composed of the same mixed lithology described @ 2250, subrounded to subangular, 1/8-3/8"	0 0 0 0 0 0 0 0 0		Moderate to strong HCl reaction, sand only
2290	BCS0000 7883 50 MIN	Traces of gray brn (5YR 3/2) siltstone	0 0 0 0 0 0 0 0 0		SHIFT CHANGE 2400 8-17-00, 0703
2295	BCS0000 7884 49 MIN	All angular cuttings, no carbonates and all hard. Abundant med dk gray (N4) - dark gray (N3) aplastic, very hard cuttings with conchoidal - blocky fractures. One grain had a cubic cast <0.5mm diam & another had sulfide grains <0.5 mm diam.	0 0 0 0 0 0 0 0 0		DRILLER REPORTS THAT BIT IS CUTTING LIKE IT IS IN ROCK
2300	BCS0000 7885 101 MIN	Increased gravel with traces of Lt brn (5YR 6/4) clay & 30% gray brn (5YR 3/2), dk gray (N3) & gray gray (5G 6/1) soft siltstone, mixed lithologies, rounded pebbles.	0 0 0 0 0 0 0 0 0		Clay has strong HCl reaction
2305	BCS0000 7886 50 MIN	@ 2300-2305 SANDSTONE WITH MINOR FINE CONGLOMERATE GRAVEL FINE TO MEDIUM GRAINED SAND, COMPOSED PREDOMINANTLY of white rounded quartz and subrounded dk gray (N3) siltstone & gray (N3) gravels are 1/8", predominantly chert, quartzite, siltstone.	0 0 0 0 0 0 0 0 0		SHIFT CHANGE 8-17-00, 1200
2310	BCS0000 7887 155 MIN	SANDY CLAYSTONE WITH MINOR FINE GRAVEL, light to moderate brown (5YR 5/4), 10% fine to med. sand composed of very light gray (N8) translucent quartz and dark gray (N3) siltstone. 5% fine (1/8") gravels of black chert and rounded quartzite; claystone drilling induced fragments are moderately well indurated, med. brown (5YR 5/4)	0 0 0 0 0 0 0 0 0		Moderate to strong Reactive to HCl
2315	BCS0000 7888 136 MIN		0 0 0 0 0 0 0 0 0		Strong Reaction to HCl

Prepared By Ken D. Norpellson Date 8/16/00 - 8/17/00 Checked By J. S. Walker Date 8/30/01

KEN D. NORPELLSON

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-3WDP-2DB Drill Depth From 2315 To 2380 Page 29 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2320	BCS0000 7889 120 MIN	SANDY CLAYSTONE with minor fine gravel: Light to moderate brown (5YR 5/4), 10% fine to medium sand, composed of very light gray (N8) quartz and dark gray (N3) siltstone; 5% fine (1/8") gravel composed of black (N1) chert and rounded quartzite; 85% quartzite, occurs as coring induced fragments, moderate brown (5YR 3/4), moderately well indurated  Increased amount of gravel (10-15%) from 2320 - 2330',			Strong HCl reaction from 2315-2340'
2330	BCS0000 7890 50 MIN				
2335	BCS0000 7891 95 MIN				
2340	BCS0000 7892 109 MIN				
2340	BCS0000 7893 130 MIN	Interbedded Gravely SANDSTONE, WITH CLAYEY SILTSTONE; SAND is composed of very light gray quartz and medium dark gray (N4) to grayish black (N2) quartzite; sand consists of ranges from 10 to 20%; gravels are fine grained and compose 15 to 20% of interval, gravel lithology consists of black (N1) chert and medium dark gray to grayish black (N4-N2) quartzite; clayey siltstone is grayish brown (5YR 3/2) to moderate brown (5YR 4/4) with minor greenish gray (5G 6/1) siltstone, the greenish gray siltstone is harder than the brown siltstone			Shift change 8-17-00, 24:00 8-18-00, 00:00  12mm dia x 25mm long tubular cores* of brown siltstone. Moderate HCl reaction  Strong HCl reaction from 2345 - 2360' Hole deviation = 1 1/2" at 2352'
2345	BCS0000 7894 131 MIN				
2350	BCS0000 7895 166 MIN				
2355	BCS0000 7896 140 MIN				
2355	BCS0000 7897 140 MIN	Increased amount of sand, 10-25%			Shift change 8-18-00, 12:00  Drill rate increases
2360	BCS0000 7898 50 MIN	Increased amount of clay			
2365	BCS0000 7899 40 MIN	Further increase in amount of clay.			
2370	BCS0000 7900 15 MIN	TUFFACEOUS SANDY/SILTY CLAYSTONE: Olive gray (5Y 5/1), 5% fine sand, rounded, well sorted; 95% silt and clay, high plasticity, mafic rich, reworked tuff, well rounded grains  Increased amount of sand, 15-20%			
2375	BCS0000 7901 15 MIN	Increased amount of sand, 25-35%, 1"-2" fragments of reworked tuff, fine to medium grained, well rounded, mafic rich.			Substantial increase in drill rate No HCl reaction from 2365 - 2370'
2380	15 MIN				

\*Coring may be induced by blocks of siltstone being lodged between the tri-cone bit & water ports & they forced into & cut off in the ports

Prepared By Bob Wilcox  
Amended by KXP 8-20-01

Date 6-03-01

Checked By J. S. Alton

Date 8/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2380 To 2445 Page 30 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
	BCS0000 7902	as since 2365', TURFACEOUS SANDY/FILTY CLAY, olive gray (5Y 5/1), ~25% fine sand, well rounded, mafic rich, appears to be reworked tuff			No HCl reaction
2385	15 MIN BCS0000 7903	as above, becoming more gray, less green (med. gray N5) probably less alteration, less clay component			Driller reduces drill rate intentionally because down hole deviation = 1 1/2°
2390	25 MIN BCS0000 7904	From 2390-2396 RHYOLITIC LAVA, dark gray (N3), very hard (-7), microcryst. fine, furnished mafics, chaotic fracturing, dense, mostly unweathered with minor white fracture filling fresh appearance, angular cutting, presence of flow banding [Likely reworked]			No HCl reaction
2395	45 MIN BCS0000 7905	From 2396 to CLAYEY GRAVEL; MED. LIGHT GRAY (N6), 60-70% fine to coarse gravel, rounded to subangular, composed of trauv (west quartz, sand/silt stone (dark gray N3), possibly chert			No HCl reaction
2400	35 MIN BCS0000 7906	as above			No HCl reaction
2405	23 MIN BCS0000 7907				No HCl reaction
2410	31 MIN BCS0000 7908	SANDY GRAVEL: Gray blk (N2), gray (5Y 6/1), med gray (N5), med dk gray (N4) & gray brn (5YR 3/2) well gravel subround-subang, gravel consisting of quartz, quartzite, chert & silt stone, < 5% clay.			Weak HCl reaction
2415	29 MIN BCS0000 7909				SHIFT CHANGE 8-18-00, 2400 8-19-00, 2400
2420	28 MIN BCS0000 7910	SANDY CLAYSTONE WITH INTERBEDDED SILTSTONE: dark yellowish brown (10YR 4/2) to grayish brown (5YR 3/2) to moderate brown (5YR 3/4), moderate plasticity, fine to medium sand, < 15% gravel			Weak HCl reaction
2425	106 MIN BCS0000 7911				Mod. HCl reaction
2430	133 MIN BCS0000 7912	CLAYSTONE WITH INTERBEDDED SILTSTONE: grayish brown (5YR 3/2), trace sand, some fine gravel, high plasticity.			Weak HCl reaction - mod reaction
2435	153 MIN BCS0000 7913				
2440	139 MIN BCS0000 7914				WEAK-MOD HCl REACTION
2445	122 MIN				

Prepared By FOR Wilcox Date 8/18/00 - 8/19/00 Checked By J. S. Well Date 8/30/01  
 KEN DONNELSON

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2495 To 2510 Page 31 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
	BCS0000 7915	CLAYSTONE WITH INTERBEDDED SILTSTONE: AS SINCE 2430' LOW PLASTICITY, CLAYSTONE MOSTLY IN BALLS, SOME CLAYSTONE IN CHIPS, 1% ROUNDED GRAVEL, UP TO 7MM, VOLCANIC-GRAYISH BLACK(NB)			8-19-00, 1200 SHIRT MODERATE HCl REACTION
2450	76 MIN BCS0000 7916	SAND CONTENT INCREASING AND PLASTICITY DECREASING			MODERATE HCl REACTION
2455	50 MIN BCS0000 7917	SAND CONTENT ALMOST ZERO, HIGH PLASTICITY, 1% TUFFACEOUS SANDSTONE WITH HIGH CLAY CONTENT, VERY LIGHT GRAY (NB)			POSSIBLE AIR FALL TUFF (?) BED WEAK HCl REACTION
2460	84 MIN BCS0000 7918	SILTSTONE PREDOMINATING, MODERATE PLASTICITY.			WEAK HCl REACTION
2465	85 MIN BCS0000 7919	CLAYSTONE PREDOMINATING, HIGH PLASTICITY,			ABOUT 20% OF CLAYSTONE CUT AS CHIPS, NOT AS CLAY BALLS Mod HCl reaction
2470	80 MIN BCS0000 7920	COLOR MODERATE BROWN (S4R 3/4)			10% CLAYSTONE AS CHIPS Mod HCl reaction
2475	74 MIN BCS0000 7921	80% CLAYSTONE, 20% SILTSTONE			CLAYSTONE CUTS AS BALLS, SILTSTONE CUTS AS CHIPS. Weak HCl reaction, DEVIATION=100 2490. Mod HCl reaction
2480	76 MIN BCS0000 7922				DR-19-00, 2113, JT 1211 Installed at 2482.7' in collar string. FISHING DR-21-00 1723 Drilling ahead with 9 3/8" bit.
2485	BCS0000 7923	CLAYSTONE, as from 2430', well indurated, low plasticity. Increased siltstone, 40%			Weak HCl reaction
2490	87 MIN BCS0000 7924				Weak HCl reaction
2495	74 MIN BCS0000 7925	SILTY CLAYSTONE, medium plasticity, <15% fine sand. Some v. light gray (NB) - Mod H gray (NB) - Lt blue gray (SB 7/1) bentonitic clay with rhyolitic rock rock fragments.			Mod HCl reaction
2500	48 MIN BCS0000 7926				Mod HCl reaction
2505	43 MIN BCS0000 7927	CLAYSTONE & INTER-BEDDED SILTSTONE			No HCl reaction
2510	44 MIN				

Prepared By ARTHUR J. MENDENHALL Date 08-19-82 Checked By J.S. Walker Date 8/30/01  
/ Ken Donneton

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2510 To 2575 Page 32 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
	BCS0000 7928	CLAYSTONE: grayish brown (5YR 3/2) soft, highly plastic.			No HCl reaction
2515	50 MIN BCS0000 7929	CLAYEY SILTSTONE - sandy			SHIFT CHANGE 8-21-00 2400
2520	101 MIN BCS0000 7930	Increased clay			8-22-00, 0000 weak HCl reaction
2525	58 MIN BCS0000 7931	Increased clay			Mod HCl reaction
2530	68 MIN BCS0000 7932	Increased clay			Weak HCl reaction
2535	76 MIN BCS0000 7933	80% siltstone			Weak HCl reaction
2540	79 MIN BCS0000 7934	70% siltstone, some greenish gray (5G 6/1) mottling of siltstone			Strong HCl reaction
2545	125 MIN BCS0000 7935	as above 70% siltstone, minor mottling			Mod HCl reaction TRIP OUT
2550	65 MIN BCS0000 7936	as above			SHIFT CHANGE 8-22-00, 1200
2555	180 MIN BCS0000 7937	50% siltstone, grayish red (5R 3/2)			Strong HCl reaction TRIP OUT w/ MILL TOOTH BIT SHIFT CHANGE 8-22-00, 2400
2560	68 MIN BCS0000 7938	70% claystone, grayish red (5R 4/1) - grayish brown (5YR 3/2)			8-23-00, 0000 NEW BIT, 0531 Mod HCl reaction
2565	37 MIN BCS0000 7939				Mod HCl reaction
2570	43 MIN BCS0000 7940				Strong HCl reaction
2575	42 MIN				Strong HCl reaction

Prepared By KEN DONNELSON Date 8-22-00 → 8-23-00 Checked By J.S. Walk Date 8/30/01



**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2575 To 2640 Page 33 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2580	7941 7942	INTERBEDDED CLAYSTONE & SILTSTONE; Moderate brown (5YR 4/4) to grayish brown (5YR 3/2), less than 20% siltstone, highly plastic.			Strong HCl reaction
2585	7943 7944	Pale brn (5YR 5/2) Claystone. Some grn gry (5G 6/1) mottling, with very fine biotite.			Strong HCl reaction DEVIATION = 1° @ 2585' Strong HCl reaction
2595	7945	60% CLAYSTONE MODERATE BROWN (5YR 3/4), 40% SILTSTONE GRAYISH BROWN (5YR 3/2), LESS THAN 1% GREEN GRAY (5G 6/1) SANDSTONE AND MOTTLING IN SILTSTONE.			STRONG HCL REACTION Shift change, 1200
2600	7946	5% SILTSTONE, GREENISH GRAY (5G 6/1) FINELY LAMINATED 1MM			WEAK TO STRONG HCL REACTION
2605	7947	LESS THAN 1% SILTSTONE, GREENISH GRAY (5G 6/1)			WEAK TO STRONG HCL REACTION NONE TO STRONG HCL REACTION
2610	7948	80% CLAYSTONE MODERATE BROWN (5YR 3/4), 20% SILTSTONE GRAYISH BROWN (5YR 3/2)			WEAK TO STRONG HCL REACTION
2615	7949	50% CLAYSTONE, MODERATE BROWN (5YR 4/4), 50% SILTSTONE GRAYISH BROWN (5YR 3/2), SOME CHIPS SANDY, LESS THAN 1% SILTSTONE, PALE OLIVE (10Y 6/2).			NONE TO STRONG HCL REACTION
2620	7950				WEAK TO STRONG HCL REACTION
2625	7951	90% CLAYSTONE, MODERATE BROWN (5YR 4/4), 50% SILTSTONE, GRAYISH BROWN (5YR 3/2)			MODERATE TO STRONG HCL REACTION
2630	7952	90% CLAYSTONE, MODERATE BROWN (5YR 4/4), 50% SILTSTONE, GRAYISH BROWN (5YR 3/2)			MODERATE HCL REACTION
2635	7953	1% CHERT, DARK GRAY (N3), PROBABLY GRAVEL FRAGMENTS			MODERATE HCL REACTION
2640					

Prepared By KENNON JENSEN / ARTHUR MENDENHALL Date 8-23-00

Checked By J.S. Walker Date 8/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2 DB Drill Depth From 2640 To 2705 Page 34 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2645	BCS0000 7954 41 MIN BCS0000 7955	CLAYSTONE WITH INTERBEDDED SILTSTONE, AS SINCE 2430', 90% CLAYSTONE, MODERATE BROWN (5YR 4/4) 10% SILTSTONE, GRAYISH BROWN (5YR 3/2).  95% CLAYSTONE, MODERATE BROWN (5YR 4/4) HIGH PLASTICITY CONTINUING, 5% SILTSTONE, GRAYISH BROWN (5YR 3/2)			Strong HCl reaction  strong HCl reaction
2650	42 MIN BCS0000 7956				strong HCl reaction SHEET CHANGE 2400 08-23-00 2652 FT. 8-24-00, 0000
2655	50 MIN BCS0000 7957				strong HCl reaction
2660	31 MIN BCS0000 7958	SILTY CLAYSTONE WITH THIN INTERBEDDED SANDSTONE: Pale brn (5YR 5/2) mottled with pale grn (10G 7/2) 8 very Lt gry (N8), fine grained sandstone, med plasticity, tuffaceous(?)		- TOP OF RECORDED? TRANSITIONAL?	strong HCl reaction
2665	41 MIN BCS0000 7959				Strong HCl reaction
2670	30 MIN BCS0000 7960	Increased amount of fine sand, light gray (N7)			No HCl reaction
2675	26 MIN BCS0000 7961	SANDSTONE (?) WITH THIN INTERBEDDED SILTSTONE: Lt gry (N7) fine grained, silicified? sandstone & gry brn (5YR 3/2) siltstone. Trace of Lt gry (N7) clay. Minor quartz. May contain gravel. Tuffaceous?			No HCl reaction
2680	25 MIN BCS0000 7962	SANDY CLAY: Lt gray (N7) - Lt grn gry (5G 8/1) fine grained sand. Some siltstone & quartzite fragments. low - med plasticity. Tuffaceous?			Mod HCl reaction
2685	35 MIN BCS0000 7963	CONGLOMERATE: Predom med Lt gry (N6) - Lt gray (N7) quartzite, minor dk gray (N3) chert? abundant quartz, rare gry brn (5YR 3/2) siltstone. clayey from 2685 - 2690'			No HCl reaction
2690	24 MIN BCS0000 7964				No HCl reaction
2695	40 MIN BCS0000 7965				No HCl reaction
2700	34 MIN BCS0000 7966				Weak - mod reaction
2705	60 MIN	Trace of white (N9) "milky" silt coating on fragments. May be calcareous matrix in conglomerate. Trace of med Lt gry (N6) - med gry (N5) limestone.			

Prepared By ARTHUR J. MENDENHALL Date 08/23 & 24/00 Checked By J.S. Walker Date 8/30/01  
KEN DONNELSON

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2705 To 2770 Page 35 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
		As ABOVE			
2710	69 MIN BCS0000 7967	Increased white (N9) "milky" silt & med blugry (5B 5/1) - med gry (N5) crystalline limestone			Mod HCl reaction
		white silty matrix becomes more clayey			Mod HCl reaction
2715	72 MIN BCS0000 7969	CONGLOMERATE: Predominantly dolomite, very fine-grained, med gry (N5) - med dark gray (N4). Traces of quartzite, which may be up-hole contamination.			DEVIATION = 19@2715' Weak HCl reaction
2720	62 MIN BCS0000 7970	Contaminated mix at bottom of hole after tripping consists of med gry (N5) to med dark gray (N4) dolomite, black chert, moderate orange pink (10R 6.5/5) quartzite, moderate brown (5YR 4/4) siltstone,			TRIP OUT FOR GEOLOGICAL SURVEY SHIFT CHANGE 1200 8/24 8/25/00 1200-2400
2725	80 MIN BCS0000 7971	CONGLOMERATE: 85% med gry (N5) and med-dark gray (N4) dolomite?, 2-3% moderate orange pink (10R 6.5/5) quartzite, 5% siltstone. Fragments are angular to subangular, 1/8 - 1/2"			Trip out for bit change @ 2722.5'
2730	45 MIN BCS0000 7972	70% dolomite, minor quartzite (1-2%), trace siltstone fragments			
2735	30 MIN BCS0000 7973	50% Lt gry (N7) cryptocrystalline quartzite, 20% med dk gry (N4) dolomite, 20% pink gry (5YR 8/1) bleached limestone, 5% quartz.			Weak-med HCl reaction
2740	46 MIN BCS0000 7974	60% pink gry quartz, 10% quartzite, 15% gry brn (5YR 3/2) siltstone, 5% chert, 5-10% dolomite			SHIFT CHANGE 8/25/00 2400 8-26-00 0600 Weak-med HCl reaction
2745	45 MIN BCS0000 7975	40% dolomite w/ calcite fr's, 10% chert, 2% siltstone 30% quartzite, 10% quartz			LOSING CIRCULATION ADD LCM Weak-med HCl reaction
2750	36 MIN BCS0000 7976	35% dolomite, 30% quartzite, 10% chert, 10% quartz, 5% siltstone. Rare calcite xtls			Weak-med HCl reaction
2755	41 MIN BCS0000 7977	More variegated than above. 40% quartzite, 5% quartz, 5% chert, 10% dolomite, 15% limestone			Weak-med HCl reaction
2760	47 MIN BCS0000 7978	25% volcanics, Volcanics med red orange (10R 5/6), Lt brn (5YR 5/6), med orange pink (5YR 8/4), gry brn (5YR 3/2) & very pale orange (10YR 8/2)			Weak-med HCl reaction
2765	31 MIN BCS0000 7979	30% quartzite, 20% limestone, 25% volcanics, 5% chert. Some fine vesicular gravel.			Weak-med HCl reaction
2770		From 2765-2770: Contamination after tripping back and conditioning hole with mud and LCM. 70% med brown (4/4) siltstone fragments with minor quantities (1-2%) of volcanic, limestone, chert, quartzite			PUT IN 60.000 GAL MUD LOST ALL CIRCULATION SHIFT CHANGE 8-26-00 1200 8-26-00 1200-2400 SEAL IT OFF ZONE WITH 18.000 GAL PACER & LCM

Prepared By KEN DUNNELSON / TSC/W/ Date 8/24-26/00

Checked By J.S. Welker Date 8/30/07

# NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

## CUTTINGS SAMPLE LOG

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2770 To 2835 Page 36 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
	BCS0000 7980	contaminated conglomerate as above - siltstone - conglomerate is med. brown (5YR 4/4), limestone predominates, rare quartzite and rare buffaceous volcanic	0 0 0 0 0 0 0 0 0 0		samples contain LCM material POSSIBLE VOIDS FROM 2770 - 2775.
2775	30 min BCS0000 7981	Reduction of siltstone (~5%), predominance of limestone medium gray (N5) to med. dark gray, rare, grayish black (N2) basaltic gravel, rare breccia gravels containing very angular fragments of dolomite (med. dark gray, effervesces after scratching)	0 0 0 0 0 0 0 0 0 0		Dolomite reacts with HCl after scratching
2780	30 min BCS0000 7982	as above - absence of breccia fragments, predominance of med. light gray (N4) dolomite, quartzite light gray (N7), grayish black (N2) basalt, rare calcite xrls. Absence of	0 0 0 0 0 0 0 0 0 0		Scratched dolomite reacts weakly w/ HCl
2785	30 min BCS0000 7983	as above	0 0 0 0 0 0 0 0 0 0		DEVIATION = 1 3/4" @ 2785' scratched dolomite reacts weakly w/ HCl
2790	60 min BCS0000 7984	as above, increase of brecciated dolomite	0 0 0 0 0 0 0 0 0 0		scratched dolomite reacts weakly w/ HCl
2795	7 min BCS0000 7985	as above	0 0 0 0 0 0 0 0 0 0		scratched dolomite reacts weakly w/ HCl
2800	30 min BCS0000 7986	as above - predom. qtzite and dolomite, gravels are fine (1/8-1/4")	0 0 0 0 0 0 0 0 0 0		scratched dolomite reacts weakly w/ HCl
2805	17 min BCS0000 7987	as above with gravel size increasing to 1" rounded to subangular	0 0 0 0 0 0 0 0 0 0		Scratched dolomite reacts weakly w/ HCl
2810	21 min BCS0000 7988	as above; quartzite, dolomite, rare basalt quartzite gravels and dolomite gravels are fine to coarse (up to 1") rounded to subrounded	0 0 0 0 0 0 0 0 0 0		Scratched dolomite reacts weakly w/ HCl
2815	24 min BCS0000 7989	as above Smaller gravels (up to 1/2")	0 0 0 0 0 0 0 0 0 0		DEVIATION = 1 3/4" @ 2815'
2820	18 min BCS0000 7990	as above	0 0 0 0 0 0 0 0 0 0		Scratched dolomite reacts weakly w/ HCl
2825	37 min BCS0000 7991	CONGLOMERATE AS ABOVE WITH ABUNDANCE (50%) OF med. reddish brown CLAY (10R 4/6) and light bluish gray clay (5B 7/1). Brown clay occurs as both soft clay balls and indurated chips (1/8"), Red clay	0 0 0 0 0 0 0 0 0 0		
2830	55 min BCS0000 7992	RED CLAY, possibly lateritic residual of carbonate, moderate reddish brown (10R 4/6), contains ~2% fine dolomite gravels (1/8"), trace of pale yellow brown (10YR 6/4) siltstone, and 95% siltstone fragments, med. brown (5YR 3/4), MOD. INDURATION	0 0 0 0 0 0 0 0 0 0		SHIFT CHANGE 8-26-00, 2:40 Dolomite effervesces strongly w/ HCl
2835	70 min				no reactions with clay and silt

Prepared By Bob Wilcox Date 8/26/00 Checked By J.S. Walker Date 8/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2835 To 2900 Page 37 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2840	BCS0000 7993 70 MIN	SILTY CLAYSTONE: grayish brown (5YR 3/2) to light bluish gray (5B 7/1), composed of drilling induced chips of brittle, weakly foliated claystone mixed with 30% soft granulated clay; claystone contains 10-20% silt.			Drilling rate slow in clay rich formation (4-5'/hr)
2843	BCS0000 7994 58 MIN	claystone as above chips are brittle and soft.			
2850	BCS0000 7995 59 MIN	GRADATIONAL CONTACT			
2855	BCS0000 7997 38 MIN	SILTSTONE, limey. Lt. olive gray (5Y 5/2) weakly foliated or platy. Harder than above unit (as). Contains ~20% plastic brown clay similar to above unit.			Drilling rate increases to 7-8'/hr.
2865	BCS0000 7998 39 MIN	GRADATIONAL CONTACT			Weak-Mod HCl reaction
2870	BCS0000 7999 33 MIN	LIMESTONE; moderate bluish gray (5B 5/1); monolithic, platy foliation/bedding; moderate to strong HCl reaction, hardness 3-3.5.			~1% contamination w/ brown silty claystone as 2835-2850;
2875	BCS0000 8000 33 MIN	Limestone as above, < 5% bluish grey clayey beds			Mod-Strong HCl reaction 2865-2875' gen. massive
2880	BCS0000 8001 30 MIN	Color becomes more variable and includes pale olive (10Y 6/2) to greenish grey (5G 6/1) ~5% bluish grey soft clay cemented fine sandstone			Drilling rate up to 10'/hr.
2885	BCS0000 8002 34 MIN	Unit becoming interbedded with ~5% brown claystone (similar to unit 2835-2850?) Also pinkish banding up to 3mm, poss. dissolution features. ~2-3% light colored limey clay			
2890	BCS0000 8003 40 MIN	Limestone, as above from 2865, greenish grey (5G 6/1), interbedded with ~20% greyish brown (5YR 3/2) soft weakly calcareous claystone, very similar to 2835-2850'			Mod-Strong HCl reaction
2895	BCS0000 8004 28 MIN	GRADATIONAL CONTACT			faster drilling. Claystone maybe uphole contamination
2900	BCS0000 8005	Unit becomes pale olive (10Y 6/2) to pale greenish yellow (10Y 8/2).			

Prepared By JAMIE WALKER Date 8-27-00 Checked By Kenneth D. ... Date 8-30-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2900 To 2965 Page 38 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2905	BCS0000 8006 55MIN	CALCAREOUS SILTSTONE, A: from 2890'  LIMESTONE, dark grey to greyish black (N3-N2), massive with local white to lt. grey bands (dissolution features), H=3 1/2-4.			Lost circulation material in all samples since 2766.4'
2910	BCS0000 8007 65MIN	CALCAREOUS SILTSTONE, grayish black (N3-N2), interbedded with calcareous moderate brown siltstone (5YR 3/4) (30-40%), contains 1-2% grayish-orange (10YR 7/4) soft clay, possible fracture fill; siltstone exhibits platy foliations, thinly bedded			SHIFT CHANGE 8-27-00 Mod-strong HCl reaction 8-27-00, 1200
2915	BCS0000 8008 90MIN	60-70% brown siltstone			Reduced drill rate
2920	BCS0000 8009 90MIN	60-70% med dark gray (N4) to dark gray (N3) calcareous limestone fragments			
2925	BCS0000 8010 50MIN	LIMESTONE: medium light gray (N6) to dark gray (N3), crystalline, massive to finely laminated (2.1 min); medium grained, weathering to moderate reddish brown (10YR 6/3), on fractures and surfaces, dissolution features prevalent throughout; hardness 3-4, grayish orange (10YR 7/4) soft, clayey fracture fill present			Moderate reaction to HCL
2930	BCS0000 8011 50MIN	as above; reddish brown siltstone fragments, as sample are possible weathered, lateritic limestone surfaces			Strong reaction to HCL
2935	BCS0000 8012 55MIN	interbedded limestone types; 2 colors: dark gray (N3) as above and light olive (10Y 6/3). Both massive to finely laminated. Olive component exhibits calcite fracture fill on several large chips. Displays a weaker reaction to HCL than the dark gray		Massive	Dark gray limestone → Strong reactions to HCL
2940	BCS0000 8013 60MIN	90% light olive limestone described above: finely laminated, hackly and platy foliation; 5-8% moderate brown siltstone; description above. 2% dark gray massive limestone.		finely laminated	Light olive limestone → Weak-Mod. reaction to HCL
2945	BCS0000 8014 75MIN	as above			DEVIATION = 4' @ 2946'
2950	BCS0000 8015 60MIN	as above - finely laminated light olive limestone			Mod-strong reaction
2955	BCS0000 8016 75MIN	as from 2920'			SHIFT CHANGE 8-27-00, 2400 8-28-00, 0000 moderate HCl reaction
2960	BCS0000 8017 79MIN	<b>SHARP CONTACT</b>  CALCAREOUS SHALE; med. dk grey (N4) to greyish black (N2), moderately foliated, local (<2%) white calcite veinlets, H=3 1/2-4. Weak-strong HCl reaction. ~2% soft plastic clay; possible contamination			~ 1/2% soft brown claystone. Probably contamination from above
2965	BCS0000 8018 78MIN				

Prepared By Bob Wilcoxon Date 8-27-00 Checked By Jamie Walker Date 8-28-00  
 Prepared By JAMIE WALKER Date 8-28-00 Checked By Kenneth Daniels Date 8-30-01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 2965 To 3030 Page 39 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
2970	BCS0000 8019 102 MIN	CALCAREOUS SHALE, as from 2956'. Dk. grey (N3), foliated. 2-3% white calcite.	[Graphic Log: Horizontal lines with small dashes]		DEVIATION = 5' @ 2965' 1% brown claystone contamination.
2975	BCS0000 8020 73 MIN	as above, dark grey foliated calcareous shale	[Graphic Log: Horizontal lines with small dashes]		weak-mod HCl reaction
2980	BCS0000 8021 127 MIN	as above, interbedded fine-med calcareous sandstone and siltstone, finely laminated (<1mm), platy foliation, non crystalline, medium light gray (N6) to Dark gray (N3), some fragments appear to be dolomitic, hardness 3-4	[Graphic Log: Alternating horizontal lines with dashes and dots]		SAMPLE CONTINUATED AFTER JOINT CHANGE weak to mod reaction w/ HCl SHIFT CHANGE 8-28-00 120.0
2985	BCS0000 8022 85 MIN	as above -	[Graphic Log: Alternating horizontal lines with dashes and dots]		Mod. reaction w/ HCl DEVIATION = 4 3/4' @ 2985'
2990	BCS0000 8023 83 MIN	as above - grayish black (N2), calcareous sandstone, medium grained and siltstone	[Graphic Log: Alternating horizontal lines with dashes and dots]		Strong reaction w/ HCl Increase W.O.B. from 20K - 24K LBS.
2995	BCS0000 8024 66 MIN	as above, increasing moderate brown siltstone fragments, non calcareous	[Graphic Log: Alternating horizontal lines with dashes and dots]		Strong reaction w/ HCl by dark grey calcareous component
3000	BCS0000 8025 55 MIN		[Graphic Log: Alternating horizontal lines with dashes and dots]		
3005	BCS0000 8026 120 MIN	INTERBEDDED Dolomite SANDSTONE AND NONCALCAREOUS SILTSTONE; Dolomite is dark gray (N3), finely laminated (<1mm), hardness 3-4, effervesces strongly when scratched; non calcareous siltstone is moderate brown (5R 3/3), moderately indurated, composes 75% of sample; 1/4 fragment of a black (N1-N2) chert nodule is present, rounded, hardness 7, cryptocrystalline.	[Graphic Log: Alternating horizontal lines with dashes and dots, includes a small black circle representing a chert nodule]		* WITH CHERT NODULE Drill rate doubles Dolomite reacts strongly with HCl No reaction to HCl by siltstone
3010	BCS0000 8028 100 MIN		[Graphic Log: Alternating horizontal lines with dashes and dots]		
3015	BCS0000 8029 105 MIN	DOLOMITIC LIMESTONE WITH INTERBEDDED SILTSTONE; Dark gray (N3) - gray black (N2), shaly, cryptocrystalline, abundant white calcite (10%), 15-20% gray iron (5YR 3/1) which may be up-hole contamination	[Graphic Log: Alternating horizontal lines with dashes and dots]		SHIFT CHANGE 8-28-00, 24.00 8-29-00, 00.00 Strong reaction w/ HCl
3020	BCS0000 8030 77 MIN		[Graphic Log: Alternating horizontal lines with dashes and dots]		DEVIATION = 5' @ 3020' Strong reaction w/ HCl
3025	BCS0000 8031 70 MIN		[Graphic Log: Alternating horizontal lines with dashes and dots]		Strong reaction w/ HCl
3030	82 MIN		[Graphic Log: Alternating horizontal lines with dashes and dots]		

Prepared By Bob Wilson / KEN BONNELSON Date 8/28/00 - 8/29/00 Checked By J.S. Walker Date 8/30/01

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

CONTINUATION

Borehole ID NC-EWDP-2DB Drill Depth From 3030 To 3095 Page 40 of 40

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	LITHOLOGIC UNIT	Notes
	BCS0000 8032	Decreased calcite, < 5%			Strong reaction w/HCl
3035	97 MIN BCS0000 8033	Decreased calcite, < 1% Trace light olive gray (54 s/s) fissile shale (< 2%) or phyllite (?)			Strong reaction to HCl
3040	76 MIN BCS0000 8034				Strong reaction to HCl
3045	88 MIN BCS0000 8035				Strong reaction to HCl
3050	109 MIN BCS0000 8036	Dolomitic Limestone as since 3015' 50-60% of material is contaminated with up hole med brown noncalcareous siltstone			Shift change 8-29-00, 1200 8-29-00 1200-2400
3055	136 MIN BCS0000 8037	increased med brown noncalcareous siltstone contaminate			STRONG REACTION TO HCL
3060	136 MIN BCS0000 8038	as above			STRONG REACTION TO HCL
3065	135 MIN BCS0000 8039	slight increase of light olive gray fissile shale (phyllite?)			STRONG REACTION TO HCL
3070	109 MIN BCS0000 8040	As above			
3075	210 MIN BCS0000 8041				8-29-00, 2335
3080	BCS0000 8042	T.D. Hole @ 3075.03'			
3085	BCS0000 8043				
3090	BCS0000 8044				
3095					

Prepared By KEV DONNELSON/BOB WILSON Date 8-29-00 Checked By J.S. Walker Date 8/30/01