

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID
 NC-EWDP-20
 Drill Depth From
 0.0'
 To
 1618.38'
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 of
 28

Driller
 BRYAN MORRIS/BOYLES BROS
 Start Date/Time
 1-12-99/1533
 End Date/Time
 2-18-99/0845

Drilling Equip./Method
 AP-1000/HAMMER-BIT 0-500'
 Sampling Equip./Method
 CYCLONE/CUTTINGS

1RTH75E Reverse Circulation - Tricone bit 500-1618.38'

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
5	BCS 0000 1451 (2MIN)	VALLEY FILL SILTY SAND: Pale yellow brn (10YR 6/2), some fine sub- ang volc gravel with thin carbonate rind, fine sand Pale brn (5YR 5/2) when wet			INJECTED WATER FOR CUTTINGS RETURN DRILLED WITH 14" BIT FROM 0-20'
10	BCS 0000 1452 (4MIN)	Gravels and cobbles increasing with depth subrounded gravels & cobbles			
15	BCS 0000 1453 (8MIN)				Hole caving
20	BCS 0000 1454 (4MIN)				PUT ON 11" BIT AT 20' STOPPED INJECTING WATER
25	BCS 0000 1455 (2 MIN)	Decrease in amount cobbles, predom fine subang gravel, fine-med sand.			
30	BCS 0000 1456 (3 MIN)	INCREASE IN AMOUNT OF FINE GRAVEL			
35	BCS 0000 1457 (3 MIN)				
40	BCS 0000 1458 (2 MIN)				1-12-99 1706 40'
45	BCS 0000 1459 (1 MIN)	SANDY GRAVEL, f-c subrnd gravel, f-med sand.			1-13-99, 0709
50	BCS 0000 1460 (2 MIN)				
55	BCS 0000 1461 (2 MIN)	SILTY SAND with f subrnd gravel, f sand			
60	BCS 0000 1462 (5 MIN)	SANDY GRAVEL, f-c subrnd gravel, fine-med sand			

Prepared By
 KEN DOWNERSON
 Date
 1-13-99
 Checked By
 ARTHUR J. MENDENHALL
 Date
 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 60.0 To 120.0 Page 2 of 28
 Driller BRYAN MORRIS / ROYLES BROS Start Date/Time 1-12-99/1333 End Date/Time _____
 Drilling Equip./Method AP-1000/HAMMER BIT Sampling Equip./Method CYCLONE / CUTTINGS
DRILLED WITH AIR

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
65	BCS 000 1463 (2 MIN)	SILTY SAND, f subang. subbrnd gravel, f sand			
70	BCS 000 1464 (1 MIN)	INCREASED AMOUNT OF COARSE GRAVEL			
75	BCS 000 1466 (2 MIN)	SANDY GRAVEL, f-c subang-subbrnd gravel, f-med sand, some silt			
80	BCS 000 1467 (4 MIN)	GRAVELLY SAND DECREASE IN AMOUNT OF GRAVEL Some cobbles, increased silt			
85	BCS 000 1468 (4 MIN)				
90	BCS 000 1469 (4 MIN)	Increased coarse sand			
95	BCS 000 1470 (4 MIN)				
100	BCS 000 1471 (5 MIN)	Increased silt			
105	BCS 000 1472 (1 MIN)				
110	BCS 000 1473 (4 MIN)	Increased coarse sand & decreased silt Increased fine gravel			
115	BCS 000 1474 (1 MIN)				
120					

Prepared By K. DONNELSON Date 1/13/99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-20 Drill Depth From 120 To 180 Page 3 of 28
 Driller BRYAN MORRIS/BOYLES BROS Start Date/Time 1-12-99, 1333 End Date/Time _____
 Drilling Equip./Method AP-1000/HAMMER BIT Sampling Equip./Method CYCLONE/CUTTINGS
DRILLED WITH AIR


DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
125	BCS 000 1475 (4 MIN)	GRAVELLY SAND, f-med sand, some silt, predom f subrnd gravel			
130	BCS 000 1476 (2 MIN)	INCREASED SILT very pale orange (10YR 8/2)			
135	BCS 000 1477 (3 MIN)	INCREASED FINE-COARSE GRAVEL w/ SOME CEMENTATION			
140	BCS 000 1478 (4 MIN)	SANDY GRAVEL, poorly sorted sand, poorly sorted subrnd gravel			
145	BCS 000 1479 (4 MIN)				
150	BCS 000 1480 (3 MIN)	Decrease in amount of gravel			
155	BCS 000 1481 (3 MIN)				
160	BCS 000 1482 (2 MIN)	Same silt			
165	BCS 000 1483 (2 MIN)	INCREASE IN AMOUNT OF GRAVEL & DECREASE IN SILT. SOME CEMENTATION OF FINE SAND			
170	BCS 000 1484 (3 MIN)				
175	BCS 000 1485 (3 MIN)	Predom fine gravel with coarse sand Moderate Brown (5YR 4/4 wet)			INJECT WATER AT 170' FOR DUST CONTROL SAMPLES DAMP
180	BCS 000 1486 (3 MIN)	Predom coarse subrnd gravel with f-med sand			

Prepared By KEN DONNELSON Date 1-13-98 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2P Drill Depth From 180 To 240 Page 4 of 20
 Driller BRYAN MORRIS/BOYLES BEAS Start Date/Time 1-12-99, 1333 End Date/Time _____
 Drilling Equip./Method AP-1000/HAMMER BIT Sampling Equip./Method CYCLONE/CUTTINGS
DRILLED WITH AIR

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
185	BCS 000 1487 (3 MIN)	GRAVELLY SAND, coarse subrnd gravel, med sand some silt.			
190	BCS 000 1488 (2 MIN)	Predom fine subrnd gravel			
195	BCS 000 1489 (4 MIN)	Predom coarse subrnd gravel			
200	BCS 000 1490 (2 MIN)	Predom fine subrnd gravel Some clay from 202-203'			Increased hardness at 202.5'
205	BCS 000 1491 (6 MIN)				
210	BCS 000 1492 (3 MIN)	Predom coarse sand, some gravel			
215	BCS 000 1493 (3 MIN)	Sand, med grained well sorted, trace clay & gravel			
220	BCS 000 1494 (2 MIN)	Sand, coarse grained, trace clay, some fine gravel			
225	BCS 000 1495 (4 MIN)	SANDY GRAVEL, coarse sand, fine angular - subrnd gravel			
230	BCS 000 1496 (4 MIN)	INCREASED SAND & DECREASED GRAVEL			
235	BCS 000 1497 (4 MIN)	Increased fine - med subang - subrnd gravel, trace - some clay			
240	BCS 000 1498 (6 MIN)				

Prepared By KEN DONNELSON Date 1-13 98 Checked By ARTHUR J. MENDEVILLE Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID
 NC-EWDP-2D

Drill Depth From
 240

To
 300

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of
 20

Driller
 BRYAN MORRIS / BOYLES BROS

Start Date/Time
 1-12-99, 1333

End Date/Time

Drilling Equip./Method
 AP-1000 / HAMMER BIT

Sampling Equip./Method
 CYCLONE / CUTTINGS

PRILLED WITH AIR

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
245	BCS 000 1499 (4 MIN)	GRAVELLY SAND, fine subang-subbrnd gravel, coarse sand, trace-some clay			
250	BCS 000 1500 (4 MIN)	CLAYEY SAND, fine-coarse sand, consid fine subang gravel, med plasticity			
255	BCS 006 1501 (8 MIN)	MOODY, Decrease in clay			1-13-99, 1648
260	BCS 000 1502 (4 MIN)	DAMP			1-14-99, 0653
265	BCS 000 1503 (5 MIN)	GRAVEL, Gry Red (10R4/2) - Dk yel brn (10YR4/2) subang-angular volcanic, fine gravel, some coarse ang sand			SAMPLE WET FROM 250-260' BUT NOT YIELDING WATER NO WATER INTERCTED
270	BCS 000 1504 (17 MIN)	Increased amount of coarse gravel. Some subbrnd gravel, Some cobbles			Dry
275	BCS 000 1505 (8 MIN)	Increased multi-colored gravel			Poor recovery
280	BCS 000 1506 (13 MIN)	Predom. fine subang gravel, Some cobbles			
285	BCS 000 1507 (21 MIN)				Had to inject water @ 280' because hole was tight
290	BCS 000 1508 (6 MIN)	Some subbrnd medium gravel with clay coating			
295	BCS 000 1509 (8 MIN)				
300	BCS 000 1510 (12 MIN)				

Prepared By
 KEN DONNELSON

Date
 1-13-99 & 1-14-99

Checked By
 ARTHUR J. MENDEMHAN

Date
 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 300 To 360 Page 6 of 28

Driller BRYAN MORRIS / BOYLES BROS Start Date/Time 1-12-99, 1333 End Date/Time _____

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

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
305	BCS 000 1511 (25 MIN)	MUDDY			Poor Recovery
310	BCS 000 1512 (38 MIN)	GRAVEL, multicolored, poorly sorted, subang-subrnd. coarse sand, muddy			ABUNDANT RECOVERY LOOSING AIR TO LIFT CUTTINGS.
315	BCS 000 1513 (10 MIN)	Decrease in gravel size & increase in angularity WATER LEVEL 312.1', 1502, 1-14-99, WITH HOLE DEPTH AT 350' & DWP AT 347' WATER LEVEL 311.6', 0620, 1-19-99			
320	BCS 000 1514 (4 MIN)				Poor Recovery
325	BCS 000 1515 (5 MIN)	Increased coarse gravel			
330	BCS 000 1516 (15 MIN)	Coarse gravel subrnd			
335	BCS 000 1517 (8 MIN)	Extremely muddy. Increased sand & silt			
340	BCS 000 1518 (9 MIN)	Considerable subrnd gravel & cobbles			
345	BCS 000 1519 (4 MIN)				POOR RECOVERY
350	BCS 000 1520 (6 MIN)	Considerable fine-medium sand			Hit water @ 350' Yields ~ 40 GPM Drilled to 350 & pulled back DWP to 347 1-14-99, 1349
355	BCS 000 1521 (6 MIN)	Consid coarse sand, subang coarse gravel			1-19-99, 0718
360	BCS 000 1522 (24 MIN)				

Prepared By KEN DONNELSON Date 1-19-99 Checked By ARTHUR J. MENDEHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-20 Drill Depth From 360 To 420 Page 7 of 28

Driller BRYAN MORRIS/BOYLES BROS Start Date/Time 1-12-99, 1333 End Date/Time _____

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

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
365	BCS 000 1523 (13 MIN)	SANDY GRAVEL, some silt, predom coarse ang sand, subang - subrnd multi-colored gravel			
370	BCS 000 1524 (12 MIN)	Predominantly fine angular gravel			
375	BCS 000 1525 (3 MIN)				
380	BCS 000 1526 (3 MIN)				
385	BCS 000 1527 (10 MIN)	Increased coarse gravel silt & fine sand			
390	BCS 000 1528 (2 MIN)				
395	BCS 000 1529 (2 MIN)	Predom fine sand coarse subrnd gravel & cobbles. Silty			
400	BCS 000 1530 (5 MIN)				
405	BCS 000 1531 (7 MIN)	Decrease in silt & increase in coarse sand			Increased water yield @ 405; becoming clearer.
410	BCS 000 1532 (14 MIN)	Increased angular gravel			
415	BCS 000 1533 (7 MIN)	subrnd & subang gravel & cobbles			
420	BCS 000 1534 (15 MIN)				

Prepared By K. DONNELSON Date 1-19-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-20 Drill Depth From 420 To 480 Page 8 of 28

Driller BRYAN MORRIS/BOYLES BROS. Start Date/Time 1-12-99, 1323 End Date/Time _____

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

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
425	BCS 000 1535 (17 MIN)	SANDY GRAVEL & COBBLES, coarse sand, coarse subeng-subrnd multi-colored gravels.			
430	BCS 000 1536 (25 MIN)				
435	BCS 000 1537 (9 MIN)				Not enough pressure @ 433' to bring up cuttings. Injected QUIK-FOAM WITH WATER, 25' PLUG IN PIPE. 1-19-99, 1449.
440	BCS 000 1538 (20 MIN)				1-20-99, 1557
445	BCS 000 1539 (8 MIN)	DECREASE IN AMOUNT OF COBBLES			
450	BCS 000 1540 (20 MIN)				
455	BCS 000 1541 (8 MIN)	INCREASED COARSE SAND			
460	BCS 000 1542 (14 MIN)				1-20-99, 1731
465	BCS 000 1543 (5 MIN)	Predom. fine subrnd gravel			1-21-99, 0643
470	BCS 000 1544 (22 MIN)	INCREASED AMOUNT OF COARSE SUBRND GRAVEL & COBBLES			
475	BCS 000 1545 (4 MIN)	INCREASED AMOUNT OF COARSE SAND			
480	BCS 000 1546 (8 MIN)				

Prepared By KEN DUNFELSON Date 1-21-99 Checked By ARTHUR J. MENDEHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 480 To 500 Page 9 of 28
 Driller BRYAN MORRIS / BOYLES BRW Start Date/Time 1-12-99, 1333 End Date/Time _____
 Drilling Equip./Method AP-1000 / 11" CROWD OUT ^{BIT} Sampling Equip./Method CYCLONE / CUTTINGS
DRILLED WITH AIR

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
485	BCS 000 1547 (13 MIN)	Some silt (MUDDY)			
490	BCS 000 1548 (10 MIN)				
495	BCS 000 1549 (6 MIN)	Increased amount of coarse sand			
500	BCS 000 1550 (10 MIN)	INCREASED AMOUNT OF COARSE GRAVEL			1-21-98, 0908 DRILLED TO 500' WITH AP-1000. INSTALLED 498.9' OF 6 5/8" I.D. x 7" O.D. CASING

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 480 To 580 Page 10 of 28
Driller BRYAN MORRIS / 0-500' / LAYNE Start Date/Time 1-12-99 / 1333 End Date/Time 2-18-99 1730
HOLQUIN / CLEVER / 500-1618.38 (2-10-99 - 0540 with TH 75E) 2-18-99
Drilling Equip./Method AP-1000/11" 0-500' Sampling Equip./Method Cyclone / cuttings
1R TH 75E - 500' - 1618.38'

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
480	BCS 0000	VALLEY FILL - GRAVEL, POLYMICTIC, LOCALLY COARSE VARIOUS COLOR TYPES, ALSO COARSE SAND			
485	BCS 0000				
490	BCS 0000				
495	BCS 0000				
500	BCS 0000 2351				
505	BCS 0000 2352				
510	BCS 0000 2353				
515	BCS 0000 2354				
520	BCS 0000 2355				
525	BCS 0000 2356				
530	BCS 0000 2357	532'-537' CLAY RICH ZONE, PALE ORANGE 10YR 7/2 MINOR SAND WITH FINE CLAY			RETURN WATER WARM AT 524' WATER WAS RED
535	BCS 0000 2358	537' GRAVEL AS TO 500'			
540					

Prepared By BENT AQUIST Date 2-16-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

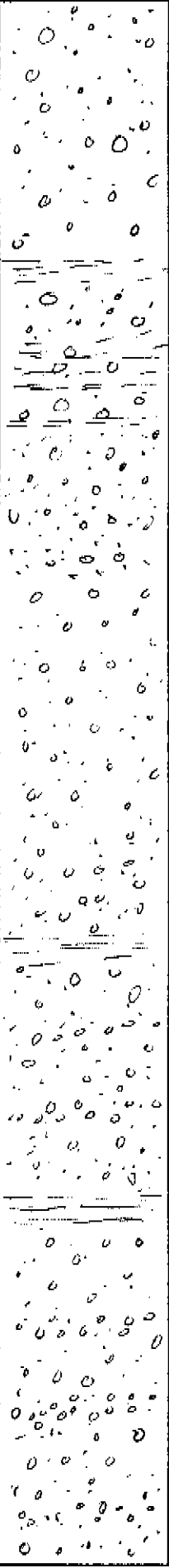
Borehole ID NC-EWDP-2D Drill Depth From 540 To 600 Page 11 of 28
Driller HOLZMANN CLEAVER/LAYNE Start Date/Time _____ End Date/Time _____
Drilling Equip./Method 1R 7 1/2" E-TACONE AC Sampling Equip./Method Cyclonic/Cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
540	BCS 0000 2359	VALLEY FILL - COARSE GRAVEL, POLYMICTIC, WITH LOCAL COARSE SAND			
545	BCS 0000 2360	HOLE CAVING, LOTS OF GRAVEL RETURN			
550	BCS 0000 2361				
555	BCS 0000 2362	AT 556 PENETRATION ALMOST STOPPED AS IF DRILLING THROUGH A BOULDER			
560	BCS 0000 2363				
565	BCS 0000 2364	AT 565 PENETRATION VERY SLOW ABUNDANT CUTTINGS RETURN, CAVING			
570	BCS 0000 2365	SLOW ROUGH DRILLING, BOULDER			
575	BCS 0000 2366				
580	BCS 0000 2367	VALLEY FILL coarse sand, gravel and local cobble beds. Gen. pale reddish brown (10R 5/4) to mod. reddish brown (10R 4/6) due to clasts of reddish volcanics. Sands are grey-red. Clasts are dom. rhyolitic volcanics.			2.11.99 Second shift 1200 HRS. hole is washing out due to unconsolidated granular material.
585	BCS 0000 2368				
590	BCS 0000 2369				
595	BCS 0000 2370				

Prepared By BENT ARQUIST Date 2-16-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99
JAMIE WALKER 2-11-99

CUTTINGS SAMPLE LOG

Borehole ID NC-ENWP-2D Drill Depth From 600 To 660 Page 12 of 28
Driller CLEAVER / LAYNE Start Date/Time _____ End Date/Time _____
Drilling Equip./Method 1R TH75E - TALCONA RC Sampling Equip./Method Cyclone/cutting

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
600	BCS 0000 2371	Valley Fill as above, coarse sand, gravels and cobbles. Multicolored volcanic clasts including: red/brown rhyolite; gray brown aphyric rhyolite and light grey to white rhyolite.			
605	BCS 0000 2372				
610	BCS 0000 2373	Similar sandy coarse alluvium w/ ~30% yellow-grey (547%) clay			
615	BCS 0000 2374	Valley Fill, as above, coarse sand, gravels and cobbles section with obvious fine brown sand; return water to brown and gritty			
620	BCS 0000 2375	return "clears"; no fine sand			
625	BCS 0000 2376				
630	BCS 0000 2377				
635	BCS 0000 2378	Thin clay layer			
640	BCS 0000 2379				
645	BCS 0000 2380	20% light brownish grey clay (54R6/1)			
650	BCS 0000 2381				
655	BCS 0000 2382				
660					

problems re-establishing return after rod add 14:03 return becomes very brown due to fine sand

Prepared By JAMIE WALKER Date 2-11-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG



Borehole ID NK-EWDP2D Drill Depth From 660 To 720 Page 13 of 28
Driller CLEAVER/LAYNE Start Date/Time _____ End Date/Time _____
Drilling Equip./Method IR TH75E / Tricone RC Sampling Equip./Method Cyclone/Cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
660	BCS 0000	Valley Fill, as above, coarse sand, gravel and cobbles. local thin (<1') beds of clay			
665	2383 BCS 0000				
670	2384 BCS 0000				
675	2385 BCS 0000	15% light brownish grey clay			
680	2386 BCS 0000				
685	2387 BCS 0000				
690	2388 BCS 0000	Clay, light brownish grey, local gravel beds (<5%)			
695	2389 BCS 0000				
700	2390 BCS 0000				
705	2391 BCS 0000	Gravel Beds; sub round pebbles and coarse sand ~50%			
710	2392 BCS 0000				
715	2393 BCS 0000				
720	2394				

Prepared By JAMIE WALKER Date 2-11-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 720 To 780 Page 14 of 28
 Driller CLEAVER/LAYNE to 757.5' Start Date/Time _____ End Date/Time _____
 Drilling Equip./Method 1R TH75E/Tricone RC Sampling Equip./Method Cyclone/cutting

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
720	BCS 0000 2395	VALLEY FILL, Sandy Clay; Light brown (54R 6/2), med-coarse sand mixed with clay (inter bedded), Generally less than 50% sand.			
725	BCS 0000 2396				
730	BCS 0000 2397				
735	BCS 0000 2398				
740	BCS 0000 2399				
745	BCS 0000 2400				
750	BCS 0000 2401				
755	BCS 0000 2402				
760	BCS 0000 2403				
765	BCS 0000 2404				
770	BCS 0000 2405	SANDY CLAY WITH MINOR GRAVEL OF MIXED LITHOLOGY CLAY PALE YELLOWISH ORANGE 10YR 7/2 GRAVEL FRAGMENTS ANGULAR			end of shift 2-11-99/19:18 A to button bit 757.5 2-16-99 first shift
775	BCS 0000 2406				
780					RETURN WATER BROWN TO GRAYISH BROWN

Prepared By JAMIE WALKER Date 2-11-99 Checked By ARTHUR J. MENDEYHALL Date 3-23-99
BENT AUGUST 2-16-99

CUTTINGS SAMPLE LOG

Borehole ID NC-EWOP-2D
 Drill Depth From 780 To 840
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Driller HOLQUIN/CLEAVER
 Start Date/Time 2.10.98
 End Date/Time _____

Drilling Equip./Method 1R TH 75E / REVERSE CIRCULATION
 Sampling Equip./Method Cyclone / cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
780	BCS 0000	SANDY CLAY GRAYISH ORANGE TOYR 7/4 VALLEY FILL, AS ABOVE			
	2407				
785	BCS 0000				
	2408				
790	BCS 0000	LOCAL MINOR COARSE GRAVEL			WATER YELLOWISH BROWN
	2409				
795	BCS 0000				
	2410				
800	BCS 0000				
	2411				
805	BCC 0000				
	2412				
810	BCS 0000				
	2413				
815	BCS 0000				
	2414				
820	BCS 0000				
	2415				
825	BCS 0000				
	2416				
830	BCS 0000				
	2417				
835	BCS 0000				
	2418				
840					

Prepared By BENT AARQUIST
 Date 2-16-99
 Checked By ARTHUR J. MENDENHALL
 Date 3-23-99

CUTTINGS SAMPLE LOG

Borehole ID NC-EQP-2D Drill Depth From 840 To 900 Page 16 of 28
 Driller HOLQUIN/CLEAVER Start Date/Time 2.10.99 End Date/Time _____
 Drilling Equip./Method IR 7175E / REVERSE CIRCULATION Sampling Equip./Method Cyclone/cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
840	BCS 0000 2419	SANDY CLAY WITH MINOR GRAVEL CLAY GRAYISH ORANGE 10YR 7/4 VALLEY FILL, AS ABOVE.			
845	BCS 0000 2420				
850	BCS 0000 2421				
855	BCS 0000 2422	VALLEY FILL, coarse sand and gravel; gen brownish grey (5YR 4/1) due to rhyolitic volcanic clasts Minor local clay beds.			2.16.99 First shift 2.16.99 Second shift
860	BCS 0000 2423	Clay, sand. Brown hard dry clay and sandy gravel			
865	BCS 0000 2424	Coarse sand & gravel.			
870	BCS 0000 2425				
875	BCS 0000 2426				
880	BCS 0000 2427	becomes finer; mostly coarse-med. sand			
885	BCS 0000 2428				
890	BCS 0000 2429	coarse sand, gravel			
895	BCS 0000 2430				

Prepared By BURT ANDRIST
JAMIE WACKER Date 2.16.99 Checked By ARTHUR J.
MEADENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

Borehole ID NCEADP 2D Drill Depth From 900 To 960 Page 17 of 28
 Driller HOLQUIN / CLEAVER Start Date/Time _____ End Date/Time _____
 Drilling Equip./Method 1R TH75E / REVERSE CIRCULATION Sampling Equip./Method Cyclone / cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
900	BCS 0000 2431	Valley Fill as above, coarse sand and gravel; well washed / sorted; very little fine material.			
905	BCS 0000 2432	obvious brown silty sand in return water; mostly coarse sand in sample.			
910	BCS 0000 2433				
915	BCS 0000 2434	clear return			
920	BCS 0000 2435				
925	BCS 0000 2436				
930	BCS 0000 2437	finer sandy section			hole producing ~ 50 gpm consistently
935	BCS 0000 2438	coarse gravel			
940	BCS 0000 2439	Valley Fill, sand and gravel, yellowish-brown (10YR 5/4); different source than sands above.			
945	BCS 0000 2440	occasional boulders, mostly brown volcanic			sl. increase in water flow after pit 48 added ~ 60 gpm return. hose is kicking but only slight increase in flow.
950	BCS 0000 2441				
955	BCS 0000 2442				
960					

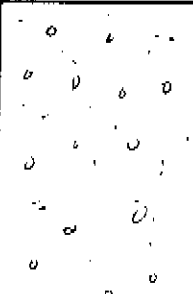



Prepared By JAMIE WALKER Date 2-16-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

Borehole ID NCEWDP-2D
 Drill Depth From 960 To 1020 Page 19 of 29

Driller HOLQUIN/CLEAVER Start Date/Time _____ End Date/Time _____

Drilling Equip./Method 1R TH75E/TALCON RC Sampling Equip./Method Cyclone/cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
960	BCS 0000 2443	VALLEY Fill, as above, sand and gravel, yellowish/brown. Weak to moderate reaction to 10% HCl as cement coatings?			
965	BCS 0000 2444				
970	BCS 0000 2445				
975	BCS 0000 2446	Coarse sand, gravel, cobbles			
980	BCS 0000 2447				
985	BCS 0000 2448				
990	BCS 0000 2449				
995	BCS 0000 2450				
1000	BCS 0000 2451				
1005	BCS 0000 2452				
1010	BCS 0000 2453	hard brown clay observed			
1015	BCS 0000 2454				
1020					

Prepared By Jamie Wacker Date 2-16-99

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

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 1020 To 1080 Page 19 of 28

Driller S. Cleaver Start Date/Time _____ End Date/Time _____

Drilling Equip./Method IR TH75E/Tricone RC Sampling Equip./Method Cyclone/cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1025	BCS 0000 2455	Valley Fill, as above, yellow-brown sand and gravel.			
1030	BCS 0000 2456				
1035	BCS 0000 2457				
1040	BCS 0000 2458	Gradation Contact Valley Fill, ?older?, greyish pink (5R 8/2) to pinkish-grey (5YR 8/1) sand and gravelly sand. Section contains 30-80% pale pink clasts of ?rhyolite and darker (red-brown) sand.			Driller reports clay hole making 75gpm out of clay
1045	BCS 0000 2459				
1050	BCS 0000 2460				
1055	BCS 0000 2461	coarse polymictic gravel bed			
1060	BCS 0000 2462				
1065	BCS 0000 2463				
1070	BCS 0000 2464				Drilling rate increases
1075	BCS 0000 2465	coarse polymictic gravels			
1080	BCS 0000 2466				

Prepared By JAMIE WALKER Date 2.17.99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 1080 To 1140 Page 20 of 28

Driller HOLQUIN/CLEAVER Start Date/Time _____ End Date/Time _____

Drilling Equip./Method I-RTH75E/REVERSE CIRCULATION Sampling Equip./Method CYCLONE/SAMPLE CUTTINGS

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1085	BCS 0000 2467	VALLEY FILL AS ABOVE, GRAYISH YELLOW 5Y 8/2 MINOR PINK CLASTS 5R 7/2, INCREASE TO 5% AT 1095' COARSE SAND, INCREASE TO FINE GRAVEL AT 1095'			
1090	BCS 0000 2468				
1095	BCS 0000 2469				2-16-99 Second shift 2-17-99 First shift WATER VOLUME 85 g.p.m
1100	BCS 0000 2470	VALLEY FILL - GRAVEL, COARSE, POORLY SORTED, OVERALL UNIT YELLOWISH GRAY 5Y 6/2, ANGULAR CLASTS WITH MODERATE SPHERICITY, RHYOLITE TUFF CLASTS OF VARYING COLOR AND TEXTURE			
1105	BCS 0000 2471	VALLEY FILL - MOSTLY FINE SANDY MATERIAL, 5% FINE GRAVEL UNIT GRAYISH RED 10R 5/2 GRAVEL PORTION POLYMICTIC RHYOLITIC CLASTS, SUB ANGULAR WITH MODERATE SPHERICITY			
1110	BCS 0000 2472				
1115	BCS 0000 2473				
1120	BCS 0000 2474	VALLEY FILL GRAVEL GRAYISH YELLOW 5Y 7/4 WITH 10% PALE BROWN 5YR 6/2 PEBBLES AND COBBLES			
1125	BCS 0000 2475	VALLEY FILL GRAVEL WITH ABUNDANT CLAY YELLOWISH ORANGE 10YR 7/6			
1130	BCS 0000 2476	BECOMING GRAYISH ORANGE PINK 5YR 7/2			
1135	BCS 0000 2477				
1140	BCS 0000 2478	COARSE GRAVEL 1135 TO 1140' WITH CLAY			AT 1139' WATER TURNED REDDISH BROWN

Prepared By BENT AAQUIST Date 2-18-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EWDP-2D Drill Depth From 1140 To 1200 Page 21 of 28
 Driller HOLQUIN/CLEAVER Start Date/Time _____ End Date/Time _____
 Drilling Equip./Method 1R TH75E/TRICONE RC Sampling Equip./Method Cyclone/cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1140	BCS 0000 2479	SILTSTONE RED SR 5/6, MINOR WHITE AND GRAY GRAVEL			
1145	BCS 0000 2480	CONTACT GRADATIONAL SANDSTONE PINKISH RED SR 6/4 DOWN TO 1150' 50% PALE YELLOWISH BROWN 10YR 6/2 FRAGMENTS			
1150	BCS 0000 2481				
1155	BCS 0000 2482	GRAVEL, PINK SR 8/4, SUBANGULAR TO ROUNDED MODERATE SPHERICITY, POLYMICTIC RHYOLITE			
1160	BCS 0000 2483	REWORKED ASH FLOW PINK SR 8/4, GRAVEL OF VERY FINE GRAINED ASH CLASTS AND CLASTS OF FINE CRYSTALLINE TEXTURE MINOR CLASTS OF QUARTZ CRYSTALS AND SANDSTONE			
1165	BCS 0000 2484	1165 TO 1190 RED SR 5/6			
1170	BCS 0000 2485				
1175	BCS 0000 2486				
1180	BCS 0000 2487				
1185	BCS 0000 2488				
1190	BCS 0000 2489	1190-1195 MODERATE PINK SR 7/4			
1195	BCS 0000 2490	GRAVEL MODERATE PINK SR 7/4 TO RED SR 5/6 POORLY SORTED POLYMICTIC, 60% FRAGMENTS OF ABOVE UNIT			
1200					

Prepared By BENT AARQUIST Date 2-18-99 Checked By ARTHUR J. MENDELMAN Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID ANCENDR 2D Drill Depth From 1200 To 1260 Page 22 of 28

Driller HOLQUIN/CLEAVER Start Date/Time _____ End Date/Time _____

Drilling Equip./Method 1R TH75E/Tricone RC Sampling Equip./Method Cyclone/cuttings

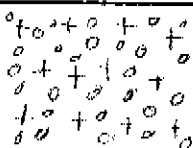

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes			
1200	BCS 0000 2491	REWORKED ASH FLOW AS TO 1100-1195 RED SR 5/6 WITH < 10% YELLOW AND BROWN CLASTS						
1205	BCS 0000 2492							
1210	BCS 0000 2493							
1215	BCS 0000 2494							
1220	BCS 0000 2495							
1225	BCS 0000 2496							
1230	BCS 0000 2497							
1235	BCS 0000 2498					GRAVEL, COURSE ROUNDED PEBBLES AND COBBLES 50% OF FRAGMENTS ARE SAME AS ABOVE UNIT		
1240	BCS 0000 2499	CLAY WITH MINOR GRAVEL, RED SR 5/6						
1245	BCS 0000 2500	GRAVEL MOSTLY RED SR 5/6 RHYOLITE PEBBLES WITH 10% QUARTZ PHENOCRYSTS. SOME QUARTZ ALSO OCCURS AS SAND GRAINS 10% MODERATE YELLOW SR 7/6 RHYOLITE GRAINS, ALSO WITH QUARTZ PHENOCRYSTS MINOR GRAYISH BLACK NR CLASTS						
1250	BCS 0000 2501							
1255	BCS 0000 2502							

Prepared By BENT ARQUIST Date 2-18-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole IDAC-EWDP-2D Drill Depth From 1260 To 1320 Page 23 of 28
Driller HOLQUIN/CLEAVER Start Date/Time _____ End Date/Time _____
Drilling Equip./Method IR TH75E/Tricone RC Sampling Equip./Method Cyclone /cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1260	BCS 0000 2503	TUFF, ASH FLOW, REWORKED DUSKY RED SR 3/4, RHYOLITE WITH >10% QUARTZ PHENOCRYSTS			
1265	BCS 0000 2504	GRAVEL, LIGHT RED SR 6/6 TUFFACEOUS CLASTS, SUBANGULAR WITH LOW SPHERICITY COMPOSE 50% - 70% CLASTS ARE MASSIVE VERY FINE GRAINED			DRILL PENETRATION RATE SLOWED TO 1/2 OF WHAT IT WAS ABOVE 1265'
1270	BCS 0000 2505				
1275	BCS 0000 2506				
1280	BCS 0000 2507				
1285	BCS 0000 2508				
1290	BCS 0000 2509				
1295	BCS 0000 2510	GRAVEL POLYMICTIC, MULTICOLORED, WELL ROUNDED CLASTS			
1300	BCS 0000 2511				2-17-99 First shift 2-17-99 Second shift
1305	BCS 0000 2512				
1310	BCS 0000 2513				
1315	BCS 0000 2514				
1320					

Prepared By BENT AQUIST Date 2-18-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99


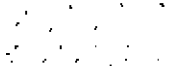
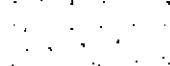



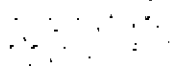
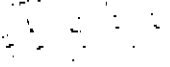
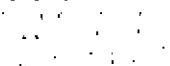

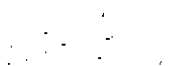

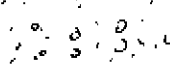
NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-EDD-2D Drill Depth From 1320 To 1380 Page 24 of 28

Driller 140LQUIN/CLEAVER Start Date/Time _____ End Date/Time _____

Drilling Equip./Method 1R TH75E/Tricone RC Sampling Equip./Method Cyclone/cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1320	BCS 0000	VALLEY FILL, gravel			distinct color change
1325	2515 BCS 0000	VALLEY FILL, fine sands or reworked tuffs, well cemented (Calcite); interfingering red (5R 5/4) hematitic beds with dominantly yellow-orange (10YR 6/6) limonitic beds. Local gravel beds (1-3') suggest unit is sand and not reworked tuffs.			
1330	2516 BCS 0000				
1335	2517 BCS 0000				
1340	2518 BCS 0000	polymictic gravel bed			
1345	2519 BCS 0000				
1350	2520 BCS 0000				
1355	2521 BCS 0000				
1360	2522 BCS 0000	coarse sand			
1365	2523 BCS 0000	polymictic gravels			
1370	2524 BCS 0000				distinct color change
1375	2525 BCS 0000				
1380	2526 BCS 0000	VALLEY FILL, interbedded sand, gravel and clay, unconsolidated, light brown (5YR 6/4) to greyish red (5R 4/2). Very slow drilling. Minor beds of yellow sandy material as above.			

Prepared By JAMIE WALKER Date 2-17-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99


NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-ENR-2D Drill Depth From 1380 To 1440 Page 25 of 28

Driller S. Cleaver Start Date/Time _____ End Date/Time _____

Drilling Equip./Method IRTH75E/Tricone RC Sampling Equip./Method Cyclone/cutting

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1380	BCS 0000	Alluvium, as above, interbedded sand, gravel & clay.			waterflow 120 gpm
1385	2527				
	BCS 0000				
1390	2528	clay-rich zone			
	BCS 0000				
1395	2529				
	BCS 0000				
1400	2530	coarse gravel zone			
	BCS 0000	sandy clay			
1405	2531				
	BCS 0000	clay-rich zone			
1410	2532				
	BCS 0000				
1415	2533	sand, gravel, less clay			
	BCS 0000	sand and gravel			
1420	2534				
	BCS 0000				
1425	2535	sand and fine gravel, local dark purple clay layers			
	BCS 0000				
1430	2536				
	BCS 0000				
1435	2537				
	BCS 0000				
1440	2538				

Prepared By JAMIE WALKER Date 2-18-99 Checked By ARTHUR J. MENDENHALL Date 3-23-99

CUTTINGS SAMPLE LOG

Drilling Equip./Method IRTH75E/Tricone RC Sampling Equip./Method Cyclone/cuttings

[illegible]

Prepared By JAMIE WALKER Date 2-18-99 Checked By BLW Date 5/24/00
ARTHUR J. MENDENHALL 3-12-99

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-ENDP-2D Drill Depth From 1500 To 1560 Page 27 of 28
 Driller HOLQUIN/CLEAVER Start Date/Time _____ End Date/Time _____
 Drilling Equip./Method IR TH75E/Tricone RC Sampling Equip./Method Cyclone/cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1500	BCS 0000	SILTSTONE AND GRAVEL, AS ABOVE	0-0-0		WEAKLY CALCAREOUS
			0-0-0		
			0-0-0		
1505	BCS 0000		-0-0		WEAKLY CALCAREOUS
			-0-0		
1510	BCS 0000		0-0-0		WEAKLY CALCAREOUS
			0-0-0		
1515	BCS 0000		0-0-0		WEAKLY CALCAREOUS
			0-0-0		
1520	BCS 0000		0-0-0		WEAKLY CALCAREOUS
			0-0-0		
1525	BCS 0000		0-0-0		CALCAREOUS
			0-0-0		
1530	BCS 0000	MOSTLY GRAVEL	0-0-0		CALCAREOUS
			0-0-0		
1535	BCS 0000		0-0-0		CALCAREOUS
			0-0-0		
1540	BCS 0000		0-0-0		CALCAREOUS
			0-0-0		
1545	BCS 0000		0-0-0		CALCAREOUS
			0-0-0		
1550	BCS 0000		0-0-0		CALCAREOUS
			0-0-0		
1555	BCS 0000		0-0-0		CALCAREOUS
			0-0-0		
1560	BCS 0000		0-0-0		CALCAREOUS

NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE

CUTTINGS SAMPLE LOG

Borehole ID NC-ENDP-2D Drill Depth From 1560 To 1620 Page 20 of 20

Driller HOLQUIN/CLEAVER Start Date/Time _____ End Date/Time _____

Drilling Equip./Method 12 TA75E/Tricone RC Sampling Equip./Method Cyclone/cuttings

DEPTH (Feet)	Top/Bottom of Cuttings Sample Interval	Description of Lithology - Petrology	GRAPHIC LOG	Lithologic Unit	Notes
1560	BCS 0000	SILTSTONE AND GRAVEL, AS ABOVE.	0 1 0		WEAKLY CALCAREOUS
1565	BCS 0000		0 1 0		WEAKLY CALCAREOUS
1570	BCS 0000		0 1 0		WEAKLY CALCAREOUS
1575	BCS 0000		0 1 0		WEAKLY CALCAREOUS
1580	BCS 0000	40% GRAVEL, 30% SILTSTONE 40% TUFF, REWORKED, ABRAIDED BIOTITE PHENOCRYSTS LIGHT GRAY N7	0 0 0 0 + + + + + + + + + +		WEAKLY CALCAREOUS
1585	BCS 0000	MOSTLY GRAVEL	0 0 0 0 0 0 0 0 0 0 0 0		WEAKLY CALCAREOUS
1590	BCS 0000	10% TUFF, REWORKED, AS ABOVE	0 0 0 0 + + + 0		WEAKLY CALCAREOUS
1595	BCS 0000		0 1 0		WEAKLY CALCAREOUS
1600	BCS 0000	MOSTLY GRAVEL	0 0 0 0 0 0 0 0 0 0 0 0		WEAKLY CALCAREOUS
1605	BCS 0000		0 0 0 0 0 0 0 0 0 0 0 0		CALCAREOUS TO WEAKLY CALCAREOUS
1610	BCS 0000	SILTSTONE, LACUSTRINE, GRAYISH BROWN STR 3/2	0 0 0 0		CALCAREOUS
1615	BCS 0000		0 0 0 0		CALCAREOUS
1620	BCS 0000	HOLE TD'd at 1618.38' due to casing problems.	0 0 0 0		CALCAREOUS Plugged off - TILD OUT HOLE TD'd 2.18.99 17:30'

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