PROJECT A. W. Vogtle Nuclear Site

SHEET 4 OF 4

HOLE NO. 503

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
117.0									
2'1" recovery	43				74	120			
122.0									
7" recovery	12					125			121.5 SAND: dark gray to black medium grained, some clay contact established with core barrel. Generally a sandy silt of moderate plasticity.
130.0					64	130			
TD = 130.0 ft.						135			
						140			
						145			
						150			

HOLE SIZE NX

HOLE NO. 503

SITE ~~General~~

12/10/73 Amendment 13

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 504

PROJECT A.W.VOGTLE NUCLEAR SITE ANGLE FROM HORIZ. 90 BEARING
LOCATION N1,144,139 E 622,611 BEGUN 8-17-73 COMPLETED 8-23-73
OVERBURDEN 84 ft. DEPTH DRILLED INTO ROCK 50 ft. TOTAL DEPTH OF HOLE 186.5ft.
ELEV. WATER TABLE - NO. CORE BOXES 3 NO. SAMPLES TAKEN 7
CORE RECOVERY(%) 88 % FEET MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 214.61 ft. HOLE LOGGED BY P. Yen DRILLER CLEO IVY & LEWIS LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled to 85 ft. using a 5 7/8" tricone bit.									0-84.0 ft. OVERBURDEN: Sand, silt and clay.
Cased (4") to 85 ft.						5			
Began NX coring at 85 ft.					205	10			
Used no cement. Used 5 bags bentonite.									
Began coring at 85 ft. with a longyear NX barrel.						15			
100 % Water loss @ 20 ft.					195	20			
Backfilled to 23 ft. with 5 bags of cement.						25			
Hole drilled to investigate marl only. No sample taken 0-85 ft.									
Solid rectangles indicate spoon samples.					185	30			

13

HOLE SIZE 5 7/8"

HOLE NO. 504
SITE General

12/10/73 Amendment 13

PROJECT A.W. VOGTLE NUCLEAR SITE

SHEET 2 OF 5

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					175	40			
						45			
					165	50			
						55			
					155	60			
						65			
					145	70			

1 3

HOLE SIZE 5 7/8"

HOLE NO. 504

SITE General

12/10/73 Amendment 1 3

PROJECT A.W. VOGTLE NUCLEAR SITE

SHEET 3 OF 5

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Shaly clay material in return line.								
Yellow green clay with shells in return line at 80.0 ft.					135	80		
Began coring 85ft.								
			84.0					
Spoon Sample		SS1.4	50-50	5"		85		84.0-134.' MARL: Gray, very firm compacted clay. Very calcareous. Weakly cemented, silty, massive, has hard moderately cemented nodules, marl can be broken by hard finger pressure, nodules are broken by hard hammer blow. Has shell fragments in some zone.
4 ft. recovery.		87	- 99					
90 ft.	80	0 0 0 0 *	10 15 20 25 30	2 2 2 2	125	90		
4 ft. recovery.	80							
95 ft.						95		95 - 103 ft. LIMESTONE: Nodules alternating layers 2 - 3" thick cemented limestone in the marl.
3'6" recovery.			97-109					
some core loss due to grinding. Hard & soft layers 100 ft.	70	0 0 0 *	10 15 20 25	2 2 2	115	100		
4.0 ft. recovery.	100							
105 ft.						105		
Core length: Broken 4-10"			107-	119				
5.0 recovery	100	0 0 *	10 15 20	3 2				
110 ft.					105	110		
5.0 recovery	100							
115 ft.								

13

HOLE SIZE 5 7/8" & NX

* slight loss out top of casing

HOLE NO. 504

SITE General

12/10/73 Amendment 13

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 4 OF 5

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Recovery 5.0 ft.								
	100	118	-130.0					
Average core 18"		0	10	10				
120		*	15	10	95	120		
	100	122-	135					
		0	10	5				
125		0	15	3		125		
		0	20	5				
		0	25	5				
	100	0	30	5				
		*	35	10				
130.0								
					85	130		
Recovery 3.5 ft. Core loss at 134ft. Sand will not stay in core barrel.	70							
135.0								
						135		134.0 SAND: gray medium grained dark. Non - calcarious.
No recovery in sand.	0							
140.0			140					
					75	140		
Spoon sample		ss1.4	100=2"					140-141.5 SAND: dark gray, medium grained, non-calcarious.
			144.5					
Spoon sample		ss	1.4	100=2"		145		144.5 - 146 SAND: medium grained, medium gray, non-calcarious.
			149.5					
Spoon sample		ss	1.4	100=3"	65	150		149.5 - 151.0 SAND: medium grained sand, gray, clean, very slightly silty.

HOLE SIZE NX

* slight loss out top of casing.

HOLE NO. 504

SITE General

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 5 OF 5

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Spoon sample		ss	1.4	100-4"					CLAY: ~~155~~ brown-gray medium grained, non-calcareous.
no recovery in sand due to uncemented nature of the sand.			160.0						
Spoon sample		ss	1.4	100-2"	55	160			160.0 SAND.
						165			
			170.0						
Spoon sample		ss	1.4	100=5"	45	170			170 SAND: medium grained, dark gray, non-calcareous.
No recovery.			175.0						
Spoon sample		ss	1.4	30-70=10"		175			175.0 SAND.
No recovery in sand			180.0						
Spoon sample		ss	1.4	100=5	35	180			180.0 SAND.
			185.0			185			185.0 SAND: medium grained, dark gray- black, slightly silty, non-calcareous.
Spoon sample		ss	1.4	75-25=7					
TD = 186.5 ft.						190			

HOLE SIZE NX

HOLE NO. 504

SITE General

12/10/73 Amendment 13

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 6
HOLE NO. 505

PROJECT A.W.VOGTLE NUCLEAR SITE ANGLE FROM HORIZ. 90 BEARING -
LOCATION N 1147 040 E 622 299 BEGUN 8-23-73 COMPLETED 8-31-73
OVERBURDEN 147 ft. DEPTH DRILLED INTO ROCK 40 ft. TOTAL DEPTH OF HOLE 201.5 ft
ELEV. WATER TABLE ____ NO. CORE BOXES 4 NO. SAMPLES TAKEN 4
CORE RECOVERY (%) 99% FEET 39.6' MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 241.9 ft HOLE LOGGED BY P.YEN DRILLER CLEO IVY-LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
5 7/8" tricone bit used to 147 ft Longyear NX barrel used for core recovery 4" casing to 147 ft.						5			0 - 147 ft. OVERBURDEN: Sand, silt, and clay.
8 bags bentonite used for drilling.									
No cement used for casing.					212	10			
Began casing 147 ft.									
						15			
Backfilled to 75ft. with 5 bags of cement.									
Water tested with double pneumatic packers at 10 ft. intervals with packers at 12 ft. spacing.					202	20			
						25			
Hole drilled to investigate marl only. No samples taken. 0-147 ft.					192	30			
Solid rectangles indicate spoon samples.						35			

13

HOLE SIZE 5 7/8"

HOLE NO. 505
SITE General

12/10/73 Amendment 13

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 2 OF 6

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					182	40			
						45			
					172	50			
						55			
					162	60			
						65			
					152	70			

13

HOLE SIZE 5 7/8"

HOLE NO. 505

SITE General

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 3 OF 6

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					142	80			
						85			
					132	90			
						95			
					122	100			
						105			
					112	110			

13

HOLE SIZE 5 7/8"

HOLE NO. 505

SITE General

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 4 OF 6

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Water loss 100% at 120 ft.								
					102	120		
						125		
Sampled at 130 no recovery (still in shell)					92	130		
						135		
					82	140		
4" casing - cased to 147.0 very tough marl.								
146. Spoon sample no recovery		147.0				145		147'-187' CLAY-MARL: Gray to greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules, marl can be broken by hard finger pressure, nodules by hard hammer blow. Shell fragments in some zones.
147.0	ss	1.4	100	2				
Broken 2-16"		148-160						
		0	5	5				
		0	10	12				
	100	-	15	10	72	150		
152.0		Water lost out top of casing 1/2 gpm.						
Broken 2-8" hard and soft marl	100							154.0 MARL; 3" piece very hard marl, light gray, fine grained.

HOLE SIZE 5 7/8 & NX

HOLE NO. 505

SITE General

12/10/73 Amendment 13

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 5 OF 6

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
157.0		157-	167					152-157.0 MARL: Medium gray to light gray, hard to very hard marl, begins to show less coquina.
Broken 2-7" 162.0	100	0 0 -	5 10 15	5 5	62	160		
		Water out top of casing.						
Broken, hard & soft zones. 167.0	100	166-	178			165		
		0 0 0 -	5 10 15 20	5 10 5	52	170		
Slight core grinding 168.5 - 169.5 172.0	99	Water out top of casing.						172.2 MARL: 1/2" line of broken shell and carbonaceous material in the marl. Continues uniform.
Core length Broken 2-14" Aug 10" 177.0	98	175-	187			175		
		0 0 0 0 -	5 10 15 20 25	5 10 10 5	42	180		
Core length Broken Aug 6-8" 182.0	100	Water out top of casing.						
Core length 2-24" Aug 12" Broken 187.0	100					185		187.0 SAND: medium grained, dark gray, silty, non-calcareous.
Sampled 3 ft. with no recovery in sand 190.0 Spoon sample.	0		190.0		32	190		190-191.5 SAND: non-calcareous, dark gray medium grained.
No recovery in sand with core barrel	ss 0	1.4	25-75 6 195.0	16	15			

HOLE SIZE NX

HOLE NO. 505

SITE General

12/10/73 Amendment 1 3

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 6 OF 6

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Spoon sample No recovery	0	ss	1.4	68-32					195-196.5 SAND:dark gray, medium grained, non-calcareous, slightly clayey.
200.0			200.0		22	200			200 - 201.5 SAND: clean, light gray, medium grained, noncalcareous.
Spoon sample		ss	1.4	100=2"					
TD = 201.5 ft.									

HOLE SIZE NX

HOLE NO. 505

SITE General

12/10/73 Amendment 13

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 506

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -
LOCATION NI 146 698 E 621 067 BEGUN 9-14-73 COMPLETED 9-20-73
OVERBURDEN 92.0 Ft. DEPTH DRILLED INTO ROCK 69 ft. TOTAL DEPTH OF HOLE 178.0 ft.
ELEV. WATER TABLE ____ NO. CORE BOXES 4 NO. SAMPLES TAKEN 2
CORE RECOVERY (%) 83% FEET 63 ft MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 172.7 ft. HOLE LOGGED BY P. Yen DRILLER Bill Shealey LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Rockbit 5 7/8" to marl at 91.5 ft.									0-92.0 ft. OVERBURDEN: sand and clay.
						5			
Set 4" casing to 91.5 ft.									
Drilled with mud in marl making 5 ft runs with 10 ft. Longyear sampling barrel, NX.					163	10			
100% water loss at 45 ft.						15			
Shell encountered at 35 ft.					153	20			
Regained 100% circulation at 93 ft.						25			
Same water loss in sand									
Used approximately 4 bags of bentonite					143	30			
No cement used to set casing.									
Backfilled to 6 ft. with 5 bags of cement									

13

HOLE SIZE 5 7/8"

HOLE NO. 506
SITE General

PROJECT A. W. Vogtle Nuclear Site

SHEET 2 OF 5

HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Water tested with double pneumatic packers at 10 ft. intervals.									
Packers were 12 ft. apart.					133	40			
Hole drilled to investigate marl only. No samples 0-91.5 ft.						45			
Solid rectangles indicate spoon samples.					123	50			
						55			
					113	60			
						65			
					103	70			

HOLE SIZE 5 7/8"

HOLE NO. 506

SITE General

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Spoon Sample Began Coring 93.0 93.0			92.0		93 83	80 85 90		92.'-162.' CLAY-MARL: Gray to greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules, marl can be broken by hard finger pressure. Nodules by hard hammer blow. Shell fragments in some areas. 92.0 MARL: Clay, with shells, limy silty clay, massive, fine to medium grained, gray, slightly sandy.
		SS 1.4 20-70=5 1/2 93 - 105						
3'7"/4'3" Core length broken and ground up. Barrel blocked up. Core length 1/4-5". Average 2". 97'3"	84	0 0 0 *	20 25 30 35	5 10 10 5		95		93-95.5 MARL: is silty, slightly sandy clay, gray, has a mottled, granular appearance contains small broken shell fragment shows same unsorted bedding, massive.
2'10"/5'9". Core length broken and ground up. Limestone nodules present in this run. 103'0"	50	*slight leak out top of casing. 103 - 115			73	100		95.5 MARL: becomes uniform gray clay, slightly silty, moderately compacted, fine grained, easily broken by drilling action, brittle, begins to show limestone nodules, marl itself is moderately limy and contains occasional shells and casts.
2'8"/4'0". Core length 1/4-8" Broken and ground up. Core barrel blocked up. 107'	71	0 0 0 0 0	20 25 30 35 40	5 5 10 10 5		105		
5'9"/6'0" Core length 1/4-8". Limestone nodules with some grinding. 113'0"	55	No loss. Discontinued test. 113 - 125			63	110		103-107 SAND: calcareous, compacted. 111.9 3/4 inches thick layer of charcoal.
Core length broken: 2-18". Average 4".	100	0 0 0 0 0	20 25 30 35 40	5 5 5 10 10				

No loss. Discontinued test.

HOLE SIZE 5 7/8" & NX

HOLE NO. 506

SITE General

1

12/10/73 Amendment 1 3

PROJECT A. W. Vogtle Nuclear Site

SHEET 4 OF 5

HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
No grinding of core 118.0								116.5 MARL: fossiliferous. 120.0 MARL: non bedded, silty clay, uniform.
Core length broken 2-14" average 5" Very little grinding or abrasion. 123.0	100	123 -	135		53	120		LIMESTONE: nodules 2-4" thick: 96.8, 97.3, 97.8, 99.0, 107.0, 109, 110, 111.2, 111.4, 111.5, 113.5, 117.5, 118.0, 122.0, 123.0, 124.7, 126.0, 127,1 to 135, 136.0, 145.5.
Core length broken 2-13" average 6" No grinding of core 128.0	98	0 0 0 0 0	20 25 30 35 40	5 5 5 10 10		125		127.1-135.0 LIMESTONE: not nodular but appears to be hard, very limy marl, uniform light gray, massive, silty.
		No loss, Discontinued test.						
Core length broken 2-16" average 6" slight grinding at 127.0 133.0	100	133 -	145		43	130		138.0-153.0 MARL: shows a uniform appearance, silty, firm, moderate cementation, succeptible to occasional mechanical fracture as a result of drilling action. Massive non bedded, predominantly gray clay.
Core length broken 2-14" average 6" No core grinding 138.0	100	0 0 0 *	25 30 35 40	5 10 10 5		135		
		*slight loss out top of casing.						
Core length broken 2-14" average 6" No grinding 143.0	100	143 -	155		33	140		
Core length broken 3-20" average 12" No grinding 148.0	100	0 0 *0	25 30 35	5 15 10		145		
		*slight leakage past packer and out top of casing. Estimated 1/2 gpm.						
Core length broken 3-26" average 12" No grinding 153.0	100	153 -	165		23	150		154.5 MARL: shows more lime content, broken shells and black specks of carbonaceous material, as a gradational transition.
Core length broken 2-20 average 12"	100	0 0 0 *	25 30 35 40	5 10 10 5				
		*slight loss out top of casing (3/4 gpm)						

HOLE SIZE NX

HOLE NO. 506

SITE General

PROJECT A. W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
No grinding 158.0									157.8, 159.0, 159.4, 159.7, 161.5 large 1/2" thick, salmon pink layers of shell. The marl itself becomes very fossiliferous, limy, firm to 161.5.
Core length broken 2-12" average 4" Bottom part of run (in sand) was not recovered. 163.0	81					160			161.5-162.0 SAND: gradational contact beginning at 161.5 with very limy gray-green clay becoming green to dark green clay with sand. Becoming slightly silty sand at 162.0, slight amount of clay.
9" recovery in sand 168.0	15					165			
12" recovery in sand 173.0	20				3	170			163.0 SAND: predominantly fine grained, non calcareous, silty non plastic, black, uniform.
No recovery in sand.	0					175			168.0 SAND: as before but moderately silty and black.
		178.0							178.0 SAND: fine to medium grained, slightly silty to clean sand, calcareous, chiefly quartz, vitreous, light tan color.
Spoon Sample TD = 178.0 ft.		SS 1.4	400	3"		180			
						185			
						190			

HOLE SIZE NX

HOLE NO. 506

SITE General

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 507

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -
LOCATION N 1, 145, 504.5 E 620,633.5 BEGUN 9-4-73 COMPLETED 9-13-73
OVERBURDEN 111 ft. DEPTH DRILLED INTO ROCK 67.5 ft. TOTAL DEPTH OF HOLE 191.0 ft
ELEV. WATER TABLE - NO. CORE BOXES 4 NO. SAMPLES TAKEN 4
CORE RECOVERY (%) 85% FEET 57.5 MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 211.83 ft. HOLE LOGGED BY P. Yen DRILLER Cleo Ivy LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Casing to 112 ft. with 4" casing. Drilled to marl 112 ft. using 5 7/8" tricone bit, no samples. 100% water loss at 60 ft.						5			0-112.0 ft. OVERBURDEN: Sand, silt and clay.
Drilled with 8 bags of mud. No cement used to set casing. 100% water return after casing set. Slight water loss in sand, before casing set.					202	10			
						15			
Encountered shell-limestone zone with drill chatter at 60 ft.					192	20			
Began coring at 112 ft. with Longyear NX barrel.						25			
Backfilled to 39 ft with 6 bags of cement.					182	30			
Solid rectangles indicate spoon samples.									

HOLE SIZE 5 7/8"

HOLE NO. 507
SITE General

1

PROJECT A. W. Vogtle Nuclear Site

SHEET 2 OF 5

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Water tested at 10 ft. intervals with pneumatic double packers 12 ft. apart.									
					172	40			
					162	50			
60 ft. 100% water loss - continuous to 111.0 ft. 100% water return when casing set at 111'.					152	60			
					142	70			

13

HOLE SIZE 5 7/8"

HOLE NO. 507

SITE General

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					132	80		
						85		
					122	90		
						95		
					112	100		
						105		111.'-180.5' CLAY-MARL: Gray to greenish-gray, silty, very calcareous, very firm, weakly to moderately cemented, massive, has hard moderately cemented nodules. Can be broken by hard finger pressure, nodules broken with hard hammer blow. Shell fragments in some zones.
Began coring 112.0.					102	110		
		111 -112.5						
Spoon sample	SS	1.4	10-15-18	18	18			111.0' MARL: Clayey, plastic, gray
		112-124.0						112.0 MARL: 5 nodules 1/2-1" diameter in core barrel followed by non-fossiliferous marl.
CORE LENGTH: Broken 2-24", average 6", washed out some soft clay.	50	0	5	5				
		0	10	5				
		0	15	5				
		0	20	5				
		0	25	5				
		1	30 - Water out top of casing.					

HOLE SIZE 5 7/8" & NX

HOLE NO. 507

SITE General

PROJECT A.W. Vogtle Nuclear Site

SHEET 4 OF 5

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
117.0		0	5	5				Very clayey and plastic, moderately cemented to 117.0.
		0	10	5				117.2 LIMESTONE: Nodules to 117.4.
CORE LENGTH: Broken 1/2-14", average 4" grinding, some limey nodules.	85	0	15	5				117.4-119.5 CLAYEY SILT: gray, slightly sandy, massive.
		0	20	10				119.5 LIMESTONE: 2" nodule, hard.
122.0		1	25	- water out top of casing.				122.0 SILT (MARL): moderately compacted silt (and limestone nodule 3" at 122.3.)
		127-139 Packer leaked, reset to 125-137.0, slight leak in top of rod accounted for:			92	120		
CORE LENGTH: Broken and ground up, leaving limey nodules 1/2-3", average 2".	10	125	-137.0 DP					
127.0		0	10	15		125		126.0 MARL: Silty, gray, carbonaceous, uncemented, easily broken.
		0	15	15				
CORE LENGTH: Broken and washed out 1" to 4", average 2". Soft clay layer washed out.	90	0	20	10				
		0	25	10				
		0	30	10				
		0	35	5	82	130		130.0 CLAY: 10" of soft clay, plastic, gray.
		0	40	5				
132.0		0	45	10				132-133.0 CLAY: silty, generally massive.
		1*	50	5				
		*Slight leak out top of casing due to leakage around packer.						
CORE LENGTH: Broken 2-12", average 6". Very slight grinding.	100	135.0-147.0 DP				135		133.5 LIMESTONE: nodule 3" thick.
137.0		0	5	5				134-135.5 Contained 1/2" limestone (limey harder zones).
		0	10	5				
CORE LENGTH: Broken 2-24", average 7". Very slight grinding.	100	0	15	5				135.5-142.0 MARL: massive, uniform, gray, silty clay.
		0	20	10				
		2*	25	10				
		*Water leaked past packer and out top of casing			72	140		
142.0		140	-152					142.0 LIMESTONE: 3" nodule. Marl becomes more compacted.
CORE LENGTH: Broken 2-14", average 5". Some grinding at limestone nodules.	95	0	5	2				145-147 LIMESTONE: (marly limestone).
		0	10	2				
		0	15	5				148.3 1/4" bed of charcoal.
		0	20	10		145		148.6, 149.0, 150.2, 150.6 limestone nodules 2-3 1/2" thick.
		0	25	10				
147.0		2*	30	5				
		*slight leakage past packer and out top of casing.						
CORE LENGTH: Broken 2-24", average 8". No visible grinding.	100	150	-162		62	150		152.0 MARL: gray, compacted, sandy silty clay, not fossiliferous, massive.
152.0		0	5	5				153.1 slight core grinding.
		0	10	5				
CORE LENGTH: Broken 2-14, average 6".	100	0	15	5				
		0	20	10				
		0	25	5				
		0	30	10				
		0	35	5				
		No leakage. Test discontinued.						

HOLE SIZE NX

HOLE NO. 507

SITE General

12/10/73 Amendment 13

SHEET 5 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Very slight core grinding. 157.0								157.0 MARL: Moderately cemented gray, massive, clayey silt, very slightly sandy to 167.6'.
CORE LENGTH: Broken 2-8", average 5". Slight core grinding. 162.0	100	160-172			52	160		159.1 slight core grinding.
		0	20	5				160.0 Limestone nodule 1" thick.
		0	25	5				
		0	30	10				
		No loss. Discontinued test.						
CORE LENGTH: Broken 2-7", average 4", very slight grinding 167.0	100	165.0-177.0				165		
		0	20	5				167.6 slight core grinding and marl becomes silty clay, uniform, massive.
		0	25	5				
		0	30	10				
		No loss. Discontinued test.						
CORE LENGTH: Broken 2-34", average 4", no core grinding. 172.0	100				42	170		169.0 MARL: grades into a slightly silty, well compacted plastic clay, massive, uniform gray. 172.0 MARL: becomes gray clay, very slightly silty in irregular beds 1/2-1" thick.
CORE LENGTH: Broken 1/2-24", average 1", no grinding. 177.0	100					175		175.1 MARL: remains clay, gray but grading into green-black color, only slightly silty. 176.0 CLAY: green-black is variable, silty, partly sandy at end of run.
CORE LENGTH: Broken 6-30", average 6", possible core loss in uncemented sand. 182.0	70				32	180		180.5 SAND: contact, gradational transition from silty clay to silty sand.
Spoon sample No recovery in sand with core barrel.	SS	182.0 1.4	100=2"					182.0 SAND: coarse, light gray brown and not calcareous.
Spoon sample	SS	184.5 1.4	200=2"			185		184.5 SAND: fine to medium grained, brown-light gray, not calcareous.
Spoon sample	SS	189.5 1.4	300=	1 1/2	22	190		189.5 SAND: fine, light gray, not clayey, slightly silty, non-calcareous.
TD = 191.0 ft.								

HOLE SIZE NX

HOLE NO. 507

SITE General

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 508

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -
LOCATION N 1145 605 E 621 613 BEGUN 8-31-73 COMPLETED 9-4-73
OVERBURDEN 95 ft. DEPTH DRILLED INTO ROCK 56 ft. TOTAL DEPTH OF HOLE 163.0 ft.
ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 3
CORE RECOVERY (%) 100% FEET 56 ft. MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 190.46 ft. HOLE LOGGED BY P. Yen DRILLER Cleo Ivy- LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled (5 7/8") to marl at 95 ft. depth. Set 4" casing to 95 ft. 5 bag drilling mud used. No cement used.						5			0-95.0 ft. OVERBURDEN: Silt, sand and clay.
Began coring at 96.0 ft. using Longyear NX barrel.					180	10			
						15			
20.0 ft. 100% water loss. Water tested at 10 ft. intervals with pneumatic double packers set at 12 ft. spacing.					170	20			
Backfilled to 30 ft. with 5 bags of cement.						25			
Solid rectangles indicate spoon samples.					160	30			
						35			

HOLE SIZE 5 7/8"

HOLE NO. 508
SITE General

13

12/10/73 Amendment 13

PROJECT A. W. Vogtle Nuclear Site

SHEET 2 OF 5

HOLE NO. 508

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS			ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
		LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.					
					150	40			
					140	50			
					130	60			
					120	70			

HOLE SIZE 5 7/8"

HOLE NO. 508

SITE General

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO. 503

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					110	80		
Casing: 4" diameter to 95.0 ft. depth.						85		95.'-150.8' CLAY (MARL):Gray to greenish-gray, silty, very calcareous, very firm,massive, weakly cemented,has hard moderately cemented nodules.Marl can be broken by hard finger pressure, nodules by hard hammer blow. Has shell fragments in some zones.
					100	90		
13								95.0 MARL: Medium gray, limey, hard, weathered at top, very sandy, fine-medium grained, moderately silty, bearing carbonaceous particles and small black flecks, some coquina (fossils).
Spoon sample 96.0 Began coring.			95.0			95		
		SS	1.4	35-63				
CORE LENGTH: 2-14". Generally excellent recovery.	100	97.0-109.0						
		0	5	5				
		0	10	5				
		0	15	10				
101.0		0	20	10	90	100		
CORE LENGTH: 2-7". Top of run shows core grinding and possible loss by washout. 106.0	100	-	25	Blew packer (Lost into shell zone)				
		104-116		DP				
		0	5	5		105		
		0	10	5				
		0	15	10				
CORE LENGTH: 2-19". Hard and soft zones. 100 % pickup last run. 111.0	100	0	20	10				
		-	25	Blew packer Loss into shell zone				
					80	110		
Slight grinding core at 114.8.	100							101.0 MARL: Friable for 8" depth, still moderately sandy, moderately silty. Medium gray with black flecks. 101-101.8 Core is soft, thumbprints easily. 104.4 Soft seam. 105.0 Begins hard marl,flecks gone. 108.5 3" piece of light gray hard marl. Slight amount coquina
		114-126.0						

HOLE SIZE 5 7/8" and NX

HOLE NO. 508

SITE General

SHEET 4 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 508

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
116.0								
CORE LENGTH: Broken 2-15". 121.0	100	0 0 0 -	5 10 15 20	5 5 10 -				116.0 MARL: Continues hard medium gray, medium-fine grained, sandy, silty, not visibly fossiliferous.
		Slight leakage out top of casing.			70	120		
CORE LENGTH: Broken 2-14". 126.0	100							
		125-137				125		
		0 0 -	5 10 15	10 10 -				
CORE LENGTH: Broken 2-10". 131.0	100	Slight water loss out top of casing.			60	130		
CORE LENGTH: Broken 2-15". 136.0	100							134.1 MARL: 2" limey material streaked with gray carbonaceous material. 13
		135-147				135		136.0 MARL: Clayey, fine grained, medium gray, uniform sparsely fossiliferous.
		0 0 0 -	5 10 15 20	5 10 5 -				
CORE LENGTH: Broken 2-12". 141.0	100	Slight loss of water out top of casing.			50	140		
CORE LENGTH: Broken 2-8". 146.0	100	142-154						
		0 0 0 -	5 10 15 20	5 5 10 10		145		
		Slight water loss out top of casing.						
CORE LENGTH: Broken 2-26". 151.0	100				40	150		
CORE LENGTH: 2-6". MARL: 8 1/2" recovery.	14							150.8 MARL: Begins to become more sandy. Big pieces of shell at bottom of run.

HOLE SIZE NX

HOLE NO. 508

SITE General

PROJECT A. W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO. 508

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
156.0 Took spoon sample.			156						
		SS	1.4	49-51	=2"				151.7 SAND: Medium grained, medium gray, very slightly silty, non-calcareous.
156-160.0 attempted coring (no recovery)									
			160		30	160			
160.0 Took spoon sample. No recovery		SS	1.4	54-36	=2"				161.5 SAND: Medium grained, non-plastic, dark gray to black, not calcareous, slightly clayey and silty.
			161.5						
		SS	1.4	50-50	=1"				
161.5 Took spoon sample.						165			
TD = 163.0 ft.						170			
						180			
						190			

HOLE SIZE NX

HOLE NO. 508

SITE General

BECHTEL

SHEET 1 OF 5

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 510

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ 90 BEARING -

LOCATION N 1143 047 E 622 353 BEGUN 8/29/73 COMPLETED 9/14/73

OVERBURDEN 96 ft. DEPTH DRILLED INTO ROCK 58 ft. TOTAL DEPTH OF HOLE 185.0 ft.

ELEV. WATER TABLE - NO. CORE BOXES 4 NO. SAMPLES TAKEN 23

CORE RECOVERY (%) 85% FEET 49'4" MODEL & MAKE OF DRILL CME 55

GROUND ELEV. 230.7 ft. HOLE LOGGED BY P. Yen DRILLER R. Williams, B. Shealy LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 95 ft.										0-96.0 ft. OVERBURDEN: sand and clay.
Drilled to 93 ft. with 5 7/8" tricone bit.							5			
Cored through marl with Longyear 10 ft. NX sampling barrel making 5 ft. runs.						221	10			
Longyear sample indicated by open box.										
Water tested with pneumatic double packers set at 12 ft. spacing, testing in 10 ft. increments.							15			
						211	20			
Used 2 bags of cement. Used 6 bags of bentonite.										
							25			
Backfilled to 34 ft. with 5 bags of cement.										
This hole tested with Menard pressure meter apparatus.						201	30			
Location of test indicated by triangle symbol opposite footage markers.										

13

Hole Size 5 7/8"

Hole No. 510

Site Unit 4 Reactor

12/10/73 Amendment 13

PROJECT A. W. Vogtle Nuclear Site

SHEET 2 OF 5

HOLE NO 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD & BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Hole drilled to investigate marl only. No samples 0-95 ft.										
						191	40			
Numbered rectangles indicate samples taken for soils testing. Starred rectangles indicate samples taken for general field data. Solid rectangles indicate spoon samples.										
							45			
						181	50			
						171	60			
							65			
						161	70			

1

Hole Size 5 7/8"

Hole No 510

Site Unit 4 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
						151	80			
							85			93.'-154.' CLAY(MARL): Gray to greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules. Marl can be broken by hard finger pressure. Nodules broken by hard hammer blow. Shell fragments in some zones. 93.0 suspected marl contact. 94.0 MARL: Silty, medium gray, fine grained, calcareous, contains some carbonaceous particles and fossiliferous.
Cased to 95.5 ft. with 4" ID casing										
						141	90			
Longyear split tube. NX barrel began coring in 5 ft. runs.										
Spoon sample.		94.0								
95.5	SS	1.4	18-30-50				95			
		95.0-107.0								
Core length: 2-16" broken.	91	0 10	5							
		0 15	5						1	96.2 core grinding is quite pronounced.
		0 20	10							
		0 25	10							
100.0		0 30	15			131	100		2	99.0-100.0 limy marl with shells and casts.
		No loss. Test discontinued.								
Core length: Broken 8-30".	99								3	101.5 shells and casts become more sparse. 102.6 7" piece of harder, limy marl.
105.0		105 -	117.0							
							105		4	
		0	15	5						
Core length: 2-10" Recovered 49/60	82	0	20	10						
		0	25	5						108.9-109.2 5" piece of limestone.
		0	30	5					5	
		0	35	10						
110.0		0	40	10		121	110		6	110.0-111.2 LIMESTONE: firm, nodular peices 3/4-1" size.
		No loss. Test discontinued								
Core length: 2-5" Recovered 53/60. Core mechanically ground.	90									113.7-115.0 two pieces of limestone 2" thick, grinding core on either side.
115.0									7	

Hole Size 5 7/8" and NX

Hole No 510

Site Unit 4 Reactor

PROJECT A.W. Vogtle Nuclear Site

SHEET 4 OF 5

HOLE NO 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD & BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Recovery 2 ft. Core length; 1/2-2" broken and ground up in core barrel. 120 EOS	40	0 0 0 0	25 30 35 40	5 5 10 10					*	115.0-120 Limestone nodules grinding against softer marl. Nodules recovered with rounded ends, visible shell content and moderately hard. 119.1 grinding of core.
		No loss discontinued test.				111	120			
Core length; Broken 0-2" Barrel filled with fallout overnight. Core ground up. 125.0	22								*	120-125.0 dirty, shell fragments, marl chips and debris from above falling into hole. 14" of marl core is silty, plastic and contains shells and casts.
			125 -137							
Core length; 2-6". Average 6". Broken. 130.0	100	0 0 0 0 *	15 20 25 30 25		5 5 10 15 5				8	125.0 - 130.0. LIMESTONE. 125.3 grinding of core. 126.6 limestone 2 1/2" thick. 127.0 limestone nodule 1" thick.
		*Water leakage past packer and out top of casing, about 3 GPM.				101	130		9	127.2 limestone nodule 3" thick.
Core length; 2-7" Average 6". Broken. 135.0 EOS	100								10	128.0 limestone nodule 2" thick. 128.5 slightly more sandy marl, massive, faintly bedded in part.
			135-147.0							
Core length; 2-32". Average 8". No grinding seen. 140.0	100	0 0 0 *	20 25 30 35		5 10 10 10		135		11	130.0 limestone nodule 1" thick. 130.1 - 130.2 slight grinding of core. (132.1 limestone nodule.) 132.7 slight grinding of core. 133.9 slight grinding of core. 133.6-134.0 hard limestone, massive.
		*Slight leak (2-3GPM) past packer and out top of casing.				91	140			
Core length; Broken 3-24" Average 15" No grinding seen. 145.0	100		141-153							
		0 0 0 *	20 25 30 35		5 10 10 5				12	135.0 MARL: gray, massive, uniform, silty clay, barely indents with fingernail to 144.0.
		* Slight leak out top of casing past packer approximately 3 GPM.					145			
Core length; Broken or fractured 2-30". Average 9". 150.0	100					81	150		13	145.0 MARL: becomes harder and more resistant to fingernail pressure, slightly more limy to 150.0.
Core length; Broken 4-30". Average 24". No grinding.	100								14	150.0 MARL: Silty clay, more small specks of black carbonaceous matter, becoming slightly more yellow-gray than previous run.

13

Hole Size NX

Hole No 510

Site Unit 4 Reactor.

PROJECT A.W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD & BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
No recovery in sand. 160.0	0	160.0								153.0 occasional .5-1.0mm sand grains and larger shell fragments becoming more numerous to 154.0.
Spoon sample No recovery 165.0	SS 0	1.4 165.0	100+			71	160			154.0 SAND: contact is gradational with clay and silt grading to sand, color change from gray to green-gray. 160.0 SAND: Light gray, fine to medium grained, slightly silty, non-calcareous, non-plastic.
Spoon sample no recovery 170.0	SS 0	1.4 170.0	450=	3" 3	21/2		165			165.0 SAND: light gray, fine to medium grained, massive, slightly silty, non-plastic, non-calcareous.
Spoon sample Core recovery. 175.0	SS 3	1.4	400	3	2	61	170		*	170.0 SAND: Black, slightly silty, slightly clayey, fine to medium grained, non-calcareous, non-plastic, massive, non-bedded.
Core recovery. 180.0	12						175		*	175.0 SAND: Black, fine grained, clayey, non-calcareous, plastic, not compacted, massive.
Core recovery. 185.0	18					51	180		*	180.0 SAND: Clayey, fine grained, slightly plastic, massive, non-calcareous, black to 185.0.
TD = 185.0 ft.							185			
							190			

Hole Size NX

Hole No 510

Site Unit 4 Reactor.

12/10/73 Amendment 13

BECHTEL

SHEET 1 OF 5

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 513

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ 90 BEARING -

LOCATION N 1142 940 E.622 640 BEGUN 9-4-73 COMPLETED 9-17-73

OVERBURDEN 86 ft. DEPTH DRILLED INTO ROCK 61.5 ft. TOTAL DEPTH OF HOLE 178.0 ft.

ELEV. WATER TABLE - NO. CORE BOXES 4 NO. SAMPLES TAKEN 24

CORE RECOVERY (%) 92% FEET 56.25 ft. MODEL & MAKE OF DRILL Acker

GROUND ELEV. 220.21 ft. HOLE LOGGED BY P. Yen DRILLER Smiley - LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set 4" casing to 87'. Drilled with 5 7/8" tricone bit from surface to 87 ft.							5			0-86.0 ft. OVERBURDEN: sand and clay.
Cored 88.0-148 ft. depth in marl using Longyear NX sampler barrel.						210	10			
This hole used for Menard Pressure Meter Testing. Location of test indicated by triangle symbol opposite footage marker.							15			
Three bags of cement used to grout casing. This hole was water pressure tested with pneumatic double packers at 12 ft. spacing and at 10 ft. increments.						200	20			
							25			
Backfilled to 30 ft with 5 bags of cement.						190	30			

Hole Size 5 7/8"

Hole No. 513

Site Unit 3 Reactor

1

12/10/73 Amendment 13

PROJECT A. W. Vogtle Nuclear Site

SHEET 2 OF 5

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Numbered rectangles indicate samples taken for soils testing. Starred rectangles indicate samples taken for general field data. Solid rectangles indicate spoon samples.						180	40			
							45			
						170	50			
							55			
						160	60			
							65			
						150	70			

Hole Size 5 7/8"

Hole No 513

Site Unit 3 Reactor

12/10/73 Amendment 13

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
						140	80			86.'-147.5' CLAY (MARL): Medium gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules. Marl broken by hard finger pressure, nodules broken by hard hammer blow. Shell fragments in some zones.
							85			
Began coring.		86-	87.5							
88.0	SS	1.4	17-26	-41	18	18				88.0 CLAY: Slightly silty, very soft, ground up by harder stones in the barrel, massive, non-bedded to 91.0.
CORE LENGTH: Broken 3-26", average 10". 88.2 grinding in 94.5 clay. 52/60" recovery. Loss probably due to soft clay at top of run. 93.0	87	90	-102			130	90		1	91.0 MARL: Coquina appears, some pieces 3/4" long, lying flat, in individual pieces. Marl is moderately compacted, silty clay, massive, slightly streaked, limy but not shell bearing after 92.5, very slightly sandy.
		0	15	2					2	
		0	20	2						
		0	25	2						
CORE LENGTH: Broken 2-18", average 4". 93.5, 94.5 grinding core. 62/60" 98.0		0	30	5						
		0	35	10			95		3	
	100	0	40	10						
		No loss. Test discontinued								98.0 62/50" recovery.
									4	103.0 59.5/60" recovery. LIMESTONE: Nodules 2-4" thick appearing at 94.5, 95.0, 97.8, 99.0, 99.5, 103-104, 105.2, 108.1, 108.5, 112.0, 113.0, 114.2-117.5, 122.5-124.8.
CORE LENGTH: Broken 2-24", average 4". 98.2 core grinding. 59.5/60 103.0		100	-112			120	100		5	
	100	0	25	2						
		0	30	2						
		0	35	10					6	
		0	40	10						
		No loss. Test discontinued								100-102.0 MARL: Shows lenses of more limy clay within the usual silty clay. Lenses 1/4 to 1/2" thick.
CORE LENGTH: Broken 2-5", average 3". 103.2, 104.1 core grinding, close to limestone nodules. 43/60" 108.0	72						105			102.0 MARL: Becomes silty and sandy clay.
									7	110.0 MARL: Becomes plastic, slightly silty clay.
CORE LENGTH: Broken and ground up 2-6", average 4". 108.8, 112. grinding core. 53/60" 113.0		110	-122			110	110			
	88	0	25							
		0	30							
		0	35						*	
		0	40							
CORE LENGTH: Broken 2-6", average 4".		No loss. Test discontinued								

Hole Size 5 7/8" & NX

Hole No 513

Site Unit 3 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 4 OF 5

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Grinding of clay and limestone. 44/60 118.0	73								118.0-123.0 MARL: Becomes slightly silty clay, plastic.
CORE LENGTH: Broken 2-4", average 3", core loss in soft clay. 55/60 123.0	92	120	-132			100	120		123.0 LIMESTONE: Moderately hard, calcareous, limy to 127.0.
		0	25	2				8	
		0	30	5					
		0	35	10					
		0	40	10					127.0 MARL: Becomes uniform, massive, gray, compacted, mechanically fractured in part by drilling action, silty clay Continues to be generally uniform with the exception of limestone 2" thick at 135.0 and 141.8.
CORE LENGTH: Broken 2-26", average 10", no apparent grinding 58/60. 128.0	99	No loss. Test discontinued.					125	9	
								10	
CORE LENGTH: Broken 2-18", average 10", very slight grinding. 133.0	100	130	-142			90	130		142.0-143.0 MARL: Contains sparsely scattered shell fragments, 1/8-1/4" size.
		0	25	5					
		0	30	5					
		0	35	10					
		0	40	10				11	
CORE LENGTH: Broken 2-24", average 10", no apparent grinding. 138.0	100	No loss. Test discontinued.					135		
								12	142.0-147.5 MARL: Becomes more clayey (slightly silty clay) plastic gray, easily scratched with fingernail, compacted, generally fine grained.
CORE LENGTH: Broken 2-14", average 10", no apparent grinding. 143.0	100	140	-152			80	140		
		0	15	5					
		0	20	5					
		3	25	10				13	
CORE LENGTH: Broken 2-14". Bottom part of run in sand was lost. 52/60 148.0	90	Small loss into sand at bottom of test interval.					145		147.5 SAND: Silty non-plastic sand, layer of shell at contact 1/4" thick, sand is dark green to black, non-calcareous, uncemented to moderately compacted, fine to medium grained
								14	
Small recovery in sand. 153.0	10					70	150	*	
No recovery in sand.	0								

Hole Size NX

Hole No 513

Site Unit 3 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
No recovery in sand 158.0	0	158.0								
No recovery in sand Spoon sample 163.0	SS 0	1.4 163.0	300	2	2	60	160		*	158.0 SAND: Light gray, fine grained, silty, non-calcareous.
Small recovery in sand. Spoon sample 168.0	SS 2	1.4	200	1	3		165		*	163.0 SAND: Gray, silty, fine to medium grained, non-calcareous. 163-168.0 SAND: Black, very silty, non-calcareous, fine grained, uncemented, uniform, non-plastic, very slight amount of clay.
Some recovery in sand. 173.0	15					50	170		*	168-173 As above SAND: Black, very silty, etc.
Small recovery in sand. 178.0	16						175		*	173-178 SAND: As above.
TD = 178.0 ft.						40	180			

Hole Size NX

Hole No 513

Site Unit 3 Reactor

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5

HOLE NO. 518

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ 90 BEARING -

LOCATION N 1,142,950 E 623,800 BEGUN 8-8-73 COMPLETED 8-20-73

OVERBURDEN 77.5 ft. DEPTH DRILLED INTO ROCK 62.5 ft. TOTAL DEPTH OF HOLE 175 ft.

ELEV. WATER TABLE - NO. CORE BOXES 3 NO. SAMPLES TAKEN 23

CORE RECOVERY (%) 95% FEET 59.7 ft. MODEL & MAKE OF DRILL Acker

GROUND ELEV. 209.88 ft. HOLE LOGGED BY P. Yen DRILLER Smiley LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled to 76 ft. with 5 7/8" tri-cone bit (no samples). Cased (4") to 76ft. Cored from 76.0 ft. with a Longyear sampling barrel.							5			0-77.5 ft. OVERBURDEN: Sand and clay.
No water loss reported.						200	10			
13 Backfilled to 5 ft. with 5 bags of cement.										
This hole tested with Menard pressure testing apparatus. Location of test indicated by triangle symbol opposite footage markers.							15			
						190	20			
							25			
Numbered rectangles indicate samples taken for soils testing. Starred rectangles indicate samples taken for general field data. Solid rectangles indicate spoon samples.						180	30			

Hole Size 5 7/8"

Hole No. 518

Site Unit 1 Reactor

12/10/73 Amendment 13

PROJECT A. W. Vogtle Nuclear Site

SHEET 2 OF 5

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD & BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
						170	40			
							45			
						160	50			
							55			
						150	60			
							65			73.5'-74.0' Soil red brown. 77.5'-139.7' CLAY(MARL): Greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules, clay can be broken by hard finger pressure, nodules by hard hammer blow. Shell fragments in some zones.
						140	70			
Spoon sample		SS1.4	10-40-72	73.5						

13

Hole Size 5 7/8"

Hole No 518

Site Unit 1 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Began 76.0 Spoon sample		76-	78							
3'4" recovery 79.0	99	SS	1.4	10	-12	-13				77.5 MARL: Very hard at contact, gray, slightly sandy silty clay. Easily broken by drilling action, varies from compacted to moderately cemented limy, fine to medium grained.
3'3" 82.0	98					130	80		2	
3'1" 85.0	99								3	
86'10"	100						85		4	86.0 1 1/2 x 1/2 inch chip of carbonized wood.
91.0	98					120	90		5 6	
93.9	100									
Blocked barrel and ground up core. 96.0	52						95		7	
100.5	95					110	100		8 9	
Limestone nodules begin to appear causing difficult drilling. 105.0	100								*	
109.5	98						105	xxx xxx	10	105.4 MARL: Mechanically broken by drilling action 2" thick. 108.2 MARL: Mechanically broken by drilling action 3" thick.
112.5	95					100	110	xxx xxx		
	98							xxx	11	111.0 Broken zone with limestone. Broken by drilling action.

Hole Size 5 7/8 and NX

Hole No 518

Site Unit 1 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 4 OF 5

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
119.6	83							12	
124'6"	100					90	120		
		124-	129.0					*	
126'6"	97	0	10	10			125	*	126.5 SAND: 2-4" thick, 2" clay zones on each side.
		0	15	5					
		0	20	5					
		0	25	5					
130.5	100	Slight leak out top of packer and out top of casing approximately 1 gpm.				80	130	13	
135.5	100						135	*	
140.5	100					70	140	14	
Small recovery in sand.	10								139.7 ft. Dark gray-black sand with clay, medium grained, non-calcareous, uniform, non-bedded.
145.5 Spoon sample		145.5					145	*	145.5-146.3 SAND: Dark gray, medium grained, no reaction with HCl.
No recovery in sand.	0	SS1.4	76-76						
150.5		150.0				60	150		
No recovery in sand	0	SS1.4	100+						150-151.5 SAND: Dark gray, medium grained, no reaction with HCl, non-plastic.

13

Hole Size NX

Hole No 518

Site Unit 1 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Small recovery in sand using core barrel. 160.0	5									155-165.0 SAND: Black to dark gray, slightly silty, non-plastic, non-calcareous, poorly cemented and difficult to recover in core barrel, fine to medium grained.
Small recovery in sand using core barrel. 165.0	2					50	160			
Small recovery in the sand. 170.0	15						165			165-175 SAND: Dark gray, slightly silty, medium grained, non-calcareous, generally slightly plastic to non-plastic. Chiefly quartz sand and black clayey material.
Small recovery in the sand. 175.0	3					40	170		*	
TD = 175.0 ft.							175			

Hole Size NX

Hole No 518

Site Unit 1 Reactor.

12/10/73 Amendment 13

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION	
102.2		Tan Sandy Clay (CL)	
	4.0	Gray Green Silty Clay (CL) and Clayey Silt (MH) Permeability Test 1 (E-18) from 6.0 to 11.0 feet - Packer Burst Permeability Test 2 (E-18) from 11.0 to 31.0 feet	E-18 E-18
92.2			
82.2			
72.2			
	33.0	Cemented Sand (SP or SM)	
	36.0	Black Silty Sand (SP or SM) Permeability Test 3 (E-18) from 33.0 to 48.0 feet	E-18
62.2			
52.2	48.0	Boring Terminated	

PENETRATION-BLOWS PER FOOT: 0 5 10 15 20 30 40 60 80 100

REMARKS: Boring P-1 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N 108 + 70
E 117 + 80

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-1
DATE STARTED 5-15-79
DATE COMPLETED 5-16-79
JOB NUMBER 15-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT (0 5 10 15 20 30 40 60 80 100)
102.6		Tan and Gray Green Sandy Clay (CL) Permeability Test (E-19) from 0 to 6.0 feet.	E-19	
	6.0			
92.6				

REMARKS: Boring P-1A was wash bored without sampling. Soil description is approximate.

Coordinates: N 108 + 67
E 118 + 10

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-1A
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT (0, 5, 10, 15, 20, 30, 40, 60, 80, 100)
102.2	0.5	Access Road Fill	
		Tan and Gray Green Silty Clay (CL) and Clayey Silt (ML) Permeability Test 1 (E-18) from 5.0 30.0 feet	
92.2			
82.2		E-18	
72.2	29.5		
	30.5	Cemented Sand	
		Black Silty Sand (SP or SM) Permeability Test 2 (E-18) from 30.0 to 50.0 feet.	
62.2		E-18	
52.2	50.0	Boring Terminated	

REMARKS: Boring P-2 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N - 108 + 00
E - 118 + 75

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-2
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION	
107.8		Tan Clayey Sand (SC)	
	7.0		
97.8		Tan and Gray Green Clayey Silt (MH) and Silty Clay (CL) Permeability Test 1 (E-18) from 7.0 to 17.0 feet.	E-18
87.8		Permeability test 2 (E-18) from 17.0 to 37.0 feet	E-18
77.8			
67.8	39.5		
		Black Silty Sand (SP or SM) Permeability Test 3 (E-18) from 40.5 to 54.5 feet	E-18
57.8			
	54.5	Boring Terminated	
47.8			

PENETRATION-BLOWS PER FOOT: 0 5 10 15 20 30 40 60 80 100

REMARKS: Boring P-3 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N 106 + 89
E 118 + 62

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-3
DATE STARTED 5-14-79
DATE COMPLETED 5-14-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT (0 5 10 15 20 30 40 60 80 100)
107.9		Tan Clayey Sand (SC) Permeability Test (E-19) from 0.0 to 6.5 feet	E-19
	6.5		
97.9		Boring Terminated	

REMARKS: Boring P-3A was wash bored without sampling. Stratification and soil description are approximate.

Coordinates: N 107 + 03
E 118 + 46

DRILLED BY Haynes-Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-3A
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION
96.3	1.2	Access Road Fill
		Tan Clayey Sand (SC) - Alluvium Permeability Test 1 (E-18) from 6.0 to 12.0 feet.
86.3	11.0	
		Gray Green Clayey Silt (MH) and Silty Clay (CL) Permeability Test 2 (E-18) from 12.0 to 27.0 feet.
76.3	25.8	
	26.8	Cemented Sand
66.3		Black Silty Sand (SP or SM) Permeability Test 3 (E-18) from 29.0 to 54.0 feet.
56.3		
46.3		
	54.0	Boring Terminated
36.3		

PENETRATION-BLOWS PER FOOT: 0 5 10 15 20 30 40 60 80 100

E-18

E-18

E-18

REMARKS: Boring P-5 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N 109 + 10
E 118 + 45

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-5
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429