	chnabel	EST Project:	Calvert	rert Cliffs Nuclear Power Plant rert County, Maryland						Boring Number:			B-408
Sch	habel Engineering	Caivert		nity, ivia	iyiand				Contra Sheet:	ct Number 1 of 5	er: 061200	048	
Boring	Contractor: UNI-TECH	DRILLING						Gro	oundv	vater Obs	ervations	_	-
Boring	MALAGA, I Foreman: J. Blemings	NEW JERSEY			Enco	untoro	a	D 7	ate	Time	Depth	Casing	Caved
Drillin	g Method: Mud Rotary				Enco	untere	u	1.	/24		0.0		
Drillin	g Equipment: CME-750 (A	ATV)			Start	of day	/	7.	/25		20.0'		
Schna	bel Representative: R. Vi	nzant											
Dates	Started: 7/24/06 Finis	shed: 7/25/06											
Locati	on: Northing: 216261.74 f Easting: 961482.04 t	ft ft											
Groun	d Surface Elevation: 68.4	(feet)											
DEPT (FT)	H STRATA DES	SCRIPTION	CLA	SS.	ELEV. (FT)	WL	DEP	S/ ТН	AMPL C	ING DATA	TEST	S F	REMARKS
0.5	Forest litter, rootmat a	and topsoil.		٨	67.9				2727	1			
	 SILTY SAND, fine to r moist, light brown, cor fragments, and organi 	medium grained, ntains root ic matter.		n				W	N =3 REC	=18"			
	_ Yellowish brown.							-0	3+6+ N =1	5			
15	-				63.0				REC	=18"			
4.5	 CLAYEY SAND, fine t grained, wet, mottled 	to medium grayish orange,	so)	05.5	1.000	- 5 -	M	2+4+	3			
	_ contains root fragmen	its, trace mica.				Ā		-W	N =7 REC	=15"			
	- Mottled orangeish gra						- •		21 3 1	з			
		iy.						IXI	N =6 REC	=18"			
10.0					50 4								
10.0	SANDY SILT, fine to r gray, contains mica.	medium, moist,	ML	_	00.4				2+2+	4			
							L .	Ň	N =6 REC	=18"			
13.0					55.4		L.						
80/0	SANDY SILT, fine to r dark greenish gray, co	medium, moist, ontains mica.		-					2+3+	4			
105							-15-	Ň	N =7 REC	=18"			
ABEL.(
NCHN NCHN													
CH2.	-												
J & 400							L .		3+4+	5			
							-20-	Ň	N =9 REC	=18"			
LOG	_						L .						
22.0		000 800 ••• 2000 ••••••			46.4		Ļ .						
00.0012	SANDY SILT, fine to r dark greenish gray, co	medium, moist, ontains mica.		-	marked 12		L .	$\left \right $					
SING LC	-							-0	4+6+ N =12	6 2			
ESIBO	continued on	next page					-25-		REC	=18"			
-													

	6	TEST	Project: C	Calvert Cliffs Nuclear Power Plant Calvert County, Maryland						Boring Number: B-40		
	Schnat	Del Engineering LOG		alvert Cou	nty, Ma	iryland			Contra Sheet:	ct Number: 0	6120048	
	DEPTH (FT)	STRATA DESCRIP	TION	CLASS.	ELEV. (FT)	WL	DEPTH		ING ATA	TESTS	REMARKS	
ŀ				ML								
	-						- 1					
	27.0 -	SILTY SAND, fine to mediur	n grained,	SM	41.4							
	-	molat, redular brown.						7 11+1-	1+30			
	-							N =41	=18"			
	_						-30					
]						[]					
	_											
	_	Gray.						24+28	3+49			
	_							REC	=18"			
	-											
	-											
	-											
	-	Wet.					5	10+6- N =9	+3			
	_						-40-K	REC	=11"			
	-											
	42.0 -	SANDY SILT, fine to mediur	n, moist,	ML	26.4							
	-	strong cementation, 5% med	d coarse					7 34+50	ייכיר			
	-	shell hughlents.						N =50)/2" =8"			
							-45-		-			
6/08							[]					
SDT 3/	_											
ABEL.(_	Moderate HCI reaction, no c	emented					7 7+6+8	3		Rig chatter	
SCHN	_	sand, 15% med coarse sh fragments.	ell				_ ₅₀ _/	REC	۱ =18"			
00.GPJ	-											
00 & 4(-											
SPT 3	-											
3 PLOG	-	Dark greenish gray, modera reaction, 15% med coarse	te HCI shell					9+13- N =29	+16)			
3120048	_	fragments.					<u> </u>	REC	=18"			
00 00	-											
RINGL	-											
TEST BO	-	continued on next pa	ge									

	6	hnabal	TEST	Project: Ca	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-408
	Schnat		BORING LOG	Ci	alvert Cou	nty, Ma	ryland			Contra Sheet:	ct Number: 06	6120048
	DEPTH					FLEV		S		G		
	(FT)	STRATA	DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DAT	ГА	TESTS	REMARKS
		Maak HOI waa sti	en Ell med		ML				5.0.10			
	-	shell fragments.	on, 5% mea.	- coarse				X	N =20			
	-							-60- U	REC =18	8"		
	-											
	-											
	_											
		5% med coars	e shell fragm	ents.					4+3+5			
			-					_ M	N =8 REC =18	8"		
								-65-1-		_		
	-											
	-											
	-											
	-	5% med coars	e shell fragm	ents.				M	2+6+6 N =12			
	_							_ ₇₀ _[]]	REC =18	8"		
	_											
	_											
		Light greenish g	rav, strong H	CI					26+48+5	50/5"		
	-	reaction, strong	cementation,	40% med.				X	N =98/1	1"		
	_	- coarse snell fra	igments.					-75-	REC =1	(
	-											
	-											
	-											
	_	Dark greenish gr	ay, weak HC	l reaction,				M	6+11+12	2		
6/08	_	3% med coars	e snell fragm	ents.				_ ₈₀ _0	REC =18	8"		
DT 3												
BEL.G	224											
CHNA												
PJ S(-	.							0.0.47			
400.G	-	Greenish gray, n	o shell fragm	ients.				X	6+9+17 N =26			
300 &	_							_ ₈₅ _[1]	REC =18	8"		
SPT (-											
DOJ	-											
0048	_											
0612	_							M	5+8+12			
50J	_							Ň	N =20 REC =18	8"		
DRING								50				
ST B(continue	ed on next pag	e				- 1				
ЦE												

	6	hnahal	TEST	Project: C	t: Calvert Cliffs Nuclear Power Plant Calvert County, Marvland					Boring Number: B		B-408
	Schnat	BORING Calvert Cou					ryland			Contra Sheet:	act Number: 06 4 of 5	6120048
	DEPTH (FT)	STRATA	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	бертн		NG NG	TESTS	REMARKS
					ML							
	-											
	-	Week HCI reacti	an 20/ mad	000F00					7,0,1/	1		
	-	shell fragments.	on, 5 % med.	- coarse				F X	N =19	' 18''		
	_							-95-6		10		
]							[]				
	_											
	_	Weak HCI reacti	on, 3% med.	- coarse				17	4+8+1	1		
	_	shell fragments.						_ ₁₀₀ _/	N =19 REC =	18"		
	-											
	-											
	-											
	-	Weak HCI reacti shell fragments.	on, 3% med.	- coarse				10	4+6+7 N =13			
	_							_105_L	REC =	18"		
	-											
	-											
	-	Meek HCI reacti	on 3% med	coarse					5+7+13	3		
	-	shell fragments.	on, o /o med.	- coarse					N =20 REC =	, 18"		
	_											
/6/08	_											
GDT 3	-	Dark greenish gr	ay, weak HC	l reaction,				10	6+7+9			Start of drilling for the day
VABEL.	_	5% med coars	e shen nagn	ents.				_115_P	REC =	18"		
J SCH	-											
100.GP	-											
300 & 4	-											
G SPT	-	Weak HCI reacti shell fragments.	on, 3% med.	- coarse				F -1)	5+8+8 N =16	4.01		
48 PLO	_							-120- ^L	KEC =	19		
61200	-											
LOG C	-											
DNING	-	Weak HCI reaction	on, 5% med	- coarse					5+6+9			
TEST BA		continu	ed on next pag	e								

Γ	6	TEST Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Boring Number:	B-408
	Schnat	Del Engineering LOG	alvert Cou	nty, Ma	ryland		Contract Number: 00 Sheet: 5 of 5	6120048
	DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL			REMARKS
F		shell fragments.	ML			N =15	10	
	_					-125-101 REC =	18	
	_							
	-							
	-	Weak HCI reaction 3% med - coarse				 M 1+6+9		
	-	shell fragments.				N =15	18"	
	_							
		No shell fragments.				5+7+7		
						N =14 REC =	18"	
	_							
	_							
	-							
	_	Greenish gray.						
	_					-140-WREC =	18"	Rig chatter
	-							
	-							
	-							
	_	Dark greenish gray, weak HCl reaction, 3% med coarse shell fragments.				6+9+1: N =21	2	
ŝ	_					145 REC =	18"	
3/6/0	-							
EL.GDT	-							
HNAB	-							
PJ SC	-	Greenish gray, no shell fragments.				N 5+8+10 N =18	19"	
\$ 400.G	150.0 —	BOTTOM OF BORING @ 150.0 FT.		-81.6		-150-10 100 -		
T 300 8								
OG SP								
048 PL								
06120								
IG LOG								
BORIN								
TEST								

	TEST	ST Project: Calvert Cliffs Nuclear Power Plant							Boring Number: B-40			B-409		
Schna	bel Engineering LOG		Calvert	Coun	ity, Ma	ryland				Contra Sheet:	ct Numbe 1 of 5	er: 00	61200)48
Boring	Contractor: CONNELLY AND	ASSOCIAT	ES. INC.					Gro	oundv	vater Obs	ervations			
	FREDERICK, MA	RYLAND	,					D	ate	Time	Depth	Cas	sing	Caved
Boring F	Foreman: D. Reese				Enco	untere	d	6	21		7.5'	7.	5'	
Drilling	Equipment: CME-75 (Truck)				Start	of day	/	6	22		3.0'	14	.0'	
Schnab	el Representative: M. Arles				Start	of day	/	6	23		5.0'	14	.0'	·
Dates	Started: 6/21/06 Finished:	6/27/06			Start	of day	/	6	26		19.5'	14	.0'	
Loodiloi	Easting: 961614.8 ft				Start	of day	/	6	27		20.0'	14	.0'	
Ground	Surface Elevation: 61.6 (feet)													
DEPTH (FT)	STRATA DESCRIPT	TION	CLA	ss. ^E	ELEV. (FT)	WL	DEP	S/ TH	AMPL C	ING DATA	TEST	s	R	EMARKS
0.5	Crushed Stone		<u> </u>		61.1			M	3+3+	4			0-14	1'- 6-1/4" ow stem
-	Poorly graded sand FILL, tra fine to coarse grained, moist,	ce gravel, , brown.		L				W	N =7 REC	=12"			aug	er
	trace silt								3+2+	2				
-	brownish gray.							W	N =4 REC	- =18"				
-	-								I LE O	10				
_	contains wood fragments, FI	LL.					- 5 -	M	1+1+ N =3	2				
-								٦M	REC	=18"				
	wet, blackish grav, with grave	el.				Ā			3+1+	1				
8.5	PROBABLE FILL.				53.1		[W	N =2 REC	=18"			9' ve	erv soft
-	LEAN CLAY, moist, gray, tra	ce sand.					[10			2 (2)			aug	ering
_	with silt.						-10-	M	1+2+ N =4	2				
-								W	REC	=16"				
-									3+5+	5				
80%								W	N =10 REC) =18"			14' :	start of day
້ 14.5	FAT CLAY, moist, gray, trace	e sand.	- CH	-	47.1		15						6/22 14':	2/06 3-7/8 roller
PEL.G								M	1+4+ N =7	3			bit	
					44.0		[M	REĊ	=18"				
ים 17.0 - רביים	CLAYEY SAND, fine to medi	um /	sc	2	44.6		[.		REC	=24"			17.5	5' Tube hed
× 400.	granter, molec, greenion gray	50 8					- ·						1 200	
- 000	1													
– Je Sh	green.						-20-	M	3+4+ N =8	4				
	1							ΠN	REC	=18"				
22.0 -	SANDY FAT CLAY, fine to m	iedium,	CH	-	39.6				4+7+	4			22.5 drilli	5' harder
23.0 -	CLAYEY SAND, fine to medi	um	sc	2	38.6		E ,		N =6 REC	=18"				
24.5	POORLY GRADED SAND W	/ITH CLAY.	, SP-9	sc	37.1									
	continued on next pag	ge					25-							
							I				I			

	hashal TEST	Project: C	t: Calvert Cliffs Nuclear Power Plant					Boring Number: B-40		
Schna	bel Engineering LOG	c	alvert Cou	nty, Ma	iryland		C S	Contract Number: 0 Sheet: 2 of 5	6120048	
DEPTH (FT)	STRATA DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLING	TESTS	REMARKS	
-	fine to medium grained, mois small 1/16" clay layers.	t, orange,	SP-SC			M	15+26+28 N =54 REC =18	8		
27.0 -	POORLY GRADED SAND, fi medium grained, moist, oran	ne to ge.	SP	34.6		 M	38+50/5"			
29.0 -	POORLY GRADED SAND w	ith silt, fine	SP-SM	32.6			N =50/5" REC =11	n;		
-	to medium grained, moist, gr	ау				X	18+50/5" N =50/5" REC =11			
-						 M	30+40+40 N =80	o		
-						U	REC =18	"	pitcher sample	
-								W=23.3% LL=NP PL=NP *	pushed	
37.0 -	CLAYEY SAND, fine to medi grained, moist, gray, contains sand, with fine to coarse she fragments, 10% shell frag, gr	um s cemented l ay colored.	SC	24.6		 0	3+26+6 N =32 REC =12			
-	wet, grayish green.					40	WOH+W0 +WOR N = WOR REC =18	OR R "		
-	contains cemented sand.					0	3+38+28 N =66 REC =18	n	43' cemented layer, grinding	
44.5	SILTY SAND, fine to medium moist, green, with fine to coa fragments, contains cemente strong HCI reaction, 20-30%	grained, rse shell d sand, shell frag.	SM	17.1		- 45	5+6+6 N =12 REC =18	n		
- NABEL.GDT 3						0	4+5+5 N =10 REC =18	"		
400.GPJ SCH						- 50	REC =24		tube pushed	
							4+5+5 N =10 REC =18			
- 54.5 -	POORLY GRADED SAND W fine to medium grained, mois strong HCI reaction, 10-20%	/ITH SILT, t, green, shell frag.	SP-SM	7.1		-55-	4+5+6 N =11 REC =18			
- BORING	weak HCl reaction. continued on next pag	1e					4+3+5			

Γ	6	hnahel	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-409
	Schnat	pel Engineering		alvert Cou	inty, Ma	ryland			Contra Sheet:	ct Number: 0 3 of 5	6120048	
	DEPTH (FT)	STRAT	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	SAMPLIN	G TA	TESTS	REMARKS
					SP-SM			X	N =8 REC =1	8"		
	59.5	SILTY SAND, fir moist, green, wi fragments, stror shell frag.	ne to medium th fine to coai ng HCl reactio	grained, se shell n, 10-20%	SM	2.1		-60-	2+3+2 N =5 REC =1	8"		
	-	contains fine to moderate HCI re	coarse shell f eaction.	ragments,					REC =2	24"		tube pushed
	-	with fine to coars strong HCI react	se shell fragn tion, 30-40%	nents, shell frag.		-55			3+6+9 N =15 REC =1	8"		
	-	CLAYEY SAND grained, moist, g contains cemen coarse shell frag reaction, 70-80%	, fine to mediu green and wh ted sand, with gments, strong % shell frag.	um ite, n fine to g HCl	SC	-0.0			8+14+1 N =30 REC =1	6 8"		
	-	WELL GRADED fine to medium of white, with fine t fragments, stron shell frag.	SAND WITH grained, wet, o coarse she ng HCI reactio	l CLAY, green and ll n, 70-90%	SW-SC	-8.0			11+6+1 N =18 REC =1	2 8"		
	- 74 5	moist, green, wi coarse shell frag reaction, 60-809	th silt, with fin gments, stron ⁄⁄6 shell frag.	e to g HCl		-13.0			7+29+4 N =74 REC =1	5 8"		
	-	SILTY SAND, fir moist, green, tra fragments, mode 0-10% shell frag	ne to medium ace fine to coa erate HCI rea J.	grained, arse shell ction,	SM			75	5+7+13 N =20 REC =1	8"		
/08	-	with fine to coar strong HCI react	se shell fragn tion, 20-30%	nents, shell frag.					5+7+9 N =16 REC =1	8"		79' start of day 6/23/06
NABEL.GDT 3/6	-								5+7+10 N =17 REC =1	8"		
& 400.GPJ SCH	-								7+8+11 N =19 REC =1	8"		
PLOG SPT 300	-	trace fine to mea moderate HCI re frag.	dium shell fra eaction, 0-109	gments, % shell				85	4+5+7 N =12 REC =1	8"		
JG 06120048	- 89.5	with fine to coar strong HCI react	se shell fragn tion, 10-20%	nents, shell frag.		-28.0			4+5+8 N =13 REC =1	8"		
TEST BORING L(SANDY SILT, fir green, trace fine fragments, mode <i>continu</i>	ne to medium e to medium s erate HCI rea ued on next pag	, moist, hell ction, re	ML	20.0		X	5+7+9 N =16			

Γ	-	hnabel Doping	Project:	Calvert Cliff	s Nucle	ar Pow	er Plant	Е	Boring Number:	B-409
	Schna	bel Engineering LOG		Calvert Cou	nty, Ma	iryland		S	Contract Number: (Sheet: 4 of 5	06120048
	DEPTH (FT)	STRATA DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLING	TESTS	REMARKS
		0-10% shell frag.		ML			M	REC =18'		
	92.0 -	SILTY SAND, fine to medium moist, green, trace fine to me fragments, moderate HCI rea 0-10% shell frag.	grained, dium shell ction,	SM	- 30.5		 95	5+6+6 N =12 REC =18'	"	95' tube pushed
	-	contains fine to medium shell fragments, greenish gray						REC =19	" w=33.1% LL=61 PL=42 *	
	97.0 - -	SILTY SAND, fine to medium moist, green, with fine to coa fragments, strong HCI reactio shell frag.	grained, rse shell on, 10-20%	SM	-35.5			4+6+5 N =11 REC =18'		
	-	30-50% shell frag.			40.5			2+5+6 N =11 REC =18'		
	102.0 - - -	CLAYEY SAND, fine to medi grained, moist, green, with fir coarse shell fragments, stron reaction, 50-60% shell frag.	um ne to g HCl	SC	-40.5			8+10+8 N =18 REC =18'	u	
	104.5	SANDY SILT, fine to medium green, with fine to coarse she fragments, strong HCI reaction shell frag.	n, moist, ell en, 10-20%	ML	-43.0		105- 	4+5+8 N =13 REC =18'		105' start of day 6/26/06
	-	oliveish green, trace fine to c fragments, weak HCI reaction shell frag.	oarse shell n, 0-5%					4+6+6 N =12 REC =18'		
	-	moderate HCl reaction, 0-10 ⁴ frag.	% shell				X	5+6+7 N =13 REC =18'		
L.GDT 3/6/08	- - 114 5	with sand.			-53.0		N	5+6+8 N =14 REC =18'	n	
GPJ SCHNABE	-	ELASTIC SILT, moist, oliveis trace fine to medium shell fra weak HCI reaction, 0-10% sh	h green, gments, ell frag.	MH	55.5		115 	6+6+9 N =15 REC =18'	n	
G SPT 300 & 400.	-	SANDY SILT, fine to medium oliveish green, trace fine to c fragments, moderate HCI rea 0-10% shell frag.	, moist, oarse shell ction,	ML	-55.5			4+6+8 N =14 REC =18'	u	
06120048 PLC	 - 122 0	with fine to coarse shell fragr strong HCl reaction, 10-25%	nents, shell frag.		-60 5			4+5+5 N =10 REC =18'		
TEST BORING LOG	-	ELASTIC SILT, moist, oliveis trace fine to medium shell fra with sand, weak HCI reaction shell frag. continued on next pag	h green, gments, , 0-5% ø	MH	0.0			4+5+7 N =12 REC =18'		

	hnabol	TEST	Project: C	: Calvert Cliffs Nuclear Power Plant Calvert County, Marvland					Boring Number: B-409	
Schnal	bel Engineering	BORING LOG	с	alvert Cou	nty, Ma	ryland		0	Contract Number: (Sheet: 5 of 5	06120048
DEPTH				01.000	ELEV.		5			
(FT)	STRATA	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DAT	A	REMARKS
				MH			105			
	no shells.						⁻¹²⁵ -1	5+5+7		
-							F 70	REC =18	9 ¹¹	
-	with clay.						10	4+5+6 N =11		
-							⊢ _ Ľ	REC =18	3"	
							-130-	1		130' start of day
_							L _ X	N =12		6/27/06
_								REC =18	5"	
								6+7+9		
_							אך ק	N =16	χu	
-								31120 10	, 	
							⁻¹³⁵⁻	5+6+9		
							12	REC =18	5 ¹¹	
										137.5' tube
-								REC =18	3" PP=4.00 tsf	pushed
-										
							-140-	1 5.0.0		
_								N =14		
_								REC =18	3"	
							N	5+6+8		
							F 7 X	N =14	μu –	
-										
<u>م</u>							-145-M	4+6+7		
- 200							12	REC =18	9 ¹¹	
					86.0					
	LEAN CLAY, mo silt.	oist, oliveish g	green, with	CL	-00.0					
– «CH							17	7+8+10 N =18		
150.0 -					-88.5		_150_L	REC =18	3"	
0 & 40	BOTTOMOFBC	JRING @ 15	U.U F I.							
748 PL										
J61200										
900										
SNI S										
I ROI										

Schna	TEST Project: C bel Engineering LOG C	alvert (alvert (Cliff: Cou	s Nuclea Inty, Ma	ar Pow ryland	ver Pla	nt		Boring Contra Sheet:	Number: ct Number 1 of 2	er: 06120	B-410
Boring							Gr	oundw	ater Obs	ervations		
Boning	FREDERICK, MARYLAND	, INC.						ate	Time	Depth	Casing	Caved
Boring F	oreman: D. Reese			Enco	untere	d	4	/28		44.0'	5.0'	
Drilling	Method: Mud Rotary Equipment: CME-75			Start	of day	/	5	5/1		35.1'	5.0'	
Schnabe	el Representative: M. Arles			Start	of day	/	Ę	5/2		26.0'	5.0'	
Dates	Started: 4/28/06 Finished: 5/2/06											
Locatior	n: Northing: 216374.3 ft Easting: 961323.7 ft											
Ground	Surface Elevation: 119.1 (feet)											
DEPTH (FT)	STRATA DESCRIPTION	CLAS	SS.	ELEV. (FT)	WL	DEP	S. TH	AMPL C	ING DATA	TEST	s F	REMARKS
0.3	TOPSOIL.	GM	1	118.8			Μ	1+2+4	4			
-	SILTY SAND, fine to coarse grained, moist, orange.		1				Å	N =6 REC	=18"			
2.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orange.	SP-S	δM	116.6			-¥	3+3+4 N =7	4			
-								REC	=18"			
-							-0	4+3+2 N =5 REC	2 =14"			
-	fine to coarse grained, yellow orange.						- - M	3+3+3	3			
-							Δ	REC	=12"			
10.8	fine to medium grained, orange.	SP)	108.3		10- -	- M	2+3+3	3			
-	POORLY GRADED SAND, fine to medium grained, moist, orange.	9493					Δ	REC	=12"			
3 13.5 5 -	POORLY GRADED SAND WITH SILT, fine to medium grained moist grange	SP-S	SM	105.6			- ∏	2+3+4 N =7	4			
—	white, small layers of color changes.					-15-		REC	=15"			
-						[
5)))))))))))))))))))	fine to coarse grained, orange, grades						- _ M	3+5+8	3			
	fine to coarse.					-20-	Ň	N =13 REC	3 =18"			
							-	7+10- N =18 REC	+8 } =17"			
	continued on next page							a atomis	() 10.			

Comments: 1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion. 2. * = See Appendix I for additional lab testing data. 3. Boring abandoned due to stuck tube at 55 feet. Offset to 410A

	TEST Project:	Calvert Cliff	s Nucle	ar Pow	er Plant	Boring Number:	B-410
Schnal	bel Engineering LOG	Calvert Cou	nty, Ma	iryland		Contract Number: 0 Sheet: 2 of 2	6120048
DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL			REMARKS
		SP-SM					
-							
-							
- 28.5			90.6				
-	SILTY SAND, fine to coarse grained, moist, orange.	SM			N 5+8+8 N =16	4.01	
-					-30-10 REC =	12	
-							
-							
33.5		SP SM	85.6			1	
-	fine to coarse grained, moist, orange.	3F-3W			- N =20	18"	
_					_35_[1]		
-							
-							
_					 ∏ 4+13+	14	
_					N =27	16"	
					_40		
_							
_							
43.5	SILTY SAND, fine grained, wet, orange	SM	75.6	⊻			
	white.				N =2 REC =	18"	
_							
- ABEL						3+3	
– sch					-50 M REC =	18"	
0.GPJ							
– U & 40							
9 53.5	LEAN CLAY, moist, dark gray, with sand	CL	65.6				Pushed tube
55.0 -			64.1			18"	metal; Bechtel
190 50							due to stuck tube problem
NG: LC							- Internet of the second SET (12)
HOR L							
р Ц							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.
3. Boring abandoned due to stuck tube at 55 feet. Offset to 410A

20	chnabel Boring	Project: Ca	alvert Clif alvert Co	ffs Nuclea unty, Ma	ar Pow ryland	er Plar	nt	Borin	g Number: act Numbe	er: 0612	B-410A
Schn	abel Engineering LOG						100.000	Shee	: 1 of 4		
Boring	Contractor: CONNELLY AND	ASSOCIATES,	INC.			1	Grou	undwater Ob	servations		1 -
Boring	FREDERICK, MA	RYLAND	-	Enco	untere	d	Da 4/2	te Time 8 1:46	Depth 44.0'	Casin 5.0'	g Caved
Drilling	Method: Mud Rotary		-	Start	ofday	,	5/	1 9.07	35.1'	5.0'	
Drilling	Equipment: CME-75		-	Ctort	ofday		5/	7 7:14		5.0 E.0'	
Schnat	el Representative: M. Arles	512106		Start	orday	/	5/2	2 7:14	26.0	5.0	
Locatio	n: Northing: 216381.3 ft	5/2/00									
	Easting: 961323.7 ft							_			
Ground	Surface Elevation: 119.1 (feet)	1									
DEPTH (FT)	STRATA DESCRIPT		CLASS	ELEV.	WL	DEP	SAI TH İ		TEST	s	REMARKS
	SEE BORING LOG B-410 F	OR					ΤŤ	DATA		E	Boring was
	SAMPLE DESCRIPTIONS F 58.0 FEET.	ROM 0 TO					$\left \right $			a v	vithout
	_						$\left \right $			s 5	ampling to 8.5' (depth at
	_					L.				W	which original
										te	erminated)
	7						1				
-	-					- 5 -					
	-						+				
	_										
	_										
-	_					-10-	1				
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	1						1				
5 2	-						$\left \right $				
	-						$\left \right $				
						-25-					
2	continued on next pa	ge									

Comments: 1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion. 2. * = See Appendix I for additional lab testing data.

	hnahol	TEST	Project:	Calvert Clif	fs Nucle	ar Pow	er Plant		Boring Number: B-410A		
Schnal	bel Engineering LOG			Calvert Co	unty, Ma	ryland			Contra	ct Number: 0	6120048
DEPTH					EL EV		s		G		
(FT)	STRAT	A DESCRIPT	ION	CLASS	(FT)	WL	DEPTH	DA	TA	TESTS	REMARKS
-	SEE BORING I	_OG B-410 FC)R								
-	SAMPLE DESC 58.0 FEET.	CRIPTIONS FI	ROM 0 TO								
-											
_											
							30				
-											
-											
-											
					1		-35-				
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Schna	hnabel BORING bel Engineering	Project: Ca Ca	alvert Cliffs alvert Cou	s Nuclea nty, Ma	ar Pow ryland	er Plant	Bo Co Sh	oring Number: ontract Number: 00 neet: 3 of 4	B-410A
DEPTH (FT)	STRATA DESCRIP		CLASS.	ELEV. (FT)	WL	s. Depth	AMPLING DATA	TESTS	REMARKS
-	FAT CLAY, moist, dark gray,	with sand.	СН			M	1+2+3 N =5		
-						_ ₆₀ _ () 	REC =18"		
-									
-	trace sand.					 	REC =7"	PP=2.25 tsf	
-						-65-			
-									
-	with sand.					 M	2+4+5		
-						_ ₇₀	N =9 REC =18"		
-									
-						 	REC =18"		Bottom of tube contains fine sand
75.0 —	CLAYEY SAND, fine grained	, moist,	SC	44.1		-75-			
-	greenisi gray.								
- 78.5 -	POORLY GRADED SAND, f	ine to	SP	40.6		 M	9+11+50/5	n:	
- 200	medium grained, moist, brow	'n.				_ ₈₀	N =61/11" REC =16"		
	yellowish brown.						50/2"		
- 8 400						-85-	N =50/2" REC =1"		
- 88.5	POORLY GRADED SAND V	/ITH SILT.	SP-SM	30.6		 M	42+50/4"		
	fine to medium grained, mois gray, with fine to medium sh fragments, moderate HCI rea	it, greenish ell iction.				-90-	N =50/4" REC =10"		
	continued on next pa	ge							

	hnabel	TEST	Project: C	alvert Cliffs	s Nucle	ar Pow	er Plant		Boring	g Number:	B-410A
Schnal	bel Engineering	LOG		alvert Cou	nty, ivia	ryland			Contra Sheet:	act Number: 00 4 of 4	6120048
DEPTH (FT)	STRAT	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLIN	IG TA	TESTS	REMARKS
				SP-SM							
											Rig chatter
93.5	POORLY GRAD	DED SAND, fi	ne to	SP	25.6			50/1"	4 11		
	with fine to med moderate HCI re	lium shell frag eaction.	ments,				-95-	REC ='	1" 1"		
_											
-											
	POORLY GRAI	DED SAND W	/ITH SILT,	SP-SM /	20.6			50/2"			
30.0	fine to medium gray, with fine t	grained, mois to coarse shel	t, greenish		20.0			N =50/2 REC =1	2" 1"		
	BOTTOM OF B	ORING @ 98	.6FT.								
3/0/08											
L'GDI											
HNABE											
GPJ V											
U & 400.											
a PLOG											
1002100											
L LOG											
BORING											
ES											

SC	TEST Project: C	alvert (Ivert Cliffs Nuclear Power Plant Ivert County, Maryland Contract Number: 0612004						B-411		
Schnat	bel Engineering LOG	ES, INC.						Sheet:	1 of 5	er: 06120	1048
Boring C	contractor: CONNELLY AND ASSOCIATES	S, INC.				Gro	bundw	ater Obs	ervations		1
Boring F		-	Ene	ountor	. d		ate	Time	Depth	Casing	Caved
Drilling N	Method: Mud Rotary	-	Enc	ounter	ea		/26		7.0		
Drilling E	Equipment: CME-550		Sta	rt of Da	y	7,	/27		5.0'		,
Schnabe	I Representative: K. Bell										
Dates \$	Started: 7/26/06 Finished: 7/27/06										
Location	: Northing: 216556.31 ft Easting: 961517.19 ft										
Ground	Surface Elevation: 81.5 (feet)										
DEPTH (FT)	STRATA DESCRIPTION	CLAS	SS. ELEV	/. wL	DEP	S/ TH	AMPLI D	NG ATA	TEST	s	REMARKS
0.5	ROOTMAT AND TOPSOIL.	SP-S	81.C				woh+	woh+2			
_	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, trace gravel.				F	W	N =2 REC =	=11"			
_	yellowish brown and orangeish brown, trace root fragments.				-	-0	2+2+2 N =4	2	w=6.89	%	
_					-		REC =	=15"			
5.6	CLAYEY SAND, fine to medium	SC	75.9				3+3+3 N =6	3			
75	grained, wet, orangeish brown and reddish brown, trace root fragments, trace gravel, iron staining.		74 C	Į⊻	-		REC -	-10			
-	SANDY LEAN CLAY, wet, orangeish brown.	CL				M	1+2+1 N =3 REC =	=12"	w=27.4 *	%	
					-10-					sta	art of mud
_	orangeish brown and gray				-	-M	1+1+1 N =2 REC =	=16"		rot	ary drilling:
- 13.0			. 68.5								
	FAT CLAY, moist, gray, trace sand.		1		-	-0	2+2+3	3	w=31.0	%	
					-15-		REC =	=18"			
					-	-					
					–	1					
	ORGANIC CLAY, moist, grav	ОН	63.0		-		1+2+3	3			
	·····,				[W	N =5 REC =	=18"			
					_						
					- ·	₋	REC =	=16"	w=37.9	%	
	continued on next page				-25-				PL=19	€	
2	continued on nort page										

	test	Project: (Calvert Cliffs Nuclear Power Plant					Boring Number: B-411	
Schnal	bel Engineering LOG		Calvert Cou	nty, Ma	iryland			Contract Number Sheet: 2 of 5	er: 06120048
DEPTH (FT)	STRATA DESCRIPT	TION	CLASS.	ELEV. (FT)	WL	S DEPTH		G TEST	S REMARKS
			ОН					PP=3.50) tsf
27.0				54.5					
- 21.0	ELASTIC SILT, moist, gray, t	race sand.	MH	04.0					
_						M	3+4+6		
_						_ ₃₀	REC =18	8"	
32.0 -	SANDY SILT. moist. grav.		ML	49.5					
-			ALL STOLEY						0/
-						10	4+5+6 N =11	w=24.4 *	-70
							REC = R	5	
- 27.0				44.5					
57.0 -	CLAYEY SAND, fine to medi grained, wet, reddish brown a	um and	SC	44.5					
_	orangeish brown, contains fir medium shell fragments, 10-	ne to 20%, weak				M	10+12+1	14	
_	cementation, not reaction inc	derale.				_ ₄₀	REC =1	3"	
42.0 -	SILTY SAND, fine grained, m	noist,	SM	39.5					
-	yellowish brown and orangei	sh gray.					04.50	w=24 0	%
-						10	N =50	2"*	
						45			
-									
-									
_						⊠	50/5" N =50/5'	,	
						-50-	REC =4'		
52.0 -	SANDY LEAN CLAY, moist,	gray.	CL	29.5					
						[]m	11+6+23	w=25.2	%
						_ ₅₅ _0	N =29 REC =18	B" PL=17	7
-									Harder drilling
57.0 -	SILTY SAND. fine to medium	grained	SM	24.5					
-	wet, light gray, with fine to co continued on next page	arse shell							
Ĺ									

	6	hashol TEST	Project: C	alvert Cliff	ar Pow	Power Plant Boring Number: B-411				
	Schnat	bel Engineering LOG		alvert Cou	nty, Ma	iryland		Co	ontract Number: 0 neet: 3 of 5	6120048
	DEPTH (FT)	STRATA DESCRIPT		CLASS.	ELEV. (FT)	WL	S/ DEPTH	AMPLING DATA	TESTS	REMARKS
	_	fragments, 50-60%, HCI reaction strong.		SM				28+6+13 N =19 REC =18"		
	62.0 - - - - -	POORLY GRADED SAND W fine to medium grained, wet, white, contains fine to coarse fragments, 30-40%, HCI read	/ITH SILT, gray and shell ttion strong.	SP-SM	19.5		 	6+4+5 N =9 REC =18"	w=34.4%	
		contains fine to coarse shell t 10-20%, HCl reaction modera	fragments, ate.				 	6+5+7 N =12 REC =18"		
	-	trace fine to medium shell fra 2-5%, HCl reaction weak	gments,				 	5+4+6 N =10 REC =18"	w=32.0%	
ABEL.GDT 3/6/08							 - 80- 	3+3+3 N =6 REC =18"		
JG SPT 300 & 400.GPJ SCHN	-	gray and white, contains fine shell fragments, 40-50%, we cementation, HCl reaction str	to coarse ak rong				 85	6+7+7 N =14 REC =18"	w=36.4%	
RING LOG 06120048 PLC	87.0 - - -	SILTY SAND, fine to medium wet, gray and white, contains coarse shell fragments, 20-30 reaction strong.	n grained, s fine to 0%, HCl	SM	-5.6		 	7+9+11 N =20 REC =18"		resumed drilling at 7/27/06 @ 7:45am
TEST BC	-	continued on next pag	ge							

Schnabel Engineering BORING LOG Calvert County, Maryland Contract Number: 06120048 Sheet: 4 of 5 DEPTH (FT) STRATA DESCRIPTION CLASS. ELEV. (FT) WL SAMPLING TESTS REMARK 92.0 SANDY SILT, wet, greenish gray, trace fine to coarse shell fragments, 5-10%, HCI reaction weak. ML -10.6 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -	411	Boring Number: B-411		Boring	t: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland					Project: C	Chnabel TEST Project						
DEPTH (FT) STRATA DESCRIPTION CLASS. ELEV. (FT) WL SAMPLING TESTS REMARK 92.0 SANDY SILT, wet, greenish gray, trace fine to coarse shell fragments, 5-10%, HCI reaction weak. ML -10.6 -		6120048	ct Number: 0	Contra			ryland	nty, Ma	alvert Cou	C	abel Engineering LOG						
Image: Constraint of the second sec				IPLING	SAMPLI	s		FLEV						DEPTH			
92.0 SANDY SILT, wet, greenish gray, trace fine to coarse shell fragments, 5-10%, HCl reaction weak.	₹KS	REMAR	TESTS	DATA	I D/	DEPTH	WL	(FT)	CLASS.	ION	A DESCRIPT	STRAT		(FT)			
92.0 SANDY SILT, wet, greenish gray, trace fine to coarse shell fragments, 5-10%, HCl reaction weak. 									SM								
HCI reaction weak. HCI reaction weak. HCI reaction weak. W=31.6% W=31.6% N=25 REC = 18" H1+10+15 N=25 REC = 18" H1+10+15 N=25 N=16 REC = 18" H1=30 H						1		-10.6	ML	jray, trace	et, greenish g	NDY SILT, W	SAI	92.0 -			
$\begin{bmatrix} - & - & - & - & - & - & - & - & - & - $			04.00/		_	-				i, 5-10%,	nell fragments ak.	to coarse s reaction we	HC	() 			
$ \begin{array}{c} - & - & - & - & - & - & - & - & - & - &$			W=31.6%	+10+15 =25	11+10 N =25	-N							-	-			
$\begin{bmatrix} - & - & - & - & - & - & - & - & - & - $				EC =18"	REC =	95 <u> </u>							-				
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$\begin{bmatrix} - & - & - & - & - & - & - & - & - & - $				EC - 10		100-10-											
						-								-			
						-							-	-			
						-							-	-			
			w=38.2% LL=43	+6+10 -16	5+6+1	-17							-	-			
			PL=30	EC =18"	REC =	105_N							_	_			
						_								_			
						1								-			
				7.0	7								1	-			
- $ -$				=16	(N =16	HX											
				EC =18"	I REC =	110-1							1	-			
						-								-			
wet greenich grav, trace fine to medium						-				to medium	av, trace fine	areenish a	wet	-			
shell fragments, 2-5%, HCl reaction						_				eaction	2-5%, HCI r	ll fragments	she	-			
[5] = - [0]			w=40.4%	+8+11	5+8+1	-17						ак.	wea	-			
Ŭ N =19 □ N =19 REC =18"				=19 EC =18''	N =19 REC =	115 Å											
						1							1	-			
						-							-	-			
						-								-			
contains fine to coarse shell fragments, 20-30%, HCl reaction strong				+8+16 =24	6+8+1 N =24	-N				ragments,	coarse shell f	tains fine to 30%, HCI re	con 20-;				
				EC =18"	REC =	120-M								_			
						4							4	-			
						-		-40.6						122.0 -			
ELASTIC SILT, wet, greenish gray, MH trace fine to medium shell fragments,						_			МН	i gray, gments,	wet, greenish dium shell fra	as fine to me	EL/				
Žerov 2-5%, HCl reaction weak w=42.7%			w=42.7%	+6+10	3+6+1						tion weak	%, HCI read	2-5	_			
continued on next page										le	ied on next pag	contin					

	bachol	TEST	alvert Cliff	vert Cliffs Nuclear Power Plant					Boring Number: B-411		
Schnal		с с	alvert Cou	nty, Ma	ryland			Contra Sheet:	ct Number: 00	6120048	
DEDTH	Ser Engineering	200					9		IG	5015	
(FT)	STRAT	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH		TA	TESTS	REMARKS
				мн			X	N =16	0	LL=63 PI =43	
_							-125-1	REC =	18	*	
-											
-											
_											
_							17	5+7+9			
_							_ ₁₃₀ _[]	REC =	18"		
_											
_								5.7.7			
-							1X	N =14	10"		
-							-135-		10		
-											
-											
-											
-							17	4+6+6			
_							_ ₁₄₀	REC =	18"		
_											
_											
								5+6+8			
_							- 10	N =14	18"		
8							-145-		10		
- 3/6/											
L GD											
- INABE											
- sc							[6+7+8 N =15			
150.0 —			0.0 57		-68.6		_ ₁₅₀ _Δ	REC =	18"		
00 & 40	BOTTOM OF BO		0.011.								
5PT 30											
00.00											
048 P											
06120											
LOG											
RING											
01 BO											
Ш											

Extracted Engineering Dot Output Contract Humber: Destruction Boring Contractor: CONNELLY AND ASSOCIATES, INC FREDERICK, MARYLAND Contract Humber: Destruction Boring Foreman: T. Chew Data Time Depth Data Diftiling Equipment: Defiding Associates Breadback Boring Contract, MaryLaND Caved Schnabel Representative: Bradfield Date State: Boring Contract, MaryLaND Caved Schnabel Representative: Bradfield Date State: Boring Contract, MaryLaND Caved Contains: Morthing: 216882.24 ft East East Date State: Date Contains: Morthing: 10582.24 ft East East Date State: Date Contains: Morthing: 10582.24 ft East East Date State: Date Contains: Morthing: 10582.15 ft FILL State: State: Tests ReMarks 20 Sitty and PROBABLE FILL, fine to coarse grained, most, light State: State: State: State: State: State: 4.5 FOORLY GRADED SAND WTH SLT; fine to coarse grained, most, light State: State: State: State: State: <t< th=""><th>SC</th><th></th><th>Project: Ca</th><th>alvert Clif</th><th colspan="5">Ivert Cliffs Nuclear Power Plant Boring Number:</th><th></th><th>B-412</th></t<>	SC		Project: Ca	alvert Clif	Ivert Cliffs Nuclear Power Plant Boring Number:						B-412		
Groundvæter Observations under FREDERICK, MARYLAND Boring Contracter: NOR FREDERICK, MARYLAND Date Time Depth Casing Caved Date Time Depth Casing Caved Date Time Depth Casing Caved Diffling Equipment: Dedrich D-55 (ATC) Sehnabel Representative: B. Bradfield Date Time Depth Casing Caved Contract BROM State State: 8/706 Location: Northing: 216382 92 ft Easting: 891495.42 ft Contract Description CLASS ELEV OPEPTH DATA DEPTH DATA Depth States 22 (feet) Depth States 22 (feet) Depth States 22 (feet) Site with sand, PROBABLE FILL, meist, construct dragments. Site with Sand, media brown, construct dragments. Site with Sand, media brown, construct dragments. Site with Sand, media brown, coreare grained, moist, light with sand, PROBABLE FILL fine	Schnat	bel Engineering LOG	Ca	aivert Col	unity, ivia	ryiand				Contra Sheet:	ct Number 1 of 4	e r: 06120	0048
Date Time Date Time Depth Casing Casing Doring Foreman: T. Chew Diffing Equipment: Diderich D-S0 (ATC) Schnabel Representative: 8. Bradfield Bradie Barden D-S0 (ATC) Schnabel Representative: 8. Bradfield Dates Stanteal Representative: 8. Bradfield Bradie Barden D-S0 (ATC) Schnabel Representative: 8. Bradfield Diffing Equipment: Diderich D-S0 (ATC) Dates Stante Representative: 8. Bradfield Diffing Equipment: Diderich D-S0 (ATC) Schnabel Representative: 8. Bradfield Diffield T-S0 (ATC) Dates Stanteal Representative: 8. Bradfield Diffield T-S0 (ATC) Schnabel Representative: 8. Bradfield Diffield T-S0 (ATC) Continue Gardina Food Representative: 8. Bradfield Diffield T-S0 (ATC) Schnabel Representative: 8. Bradfield Diffield T-S0 (ATC) Ground Surface Elevation: 922 (feet) CLASS FLL Schnabel Representative: 8. Bradfield Diffield T-S0 (ATC) 2.0 Sith with sand, PROBABLE FILL, molet, brit, filth FILL Schnabel Representative: 8. Bradfield Diffield T-S0 (ATC) 2.0 Sith year Redide Brown, force oranse grained, molet, light elowich for oranse grained	Boring C	ontractor: CONNELLY AND AS	SOCIATES,	INC.			ì	Gro	oundv	vater Obs	ervations		1
Doming Northin In old Multiple Description Defining Representative: Multiple Multiple Defining Representative: B. Braidfield Defining Representative: Braidfield Defining Representative:	Boring F	FREDERICK, MARY	LAND					D	ate	Time	Depth	Casing	Caved
Drilling Equipment: Description 24 hours 5/6 6.5 Schnable Representative: B:radfield Dates Startet: 6/706 Finished: 8/8006 Location: Northing: 216589 24 ft Easing: 91495.42 ft Ground Surface Elevation: 92.2 (feel) DEPTH STRATA DESCRIPTION CLASS. ELEV. (FT) WL SAMPLING Coarse grained, most, reddiab brown, contains root fragments. FILL Sitt with and, PROBABLE FILL, moist, reddiab brown, contains root fragments. FILL 90.2 - Sitt with and, PROBABLE FILL, moist, reddiab brown, contains root fragments. FILL 90.2 - - 4.5 - - - - - - - </td <td>Drilling M</td> <td>Alethod: Mud Rotary</td> <td></td> <td></td> <td>Enco</td> <td>untere</td> <td>a</td> <td>2</td> <td>5/ /</td> <td></td> <td>13.5</td> <td></td> <td></td>	Drilling M	Alethod: Mud Rotary			Enco	untere	a	2	5/ /		13.5		
Schnabel Representative: B. Bradfield Deprive Construction: 92.2 (feet) Construction: 92.2 (feet) State with each probability of the probability	Drilling E	Equipment: Diedrich D-50 (ATC)			24 I	nours		8	3/8		6.5'		
Dates Started: 97/06 Finished: 8/8/06 Location: Northing: 216289.24 ft	Schnabe	I Representative: B. Bradfield											
Location: Northing: 216589.24 ft Ground Surface Elevation: 92.2 (feet) DEPTH STRATA DESCRIPTION CLASS ELEV. (FT) WL SAMPLING DEPTH TESTS Sitt with sand, PROBABLE FILL, moist, Sitty sand PROBABLE FILL, fine to coarse grained, moist, redish brown, contains root fragments, trace gravel. FILL 2.0 Sitty sand PROBABLE FILL, fine to coarse grained, moist, light brown and brown. FILL 4.5 POORLY GRADED SAND WTH SILT, fine to medium grained, light yellowish brown and brown. SP-SM 10.0 SILTY SAND. fine to coarse grained, moist, light yellowish brown and dark moderate camentation, some iron stained bands <1/4' thick.	Dates \$	Started: 8/7/06 Finished: 8/8/0	06										
Ground Surface Elevation: 92.2 (feet) Vite SAMPLING DEPTH TESTS REMARKS 0F(T) Silt with sand, PROBABLE FILL, moist, brown, contains root fragments. FILL 00.1 DEPTH DATA TESTS REMARKS 2.0 Silt with sand, PROBABLE FILL, moist, brown, contains root fragments, trace gravel. FILL 90.2	Location	: Northing: 216589.24 ft Easting: 961495.42 ft											
DEPTH (FT) STRATA DESCRIPTION CLASS. ELFV. (FT) WL SAMPLING DEPTH DATA TESTS REMARKS 2.0 Silt with sand, PROBABLE FILL, moist, brown, contains not fragments. FILL 90.2	Ground	Surface Elevation: 92.2 (feet)											
Silt with sand, PROBABLE FILL, moist, brown, contains root fragments. FILL 2.0 Silty sand PROBABLE FILL, fine to contains root fragments. 90.2 4.5 POORLY GRADED SAND WITH SILT, fine to carse grained, moist, light brown and brown. FILL 90.2 87.7 10.0 SILTY SAND, fine to carse grained, moist, light yellowish brown and brown, with contained bands ~1/4" thick. 10.0 SILTY SAND, fine to carse grained, moist, light yellowish brown and brown, with commentation, mome iron stained bands ~1/4" thick. 10.0 SILTY SAND, fine to carse grained, moist, light yellowish brown and dark recernation, mome iron stained bands ~1.5" thick. 10.0 SILTY SAND, fine to carse grained, moist, light yellowish brown and dark recernation, momit commerced sand, race gravel, strong cementation, innonitic cemented bands up to 2" thick. 11.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, immonitic cemented bands 12.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, immonitic cemented bands 12.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, immonitic cemented bands 22.0 SANDY LEAN CLAY, fine, moist, dark gray, contains mica. 22.0 SANDY LEAN CLAY, fine, moist, dark gray, contains mica.	DEPTH (FT)	STRATA DESCRIPTIO	DN	CLASS	ELEV. (FT)	WL	DEP	S/ TH	AMPL C	ING DATA	TEST	s	REMARKS
20 Sitty sand PROBABLE FILL, fine to coarse grained, moist, reddish brown, fill 90.2 4.5 POORLY GRADED SAND WTH SILT, fine to coarse grained, moist, light willowish brown and brownish white, some slight in on stained bands <1/4' thick.	-	Silt with sand, PROBABLE FILL brown, contains root fragments.	L, moist,	FILL				-M	3+6+ N =1: REC	6 2 =18"		Dr Ht	illed 4 1/4" SA to 13.5'
4.5 Coarse grained, moist, iredisis brown, contains root fragments, trace gravel. 87.7 4.5 FOORLY GRADED SAND WITH SILT, fire to coarse grained, moist, light brown and brown. 87.7 10.0 SILTY SAND, fine to coarse grained, moist, light vellowish brown and brown and dark reddish brown, trace comentated sand, moderate commentation, some stande bands <1/4" thick.	2.0 -	Silty sand PROBABLE FILL, fin	ne to	FILL	90.2			$\left \right $					
4.5 PORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light brown and brown in thite, some slight iron stained bands <1/4 + 48 fine to medium grained, light yellowish brown and brown side solution in stained bands <1/4 + 48 10.0 SILTY SAND, fine to coarse grained, moist, light redish brown, trace cemented sand, moderate cementation, some iron stained bands -1.5 thick. 13.0 POORLY GRADED SAND WITH SILT, fine to coarse grained, well, light redish brown, with redish brown and mark redish brown with redish brown with redish brown and mark redish brown with redish brown with redish brown and mark redish brown with redish brown and mark redish brown and mark redish brown and mark redish brown with redish brown and mark redish	-	coarse grained, moist, reddish k contains root fragments, trace g	brown, gravel.					\mathbb{N}	4+3+ N =6 REC	3 =18"			
$ \begin{array}{c} 1 \\ 10.0 \\ 10.0 \\ 10.0 \\ 22.0 \\ 22.0 \\ 22.0 \\ 22.0 \\ 22.0 \\ 22.0 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ $	4.5			SD SM	87.7		- ·		TL O	10			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	_	fine to coarse grained, moist, lig brown and brown.	ght	0F-0M		▼	- 5 - - ·	\mathbb{N}	4+4+ N =12 REC	8 2 =18"			
iron stained bands <1/4" thick. iron stained bands <1/4" thick. SILTY SAND, fine to coarse grained, moderate cemental sand, moderate cemental sand, reddish brown, trace gravel, storng cemental sand, trace gravel	-	fine to medium grained, light ye	ellowish ne slight			-			5+11	+10			
10.0 SILTY SAND, fine to coarse grained, moist, light yellowish brown and dark reddish brown, trace cemented sand, moderate cementation, some iron stained bands ~1.5" thick. 82.2 -10- -4 8+10+10 N = 20 13.0 POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light grayish brown and dark reddish brown, with cementation, limonitic cemented bands SP-SM 79.2 ✓ -4 4+6+8 N = 14 13.0 POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light grayish brown and dark reddish brown, with cemented bands SP-SM 79.2 ✓ -4 4+6+8 N = 14 17.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick. 75.2 -4 -4 15'- Begin mud rotary with 2 17.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick. 75.2 -4 -4 1+1+1 22.0 SANDY LEAN CLAY, fine, moist, dark gray, contains mica. CL 70.2 -4 1+2+3 22.0 SANDY LEAN CLAY, fine, moist, dark gray, contains mica. CL 70.2 -4 1+2+3	-	iron stained bands <1/4" thick.						W	N =2 REC	1 =18''			
$\begin{bmatrix} 3.01 \\ moist, ight yellowish brown and dark reddish brown, trace cemented sand, moderate cementation, some iron stained bands ~1.5" thick. \\ \hline 13.0 \\ = & POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light grayish brown and dark reddish brown, with cemented sand, trace gravel, strong cementation, limonitic cemented bands up to 2" thick. \\ \hline 17.0 \\ = & SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick. \\ \hline 17.0 \\ = & SANDY LEAN CLAY, fine, moist, dark \\ = & continued on next page \\ \hline 22.0 \\ = & Continued on next page \\ \hline 11.1 \\ = & Continued on next page \\ \hline 11.2 \\ = & Continued on next page \\ $	10.0 —	SILTY SAND find to opproduce	ninod	см	82.2		-10-	$\left \right $					
$13.0 = \frac{1}{13.0} = \frac{1}{13.0$	-	moist, light yellowish brown and	d dark	SIVI				M	8+10	+10			
13.0 POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light grayish brown and dark reddish brown, with cemented sand, trace gravel, strong cementation, limonitic cemented bands up to 2" thick. SP-SM 79.2 Image: Continued sand, trace gravel, strong cementation, limonitic cemented bands up to 2" thick. 15'- Begin mud rotary with 2 15'16' tri-cone roller bit 17.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick. 75.2 Image: Continued on next page 1+1+1 N = 2 Continued on next page 22.0 SANDY LEAN CLAY, fine, moist, dark gray, contains mica. CL 70.2 Image: Continued on next page 1+2+3 N = 5 REC = 18"	-	moderate cementation, some in stained bands ~1.5" thick.	on					Δ	REC	-18"			
17.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick. 17.0 SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick. 75.2 75.2 75.2 76.2 76.2 77.2<		POORLY GRADED SAND WIT	H SILT,	SP-SM	- 79.2	$\underline{\nabla}$							
$\begin{array}{c} \text{cemented sand, trace gravel, strong} \\ \text{cementation, limonitic cemented bands} \\ \text{up to 2" thick.} \end{array} \\ 17.0 \\ \begin{array}{c} \text{SILTY SAND, fine grained, wet, light} \\ \text{yellowish brown and mottled gray,} \\ \text{limonitic cemented bands up to 2" thick.} \end{array} \\ \begin{array}{c} \text{75.2} \\ \text{-} \\ \ -} \\ \begin{array}{c} \text{-} \\ \text{-} \\ \text{-} \\ \text{-} \\ \text{-} \\ \ -} \\ \begin{array}{c} \text{-} \\ \text{-} \\ \text{-} \\ \ -} \\ \begin{array}{c} \text{-} \\ \text{-} \\ \text{-} \\ \ -} \\ \begin{array}{c} \text{-} \\$	- 3/6/0	fine to coarse grained, wet, light brown and dark reddish brown,	it grayish with					M	4+6+ N =1	8 4		15	- Begin mud
$17.0 = \frac{1}{22.0} = \frac{1}{22.0$		cemented sand, trace gravel, st cementation, limonitic cemented	trong d bands				-15-		REC	=18"		rot 15	ary with 2 /16" tri-cone
$17.0 - \text{SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick$	L NABEI	up to 2" thick.						$\left \right $				rol	ler bit
22.0 SANDY LEAN CLAY, fine, moist, dark CL r0.2 70.2 $-20-4$ $1+1+1$ $N=2$ gray, contains mica. $-20-4$ $1+2+3$ $N=5$ REC =18"	HUN 17.0 -	SILTY SAND fine argined wat	light	SW	75.2			$\left \right $					
$22.0 = \begin{bmatrix} 22.0 \\ -20 \\ -30 \\ $	00.GP.	yellowish brown and mottled gra	ay,										
22.0 SANDY LEAN CLAY, fine, moist, dark CL 70.2 70.2 $-20-4$ REC =18" gray, contains mica. <i>continued on next page</i> $-20-4$ REC =18"	- 08.40 -	infonitio cemented bands up to	Z UNICK.					M	1+1+	1			
22.0 SANDY LEAN CLAY, fine, moist, dark CL 70.2 gray, contains mica. <i>continued on next page</i>	PT 30						-20-	$ \Delta $	N =2 REC	=18"			
22.0 SANDY LEAN CLAY, fine, moist, dark CL 70.2 $ -$	00 8												
SANDY LEAN CLAY, fine, moist, dark CL 70.2 gray, contains mica. <i>continued on next page</i>	048 Pl				70.0								
$ \begin{array}{c} - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - $	- U.22 06120(SANDY LEAN CLAY, fine, mois gray, contains mica.	st, dark	CL	70.2			$\left \right $					
continued on next page								-0	1+2+ N =5	3			
	EST BOF	continued on next page					-25-		REC	=18"			

ſ		test	Project: C	t: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland					Boring Number: B-412		
)	Schna	bel Engineering LOG		alvert Cou	nty, Ma	ryland			Contrac Sheet:	:t Number: 06 2 of 4	6120048
	DEPTH (FT)	STRATA DESCRIPT	ION	CLASS.	ELEV.	WL	:		G	TESTS	REMARKS
F	1.1			CL			DEPTH				
	-										
	-	with sand, gray.									
	-							2+2+3			
	-							N =5 REC =1	8"		
	_										
	32.0 -				60.2						
	-	CONTRACT CLAY with sand, moist, contains mica.	gray,	СН							22 El Chart of
	-						17	2+4+3 N =7			day 8/8/06
	-						_ ₃₅ _/	REC =1	8"		
	-										
	37.0 -	LEAN CLAY with sand, moist	t, gray,	CL	55.2						
	-	contains mica.						3+3+6			
	_							N =9 REC =1	8"		
	_										
	42.0 -	SANDY FAT CLAY, find to m	odium		50.2						
	-	moist, gray, contains mica.	learam,								
	-						\	5+7+9 N =16			
							_45_L	REC =1	8"		
/08	-										
DT 3/6	-	trace cemented sand, weak cementation.									
ABEL.G	_							5+5+16			
SCHN.	49.5 —	SILTY SAND, fine to coarse	grained,	SM	42.7		L_50_L	N =21 REC =1	8"		
00.GPJ	-	white, with limonitic cementer moderate cementation, impri	d sand, nts of shell								51'- Driller noted harder
300 & 4	52.0 -	fragments, highly oxidized zo	ITH SILT	SP-SM	40.2						drilling
G SPT	-	fine to medium grained, wet, grayish white.	light				╞╴┤				
48 PLO	-						╞╢	N =72	2"		54.5'- Some light iron staining in
061200									-		sample
9 LOG	-										
BORIN	-	light gray and mottled orange	eish brown.								
TEST		continued on next pag	je								

	6	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	E	Boring Number:	B-412
	Schnat	BORING	c	alvert Cou	nty, Ma	ryland			Contract Number:	06120048
	DEDTU	Loo					S			
	(FT)	STRATA DESCRIPT	ION	CLASS.	FT)	WL	ПЕРТН			REMARKS
				SP-SM				DAD		
	-							50/5" N =50/5"		
	_						-60-	REC =5"		
	_									
	-	light brown.								
	-									
	_							50/5"		
	_						-65-	N =50/5" REC =2"		
							-05			
	-									
	67.0 -	CLAYEY SAND, fine to medi	um	SC	25.2					
	-	grained, wet, gray and brown	ish white,							
	_	trace cemented sand, moder	ate HCI				M	24+11+1	1	
		reaction, moderate cementat	on.				L _ M	N =22 RFC =18	յու	
	_									
	-									
	-	grav and gravish white 10-20	1% fine to							
	-	medium shell fragments, mod	lerate HCI							
	_	decomposed shell fragments	ea to				M	6+6+10		
							W	N =16 REC =18	,	
	_						-/5-0			
	-									
	-	10-20% fine to coarse shell fi	aamente							
	_	strong HCl reaction, HCl reac	tion							
		fragments.	II					9+9+10		
80							X	N =19 REC =14	ս	
F 3/6	_						-80-1-1			
L.GD	-									
VABE.	-	dark grav 10 20% find to mo	dium shall				\mid \mid			
SCH	_	fragments, moderate HCI rea	ction, HCI							
GPJ		fragments.	osed shell					7+9+15		
400.		-					T TX	N =24 REC =18	ա	
300 8	_						-85-0		,	
SPT :	-									
PLOG	-	work HCI reaction (EV/ Fr-	shall							
048	_	fragments, HCI reaction local	ized to							
0612(decomposed shell fragments					Π	5+4+6		
90	_							N =10	,u	
RING I	_						_90_ L]		′	
BOF	-	continued on next pac	le							
TESI		commod on nont pag								

	hashal	TEST	Project:	Calvert Cliff	s Nucle	ar Pow	er Plant]	Boring Number:	B-412
Schna	bel Engineering	BORING		Calvert Cou	nty, Ma	iryland			Contract Number:	06120048
DEDTU	ber Engineering	200					9			
(FT)	STRAT	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH		TESTS	REMARKS
				SC						
-	dark gray and b fine to coarse sl HCl reaction, H decomposed sh	rownish white nell fragments Cl reaction loo nell fragments	a, 30-40% s, strong calized to				 - 95 -	4+9+18 N =27 REC =18	3"	
-	light gray and bu fine to coarse sl cemented sand,	rownish white nell fragments , strong HCI re	, 40-50% s, with eaction,							
98.9	moderate ceme	ntation.			-6.7			50/5"	,	
	BOTTOM OF B	ORING @ 98	.9 FT.		6.7			N =50/5" REC =4"		
649										
& 400.										
nne -										
20										
140 P.C.										
1001200										
LOG										
2 2 1										

Schna	hnabel TEST BORING	Project:	Calvert Calvert	Cliffs Cour	Nucleanty, Ma	ar Pow ryland	/er Pla	nt		Boring Contra Sheet:	Number: Inct Number	e r: 06120	B-413
								Gro	oundw	ater Obs	ervations		
Boring	Contractor: UNI-TECH DRILL MALAGA, NEW JI	NG ERSEY]	D	ate	Time	Depth	Casing	Caved
Boring F	oreman: J. Evans				Start	of day	y	5	/15		20.0'		
Drilling	Method: Mud Rotary				Water	Readi	ng	5	/16		84.6'		
Drilling Schnabe	Equipment: Failing-1500 (Trucle) Representative: R Vinzant	<)											
Dates	Started: 5/12/06 Einished:	5/15/06		<u> </u>									
Location	1: Northing: 216994.88 ft Easting: 961413.25 ft	3/13/00											
Ground	Surface Elevation: 122.9 (feet)												
DEPTH	STRATA DESCRIPT		CLA	ss.	ELEV.	WL		S	AMPL	ING	TEST	s	REMARKS
(FI)					(FI)		DEP	TH	D	ATA			- Sector - Alexandro -
0.4	Forest litter, root mat and top	soil.	SP-8	SM	122.5			M	4+6+8 N =14	3			
-	medium to coarse grained, m orangeish brown.	noist, light							REC	=18"			
-	-						-	-0	5+4+(N =10	5			
-									REC	=18"			
-	light orangeish gray.						- 5 -		4+6+ N =13	7			
-									REC	=14"			
-	light orangeish brown.						-	-0	4+5+ N =12	7	w=9.7° *	%	
-							- 10-		REG	-10			
-	light reddish brown.						-	-M	3+4+{ N =9	5			
-									REC	=14"			
-	light orangeish brown.								3+2+3	3			
							-15-	Ŵ	N =5 REC	=12"			
- HNABEL							-	$\left \right $					
								1					
- 8 400.0]_[4+6+6	6	w=12.9	%	
							-20-	Ň	N =12 REC	2 =15"	200		
- LOG							L .						
048 F							L						
10120							[]					
- 50							F 1	┤_│					
	3" layer of darker strata.						-	M	9+10- N =24 REC	+14 =16"			
	continued on next pag	де					-25-						

	hnabal	TEST	Project:	ct: Calvert Cliffs Nuclear Power Plant					Boring Number: B-41	
Schna	hel Engineering	BORING		Calvert Cou	nty, Ma	ryland		C	Contract Number: 0	6120048
DEDTH	Ser Engineering	200					s			
(FT)	STRATA	DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH		A TESTS	REMARKS
				SP-SM						
-										
_							07	9+12+16		
_							$\lfloor_{30} \rfloor$	N =28 REC =15'		
							50			
-										
-										
	orangeish brown.						∏	10+12+14 N =26	4 w=8.6%	
_							_ ₃₅ _[]	REC =17	u	
-										
-		- [
-	wet, light orangel	sn gray.					F -1X	N =36		
-							_ ₄₀ _[]	REC =16'		
_										
	moist. light orang	eish brown.					Π	7+14+16		
							Г _]X	N =30 REC =16	n;	
45.0 —	SILTY SAND, fine	e to medium	grained,	SM	77.9		-45-1			
-	l moist, light orang clay.	e, mottles o	white							
5 –	-									
-										
							0	3+2+2	w=26.9%	
							L ₅₀ _Å	N =4 REC =18'	PL=NP	
5							50			
							[]			
-	1									
535					69.4		⊢ - <u> </u>			
	SANDY ELASTIC	CSILT, mois	t, oliveish	MH	03.4		∏	2+3+3 N =6	w=25.7% LL=56	
							L_55_0	REC =18	" PL=27	
-										
	continue	d on next pag	e				[]			

<sup>Comments:
1. Ground Water Observation Well OW-413B installed upon completion
2. * = See Appendix I for additional lab testing data.
3. Ground Water Observation Well OW-413A installed at a nearby location</sup>

	Sc	hnabel	TEST BORING	Project: (Calvert Cliffs Nuclear Power Plant Calvert County, Maryland						Boring Number: B-41: Contract Number: 06120048	
	Schnat	STRAT		 'ION	CLASS.	ELEV.	WL	S	AMPLING	Sheet: 3	of 5	REMARKS
	(FI) - - -	with sand, fine t moist, oliveish g	to medium gr ray,	ained,	MH	(F1)		<u>рертн</u> Д 	DAT 2+4+4 N =8 REC =18	А	w=27.5% LL=58 PL=29 *	
	-							 65				
	- - 70.0 —	FAT CLAY, mois	st, gray		СН	52.9		 	4+5+7 N =12 REC =18	ju F	PP=1.50 tsf	
	- - - 75.0 —	SILTY SAND. fir	ne to medium	grained	SM	47.9		 	REC =24	,u F	w=35.5% LL=51 PL=15 PP=4.25 tsf *	
10/US		moist, greenish	gray, contain	s mica.				 80-	4+4+10 N =14 REC =18	ju:	w=26.1% *	
IGEN SCHINABEL GUI 3	81.0 -	POORLY GRAD fine to medium g orangeish browr	DED SAND W grained, mois n.	/ITH SILT, t, dark	SP-SM	41.9		 	25+50/3"	a.	w=21%	
JU48 PLOG SP1 300 & 400	-							85 	N =50/3" REC =10	μ		
BURING LUG UD12L	-	light greenish gr color.	ay, mottles o	f orange				⊠ 90 	50/3" N =50/3" REC =4"			
Б О		condhu	ea on next pag									

6	hnabel TEST	Project:	ct: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland				Boring Number:		B-413
Schnal	bel Engineering LOG		Calvert Cou	nty, Ma	iryland		Contra Sheet:	act Number: 00 4 of 5	6120048
DEPTH (FT)	STRATA DESCRIPT	ΓΙΟΝ	CLASS.	ELEV. (FT)	WL	S		TESTS	REMARKS
			SP-SM				- DATA		
- - 95.0 — -	greenish gray, trace fine grav SILTY SAND, fine to medium moist, greenish gray, trace si fragments, moderate HCI rea	vel, orange. n grained, hell action.	SM	27.9		 - 95 	50/3" N =50/3" REC =4"		
						 -100- 	8+11+50/5" N =61/11" REC =17"	w=34.9% *	
- - 105.0 —	25% shell fragments, and ce sand, weak HCl reaction. POORLY GRADED SAND V fine to medium grained, gree	mented /ITH SILT, nish gray,	SP-SM	17.9		 ⊠ -105-	50/5" N =50/5" REC =5"		Resumed on 5/15/06 8:30am
	moderate HCI reaction, 25% fragments, layers of flat shell	shell s.				 -110-	11+12+18 N =30 REC =18"	w=24.8% *	
- 113.5 - - -	SILTY SAND, fine to medium light gray, strong HCI reactio shell fragments.	n grained, n, 50%	SM	9.4		 	7+9+13 N =22 REC =18"	w=26.3% *	
						 120- 	5+9+9 N =18 REC =18"	w=32.5% *	
-	continued on next pa	ge				 ¤	3+7+9	w=35.1%	

	hnahal	Project: (: Calvert Cliffs Nuclear Power Plant					Boring Number: B-413		B-413	
Schna	bel Engineering	BORING LOG		Calvert Cou	inty, Ma	iryland			Contra	ct Number: 0	6120048
DEPTH	ser Engliseering							SAMPI IN	G	0010	
(FT)	STRAT	TA DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DA	TA	TESTS	REMARKS
				SM				N =16	0"	*	
_							-125-	I REC =1	8		
-	-										
-	-										
_											
								7 15+43+	23	w=18.7%	
-]						r 1)	N =66	Q"	*	
-							-130- ^L		0		
-	15% shell frag	ments.									
-	-										
-	-										
_								28+27+	34	w=24.8%	
							105	N =61 REC =1	8"		
_	5% shell fragm	nents, moderat	te HCI					-			
-		ayer of flat she	115.								
-	-										
-	-										
							10	11+12+	16	w=27.5%	
_								REC =8	5"		
-]						[]				
-	weak HCI read	ction.									
-	-						\vdash \dashv				
-	-						1	12+18+	19	w=32.1%	
_							_145_L	REC =1	8"		
0/0											
5 1											
- e											
								_		w-20 00/	
- 10	-						╞╶╢	8+13+2 N =35	2	w=39.0% *	
150.0 -			0.0 FT		-27.1		150-	REC =1	8"		
0 & 4	DOTTONION		0.011.								
5 5											
48 PL											
00710											
5											
NG L(
BOR											

Sc	hnabel Boring	Project: (Calvert Calvert	Cliffs Cour	s Nuclea nty, Ma	ar Pow ryland	/er Pla	nt		Boring Contra	Number:	er: 06120	B-414
Schna	bel Engineering LUG									Sheet:	1 of 4		
Boring C	Contractor: UNI-TECH DRILL	NG					ì	Gre	oundw	ater Obs	ervations		
Borina F	MALAGA, NEW JI F oreman: J. Evans	ERSEY			Enco	untoro	5	5	ate /11	Time	Depth 13.5'	Casing	Caved
Drilling	Method: Mud Rotary				LIICO		9				10.0		
Drilling	Equipment: Failing-1500 (Trucl	<)										-	
Schnabe	el Representative: R. Vinzant												
Dates	Started: 5/11/06 Finished:	5/11/06											
Location	n: Northing: 216630.18 ft Easting: 961354.48 ft												
Ground	Surface Elevation: 121.2 (feet)		_										
DEPTH (FT)	STRATA DESCRIPT	TION	CLA	ss.	ELEV. (FT)	WL		S.	AMPL	ING	TEST	s I	REMARKS
	POORLY GRADED SAND V	/ITH SILT	SP-S	SM					3+5+0	6 6			
-	fine to coarse grained, moist brown, with root fragments a matter.	orangeish nd organic					-	W	N =11 REC	- 1 =15"			
-	light orangeish brown.						-	-0	3+5+ N =12	7			
-									REC	=14"			
-	fine to medium grained, light orange.	reddish						\mathbb{N}	5+7+9 N =16 REC	9 5 =18"			
-	fine to coarse grained.							M	6+8+	12	w=4.2	%	
-								Ň	N =20 REC) =17"			
-							-10-		6+7+	8			
-								Ŵ	N =15 REC	5 =16"			
	wet, light orangeish brown.					Ā			5+9+	7			
							-15-	Ŵ	N =16 REC	6 =15"			
							È .						
- × 40								-0	6+7+ N =17	10	w=9.2°	%	
							-20-		REC	=13"			
-								-					
- 20046							+ .	$\left \right $					
-							Ļ,						
<u>-</u> او							Ļ.		13+1	7+19			
	continued on next pag	<i>j</i> e					-25-	M	REC	o =17"			
й -													

	TEST Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland Calvert County, Maryland								Boring	Number:	B-414
Schn	abel Engineering	LOG		alvert Cou	nty, Ma	ryland		Γ	Contra Sheet:	ct Number: 06 2 of 4	6120048
DEPTH (FT)	STRATA	DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH		G FA	TESTS	REMARKS
				SP-SM							
07.0					010						
27.0	POORLY GRADE coarse grained, w trace silt and whit	ED SAND, fi /et, grayish l e clay.	ne to prown,	SP	94.2						
29.5					91.7		F -1X	5+6+14 N =20			
-	fine to coarse gra	ined, wet, o	rangeish	5P-5M				REC = I	5		
	-										
	-							11+12+1	14	w=9.7%	
							[_ ₃₅ _][]	N =26 REC =1	8"	*	
	_										
	_										
	-										
	-						M	10+13+1 N =30	17		
-	-						_ ₄₀ _ 0	REC =1	4"		
12.0	-				70.0						
42.0	SILTY SAND, fine moist, orange.	e to medium	grained,	SM	19.2						
	_						M	2+3+2		w=20.6% LL=NP	
-	_						_ ₄₅ _0	REC =1	8"	PL=NP *	
ω	_										
T 3/6/0	_										
3EL.GD	- light orange mott	les of white	clav					2+1+1		w=27.7%	
SCHNAE			ciay.					N =2 REC =1	8"	LL=NP PL=NP	
0.GPJ (_										
00 & 40(-										
NE LdS	-				67 7						
0 03.0 0 100	SANDY LEAN CL gray, with fine sa	.AY, moist, g nd.	greenish	CL	07.7		0	2+3+3 N =6		w=28.0% LL=42 PL=23	
612004	-						_ ₅₅ _ ∐	REC =1	8"	r L-23 *	
	-										
DVINO	FAT CLAY, moist fine sand	, greenish g	ray, with	СН	64.2						
TESTE	continue	d on next pag	e								

ſ	6	hnabal	Project: C	ect: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland					Boring Number: B-41		B-414	
	Schnal		BORING	С	alvert Cou	nty, Ma	ryland			Contra Sheet	ct Number: 00	6120048
ł	DEDTH	ser Engineering	200			FLEV		s		G		
	(FT)	STRATA	DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DA	TA	TESTS	REMARKS
ľ					СН				REC =2	24"	w=33.2%	
	-										PL=19	
								60 ■			PP=3.20 IST *	
	-											
	-											
	_											
	_								3+5+6		w=38.3%	
	-							X	N =11	01	*	
	()							_65_[L]	REC =1	8.	PP=2.50 tsf	
	-											
	-											
											w-26 70/	
									REC =2	24"	u=36.7% LL=51	
	_										PL=15 PP=3.80 tsf	
	_							-70			*	
	-											
	72.0 -	SANDY LEAN C	LAY. moist. o	areenish	CL	49.2						
		gray, fine graine	d.		100.0000							
	_							M	4+6+9		w=22.9%	
	_							_ ₇₅ _	REC =1	8"	PL=20	
								10			*	
						A 4 122						
	77.0 -	SANDY SILT, gr	eenish gray,	with	ML	44.2						
		black organic matter, b	00% dark bro atter.	wn and							00.0%	
	-							M	4+8+14 N =22		w=29.8% *	
3/6/08	_							_ ₈₀ _И	REC =1	8"		
CDT C												
BEL.	820 -					30.2						
CHNA	02.0	SILTY SAND, fir	e to medium	grained,	SM	33.2						
P. S	-	wet, light greente	ingray.						40.504	4 11	w=19.0%	
400.G	-							12	AZ+50/2 N =50/4	t	*	
8 00	_							-85-	REC =1	0"		
SPT 3	-											
LOG	_											
048 F	_											
06120	_	dark grav							50/5"			
00	-	dan gray.							N =50/5	5"		
SING L	_							-90-		,		
T BOF	-	continu	ed on next pao	е								
TES				NM .								

	test	Project:	t: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland					Boring Number:	
Schnal	bel Engineering LOG		Calvert Cou	nty, Ma	ryland		Co She	ntract Number: 0 eet: 4 of 4	6120048
DEPTH (FT)	STRATA DESCRI	PTION	CLASS.	ELEV. (FT)	WL	DEPTH	SAMPLING	TESTS	REMARKS
- - 95.0 — -	SILTY GRAVEL, weak HC	reaction.	SM GM	26.2		 2 95 	8+50/2" N =50/2" REC =8"	w=20.1% *	water loss from 93.5-95 ft, 1 bag quick gel
- - 100.0 —	BOTTOM OF BORING @	00.0 FT.		21.2		 -100-	35+50/3" N =50/3" REC =10"	w=13.5% *	600 gal. water, 4 bag bentonite, still loosing water

	TEST Project: C	alvert Cl	iffs Nucle	ar Pov	ver Pla	nt		Boring	Number:		B-415
Schna	bel Engineering LOG	Calvert Co	ounty, Ma	ryland				Contra Sheet:	ct Number 1 of 4	er: 06120	048
Boring	Contractor: CONNELLY AND ASSOCIATES	S. INC.				Gro	oundwat	er Obs	ervations		
	FREDERICK, MARYLAND					D	ate	Time	Depth	Casing	Caved
Boring I	Foreman: D. Bender		Enco	untere	ed	4	127		18.5'		
Drilling	Fauinment: CME 550X (AT) 0										
Sahnah											
Datas	Started: 4/27/06 Einished: 4/29/06	\vdash									
Location	Statted. 4/27/00 Finished. 4/20/00										
Location	Easting: 961264.2 ft										
Ground	Surface Elevation: 119.3 (feet)										
DEPTH (FT)	STRATA DESCRIPTION	CLASS	S. ELEV.	WL		S/		G	TEST	s	REMARKS
	Poorly graded sand FILL fine to	FILL					3+2+5	IA			
	medium grained, contains lean clay layer, moist, brown.					-10	N =7 REC =1	8"			
2.0 -		SP-SM	117.3			-					
	fine to medium grained, trace silt, moist,				L .	-M	4+3+4				
	light brown.				L.	JŴ	N =/ REC =1	6"			
					_						
_	light brown and brown.				-5-	M	3+4+4		w=3.6'	%	
-	4					-W	N =8 REC =1	8"			
-	-					-					
	light brown.				L .	-M	3+4+5				
					L	\square	N =9 REC =1	4"			
	light brown and vellowish brown				10						
_					H ¹⁰⁻		~				
-	-					HXII	3+4+4 N =8				
12.0		SP	107.3				REC =1	7"			
	coarse grained, moist, light brown and				L .	-					
0000	orangeish brown, trace silt.				L		4+4+6		w=2.5	%	
2						Ŵ	N =10 REC =1	7"	, î		
5 –	1				-15-		ILC I	'			
	-					+					
- -	4					-					
	_			_	-	4				*U	sed hollow
8 40C	wet, contains lean clay pockets.			¥			6+7+9			de	pth of 18.5 ft.
n -	·····, -·······				Γ	٦XI	N =16	5"		3-1	7/8" O.D.
	1				-20-		NEC -1	5		Tri bit	-cone roller below 18 5
Ď.	-					-				ft.	
22.0 -		CD CM	97.3			$\left \right $					
- Po	fine to coarse grained, wet, yellowish	07-51	1		L .	$\left \right $					
	brown.					Π	6+6+8				
]				[N =14				
	continued on next page				-25-						

	-	TEST Project	: Calver	Calvert Cliffs Nuclear Power Plant Calvert County. Marvland					Boring Number: B-415		
Sch	Schnabel Engineering LOG				nty, Ma	ryland		C	ontract Number: 0 neet: 2 of 4	6120048	
DEP (FT	ГН)	STRATA DESCRIPTION	CL	ASS.	ELEV. (FT)	WL	S DEPTH		TESTS	REMARKS	
			SP	-SM							
	-										
	-										
	-								w-13 5%		
		orangeish brown and yellowish brown, trace gravel, contains clayey sand	5				M	5+7+9 N =16	*		
	_	pockets.					_ ₃₀ _[1]	REC =9"			
	-										
	-										
	-										
	-	light brown.					100	4+10+13 N =23			
	-						_ ₃₅ _[1]	REC =6"			
	-										
	-										
	-										
	-	light brown and brown, contains clayey sand pockets.	y				M	4+9+13 N =22			
	-						_ ₄₀ _ ()	REC =8"			
	-										
42.0) +	SILTY SAND, fine to medium, wet, dat	rk S	SM	77.3						
	-	gray, contains mica.							w-28.2%		
	-						M	2+2+2 N =4	LL=26		
	_						_45_ U	REC =15"	PP=0.50 tsf		
ø	-										
)9 ິ 47.0) †	CLAYEY SAND, fine to medium	5	SC	72.3						
EL.GD	-	grained, wet, dark gray, contains mica						4.7.0			
CHNAB	-	5					X	4+/+2 N =9 DEC =1.4"			
PJ SC	_	tine to coarse grained below 49.5 ft.					_ ₅₀ _[]	REC = 14			
400.G	-										
8 00 00 00 00 00 00 00 00 00 00 00 00 00) †	LEAN CLAY, moist, light greenish gray	y, C	CL	67.3						
IG SPI	-	uace sano, contains mica.						0.0.0			
48 PLC	-						X	2+3+3 N =6 PEC =10"			
61200	-						-55-1 ¹²				
000	-										
57.0) †	FAT CLAY, moist, light greenish gray,		ЭН	62.3						
ST BO	-	uace sand, contains mica. continued on next page									
۳											
	TEST Pro	oject: Calvert Cliff	s Nucle	ar Pow	er Plant	В	oring Number:	B-415			
---------------	---	----------------------	---------------	--------	-----------------	-------------------	------------------------------------	---------------------------------			
Schnal	bel Engineering LOG	Calvert Cou	nty, Ma	ryland		Co	ontract Number: 00 neet: 3 of 4	6120048			
DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	S. DEPTH	AMPLING DATA	TESTS	REMARKS			
_		СН			M	2+4+5	w=36.6%				
-					_ ₆₀	N =9 REC =18"	PL=21 PP=1.50 tsf				
-											
62.0 -	ELASTIC SILT, moist, light greeni gray and dark gray, trace sand, co	ish MH ontains	57.3					**Documod			
-	mica.				M	3+4+5 N =9		drilling at 7:00 on 4/28/06.			
-					_ ₆₅	REC =18"					
67.0 -			52.3								
-	FAT CLAY, moist, light greenish g trace sand.	gray, CH	02.0								
-					0	5+7+9 N =16					
_						KEC - 10					
72.0 -	SANDY SILT, fine to coarse, mois	st. SM	47.3								
-	gray, trace gravel, contains mica.					51519	w=26.3%				
-					<u>-</u>	N =13 REC =18"	LL=40 PL=30 PP=2 00 tsf				
_							*				
-											
-					 M	26+100					
					-80-	REC =11"					
	fine to coarse grained, wet, gray a greenish gray, contains shell frag	and ments			0	17+22+31 N =53	w=17.0%				
» —	and lean clay lenses, strong HCl reaction.				85 []	REC =14"					
						100					
	gray, contains clayey sand pocket	IS.			∟ 	100 REC =6"					
	continued on next page										

Sc	hnabel	TEST BORING	Project: C	alvert Cliff alvert Cou	s Nucle nty, Ma	ar Pow ryland	er Plan	t	Borir Cont	ig Number: ract Number: 0	B-415
Schnal	bel Engineering	LOG							Shee	t: 4 of 4	felore della consistenza i la la seria
DEPTH (FT)	STRAT	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	DEPT	S/ H	AMPLING DATA	TESTS	REMARKS
				SM							
92.0 - - -	CLAYEY SAND wet, light gray, o and lean clay lay reaction.	, fine to coars contains ceme yers, modera	e grained, ented sand, le HCI	SC	27.3		 -95-	Ø	100/3" N =100/3" REC =4"		
-											
97.0 -	SILTY SAND fir	ne to coarse (arained	SM	22.3						
	moist, light gray	contains cer	nented								
98.7	reaction.	iragments, st			20.6			⊠	100/2"		
	BOTTOM OF BO	ORING @ 98	.7 FT.						N =100/2"		
									1120 -2		
Σ											
L.G.D.1 3/6/(
SCHNABE											
J & 400.GPJ											
06 SPI 30											
5120048 PL											
NG LOG U											
ESI BORI											

	SC	hnabel BORING	Project: Calv Calv	/ert Cliff: /ert Cou	s Nucle inty, Ma	ar Pow ryland	er Plant			Boring Contra	Number: ct Numbe	e r: 0612	B-416
S	ichnat	el Engineering LOG								Sheet:	1 of 4		
Во	ring C	ontractor: CONNELLY AND A	ASSOCIATES, II	NC.			(Gro	undwa	ater Obs	ervations		1
Во	ring F	FREDERICK, MAR oreman: T. Chew	YLAND		Enco	untere	<u>а</u>	Da 8/	ate /3	Time	Depth	Casing	Caved
Dri	lling N	lethod: Mud Rotary			LIICO			0,		NC-345674		- CDAY MADE	N° 1990.
Dri	lling E	quipment: Diedrich D-50 (ATC))										
Sc	hnabe	Representative: B. Bradfield											
Da	tes S	Started: 8/2/06 Finished: 8/3	3/06										
Lo	cation	Northing: 216084.5 ft Easting: 961596.34 ft											
Gr	ound \$	Surface Elevation: 86.2 (feet)											
DE (EPTH FT)	STRATA DESCRIPTI		CLASS.	ELEV. (FT)	WL	DEPTI	SA H		NG ATA	TEST	s	REMARKS
	-	SILTY SAND, fine to medium moist, light brown, contains wo fragments.	grained, ood	SM				M	1+2+2 N =4 REC =	13"		Di 1/	illed with 4 4 HSA to 45'
	-	Orangeish brown, trace grave	I.						5+5+6 N =11 REC =	18"			
8	4.5	POORLY GRADED SAND Wi fine to coarse grained, moist, l brown and orangeish brown, t gravel.	ITH SILT, S light race	SP-SM	81.7		- 5		4+4+6 N =10 REC =	16"	w=3.89	%	
	-	Slight banding of colors 1/4-1/	/2" thick.						4+7+7 N =14 REC =	17"			
	-								5+6+6 N =12 REC =	14"			
1	3.0 – – –	SILTY SAND, fine to medium moist, light orangeish brown a some iron staining visable.	grained, ind gray,	SM	73.2		 15		4+4+4 N =8 REC =	18"	w=13.0	%	
	-	Brown, colors are mottled.							2+1+1				
140 LLCG GL	-						-20-	Ň	N =2				
	2.0 -	SANDY FAT CLAY, moist, dan and greenish gray, contains m gray pockets of fine sand pres	rk gray nica, some sent <3/4".	СН	64.2				2+3+4 N =7	10"			
		continued on next page	e				-25-		REC =	10			

		TEST Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Boring Number:	B-416
	Schna	bel Engineering LOG	alvert Cou	nty, Ma	iryland		Contract Number: 0 Sheet: 2 of 4	6120048
	DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL		NG TESTS	REMARKS
		With sand, some clayey sand lenses	СН			 N =11	w=33.7% LL=58	
	- 32.0	LEAN CLAY with sand, moist, dark gray and greenish gray, contains mica.	CL	· 54.2			18" PL=17	
	- 37.0	FAT CLAY with sand, moist, dark gray and greenish gray, contains mica.	СН	· 49.2		35 A REC =	18"	
	- - 42.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, contains	SC	44.2			18"	
DT 3/6/08	- - -	sample.					w=25.6%	45'- Begin mud rotary with 2 15/16'' tri-cone roller bit
20 & 400.GPJ SCHNABEL.G		Moist, reddish brown and brownish gray, with cemented sand, weak cementation, impressions of shell fragments, highly oxidized zone.	SW	· 34.2		3+13+2 	21 18"	
ING LOG 06120048 PLOG SPT 30		moist, gray.				22+33- N =83/ -55- 	+50/3" 9" 13"	55'- Start of day 8/3/06
TEST BOR	-	continued on next page						

Γ	50	hnabel BORING	Project: C	alvert Cliff alvert Cou	s Nucle	ar Pow	er Plant	В	Boring Number:	B-416
4	Schna	bel Engineering LOG						S	heet: 3 of 4	
	DEPTH (FT)	STRATA DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLING	TESTS	REMARKS
	-	Wet, contains mica.		SM		Ā	 	41+35 +50/5.5" N =85/11. REC =16'	w=26.2%	
	62.0 - - - -	SANDY LEAN CLAY with silt gray and brownish white, trac cemented sand, 0-10% fine t shell fragments, moderate H moderate cementation, stron reaction at decomposed shel fragments.	, moist, æ o medium Cl reaction, g HCl I	CL	24.2		 	49+50/3" N =50/3" REC =8"		
	67.0 - - - -	CLAYEY SAND, fine to coars wet, light gray and gray, trace sand, 10-20% fine to medium fragments, strong HCI reactio moderate cementation, darke areas are similar to strata at the Light gray, with cemented sa fine to coarse shell fragments HCI reaction, strong cementa	e grained, e cemented n, shell on, er gray 55'. nd, 30-40% s, strong tion.	SC	19.2		 	13+16+42 N =58 REC =16'	2	
	72.0 -	POORLY GRADED SAND W fine to medium grained, wet, brownish white, 10-20% fine shell fragments, strong HCI r HCI reaction localized to she fragments.	/ITH CLAY, gray and to coarse eaction, I	SP-SC	14.2		 	6+8+10 N =18 REC =18'	w=29.5%	
EL.GDT 3/6/08	- - -	20-30% fine to coarse shell fi strong HCI reaction, HCI reac localized to shell fragments.	agments, tion				 	6+8+9 N =17 REC =15'		
8 PLOG SPT 300 & 400.GPJ SCHNABI	82.0 - - - - -	CLAYEY SAND, fine to medi grained, wet, gray, 0-10% fin shell fragments, moderate H HCl reaction localized to she fragments.	um e to coarse Cl reaction, I	SC	4.2		 85- 	4+5+8 N =13 REC =16'		
DRING LOG 0612004	-	0-10% fine to medium shell f moderate HCl reaction, HCl r localized to shell fragments.	agments, eaction				 0	5+4+7 N =11 REC =18'	w=33.5%	
LEST BC	-	continued on next pag	je							

	hashal	TEST	Project:	Calvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-416
Schnal	bel Engineering		Calvert Cou	inty, Ma	ryland			Contra Sheet:	ct Number: 06 4 of 4	6120048	
DEPTH (FT)	STRATA		ION	CLASS.	ELEV. (FT)	WL			IG TA	TESTS	REMARKS
	STRATA Light gray and w coarse shell frag sand, strong HCI cementation.	A DESCRIPT	fine to cemented ong 2, 20-30% 5, trace centre c	CLASS. SC	ELEV. (FT)	WL	Image: constraint of the second state of the second sta	SAMPLIN DA 24+17+ N =32 REC =' 10+9+1 N =20	IG NTA +15 14"	TESTS	REMARKS 93'- Harder drilling with rig chatter
3											

Sohr	chnabel TEST BORING	Project: (Calvert Calvert	Cliffs Cou	s Nucle nty, Ma	ar Pow Iryland	er Plai	nt		Boring Contra	Number:	er: 061	2004	B-417
Senna	iber Engineering LOG	l						<u> </u>		oneet:				
Boring	Contractor: CONNELLY AND	ASSOCIATE:	S, INC.				ì	GI(Junav	valer ODS	ervations	Casir	ac l	Cauad
Boring I	FREDERICK, MAR Foreman: T. Connelly				Enco	untere	d	ם 7.	/24		10.8'	uasir 	'y	
Drilling	Method: Mud Rotary				Start	of Day	,	7	/25		7.0'		+	
Drilling	Equipment: CME-550				oturi	or bu			20		7.0	-	_	
Schnab	el Representative: K. Bell													
Dates	Started: 7/24/06 Finished:	7/25/06												
Location	n: Northing: 216435.75 ft Easting: 961901.11 ft													
Ground	Surface Elevation: 49.2 (feet)													
DEPTH (FT)	STRATA DESCRIPT	ION	CLA	SS.	ELEV. (FT)	WL	DEP	S/ TH	AMPL C	ING DATA	TEST	s	R	EMARKS
0.5	ROOTMAT AND TOPSOIL.				48.7									
	SANDY LEAN CLAY, moist, I trace root fragments.	brown,		-				M	2+2+ N =6 REC	4 =8"				
	trace wood fragments, iron st	aining						-M	5+5+ N =10	5 0				
	-						 _		REC	=18"				
								M	1+2+ N =5 REC	3 =7"				
7.0					42.2				NLO	-1				
	to medium grained, moist, ye brown and orangeish brown, to coarse shell fragments, iro HCI reaction moderate.	ith silt, fine llowish trace fine n staining,	SP-9	SM				8	6+10 N =2 REC	+17 7 =16"			poss	ible fill
10.0 —	SANDY LEAN CLAY, moist, I	brown and	CI	-	39.2		-10-	М	3+7+	16				
10.8	reddish brown, trace root frag	ments.	SP-9	SM	38.4	l₹		-W	N =23 REC	3 =18"			etart	ofmud
12.0	to medium grained, wet, yello brown and orangeish brown.	ith silt, fine wish /	SP-	SC	37.2				C.C.	6			rotar	y drilling
-	POORLY GRADED SAND w fine to medium grained, wet, inch clay lenses throughout	ith clay, gray, 1/8th						Ш	N =12 REC	6 2 =11"				
14.5	FAT CLAY, moist, gray, trace	sand.	CH	4	34.7		-15-					1	color mud	tub from
ABEL								M	2+2+ N =4	2			oranı brow	geish 'n to gray
SCHN.							L.		REC	=18"				
GPJ							L		1+2+	2				
& 400.							Ľ	M	N =4 REC	=18"				
1 300							[onted cond
– Josep	trace fine to coarse shell frag	ments,					-20-	M	23+1	1+6			lense	enteu sand es
8 PLC	_ ∠-5%, HUI reaction weak							W	REC	′ =18"			Hard	er drilling
22.0 -	CLAYEY SAND, fine to media	um	s	2	27.2			$\left \right $					aiu	
00 0	grained, wet, gray and green	sh gray, ragments						-0	14+3 N =7	8+38 S				
0 I O	30-40%, strong cementation	, HCI					L .	<u> </u>	REC	=18"				
11 24.5 			SN	Λ	24.7		-25-							
TESTE	continued on next pag	ie												

	6	hpabol TEST	Project: (Calvert Cliffs	s Nucle	ar Pow	er Plant	В	oring Number:	B-417
	Schnat	bel Engineering LOG	G (Calvert Cou	nty, Ma	iryland		Co St	ontract Number: 0 neet: 2 of 4	6120048
	DEPTH (FT)	STRATA DESCRIF	PTION	CLASS.	ELEV. (FT)	WL	S. DEPTH	AMPLING	TESTS	REMARKS
	-	SILTY SAND, fine to mediu wet, gray and greenish gray fine to coarse shell fragmer strong cementation, HCI rea strong.	m grained, /, contains tts, 30-40%, action	SM			X	6+8+27 N =35 REC =18" 44+5+6 N =11 REC =18"		
	30.0 — - -	CLAYEY SAND, fine to mee grained, wet, gray and white fine to coarse shell fragmer HCI reaction moderate. gray and white	dium e, contains its, 20-30%,	SC	19.2			3+4+4 N =8 REC =18" 4+7+7 N =14 REC =18"		
	- - 37.0 -	SILTY SAND. fine to mediu	m arained.	SM	12.2			5+10+9 N =19 REC =16"		Rig chatter
	-	wet, gray and greenish gray to medium shell fragments, reaction weak.	, trace fine 5-10%, HCI					3+4+5 N =9 REC =18" 3+3+3 N =6 REC =18"		
08	-							2+3+3 N =6 REC =18" 2+2+3 N =5 REC =18"		
CPJ SCHNABEL.GDT 3/6/	47.0 - - -	SANDY SILT, wet, gray and gray, trace fine to medium s fragments, 2-5%, HCI reac greenish gray and white, co to coarse shell fragments, 4	l greenish shell tion weak. ntains fine i0-50%,	ML	2.2		 50	2+3+4 N =7 REC =18" 5+8+50/3" N =58/9"		
20048 PLOG SPT 300 & 400	52.0 - - -	strong cementation , HCl re strong. SILTY SAND, fine to mediu wet, greenish gray and whit fine to coarse shell fragmer strong cementation, HCl rea strong.	action m grained, e, contains its, 40-50%, action	SM	-2.8		 	REC =16" 6+10+44 N =54 REC =18"		
TEST BORING LOG 0612	-	contains fine to coarse shel continued on next p	l fragments, age				X X	8+14+20		resumed drilling on7/25/06 @ 7:00am

	6	TEST Project	t: Calvert Clif	fs Nucle	ar Pow	er Plant	Boring Number:	B-417
	Schnat	bel Engineering LOG	Calvert Cou	unty, Ma	aryland		Contract Number: 0 Sheet: 3 of 4	6120048
	DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL		IG TESTS	REMARKS
		10-20%, weak cementation , HCI reaction moderate	SM			N =34 N REC =	16"	
	_					-60-M 11+14-	+27	
	- 62.0 -			12.8		M REC =	18"	
	-	SANDY SILI, wet, greenish gray, contains fine to coarse shell fragmen 10-20%, HCI reaction moderate.	s, ML			4+6+10 N =16 REC =	18"	
	-					-65-4+7+14 	4 18"	
	67.0 - -	SILTY SAND, fine to medium grained wet, greenish gray, contains fine to coarse shell fragments, 10-20%, HC reaction moderate.	, SM	17.8			18"	
	70.0 —	SANDY SILT, wet, greenish gray, contains fine to coarse shell fragmen 10-20%, HCl reaction moderate.	s, ML	20.8			18"	
	72.0 -	ELASTIC SILT, moist, blueish gray, trace sand, trace fine to medium she fragments, 2-5%, HCI reaction weak	MH	22.8		6+7+10 6+7+10 N =17 REC =) 18"	
) 18"	
18	- 79.5			30.3		6+6+8 N =14 REC =	18"	
ABEL.GDT 3/6/0		SANDY SILT, moist, blueish gray, tra fine to medium shell fragments, 2-5% HCl reaction weak.	, ML) 18"	
00.GPJ SCHN	-			25.2		5+6+8 N =14 REC =	18"	
DG SPT 300 & 4		SILTY SAND, fine to medium grained moist, blueish gray, trace fine to medium shell fragments, 2-5%, HCI reaction weak.	, SM				18"	
OG 06120048 PLC	87.0 - - -	SANDY SILT, moist, blueish gray an white, contains fine to medium shell fragments, 10-20%, HCI reaction moderate.	I ML	37.8			4 18"	organic oder
TEST BORING L		trace fine to medium shell fragments 5-10%, HCI reaction weak <i>continued on next page</i>				N 5+6+9 N =15		

	hashal	TEST	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-417	
Schna		BORING	Calvert Cou	nty, Ma	ryland			Contra	act Number: 0	6120048	
DEDTH	Set Engineering								IG		
(FT)	STRAT	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH		TA	TESTS	REMARKS
				ML			Þ	REC =	18"		
92.0 -	ELASTIC SILT,	moist, greeni	sh gray,	МН	-42.8						
-	trace sand, trac fragments, 2-5%	e fine to medi %, HCI reactio	um shell on weak.				1)	5+7+9 N =16			
-		and, a a sawa a parananganan					Ľ	REC =	18"		
94.5	SANDY SILT, n	noist, greenisł	n gray,	ML	-45.3		-95				
_	2-5%, HCI read	dium shell fra ction weak.	gments,					N =15			
							Ľ	REC =	18"		
-											
	-)	N =14	101		
-	-						"	I REC =	18.		
	-						-100-	7 5+6+10)		
-	-)	N =16	10"		
101.5	BOTTOM OF B	ORING @ 10	1.5 FT.		-52.3		Ľ		10		
0											
00/0/0											
en											
ABEL											
400.4											
o nne											
LTC.											
20040											
100											
й Л											
1											

Schna	TEST Project: Ca BORING BORING Ca bel Engineering LOG	lvert Cli Ivert Cc	iffs Nuclea ounty, Ma	ar Pow ryland	ver Pla	nt	Boring Contra Sheet:	I Number: Act Number 1 of 7	: er: 06120	B-418
Boring						Ground	water Obs	ervations	;	
	MALAGA, NEW JERSEY					Date	Time	Depth	Casing	Caved
Boring F	Foreman: J. Blemings		Enco	untere	d	6/28		6.5'		
Drilling	Method: Mud Rotary Equipment: CME-750 (ATV)		Water	Readi	ng	7/6		10.5'		
Schnabe	el Representative: B. Bradfield									
Dates	Started: 6/28/06 Finished: 6/29/06									
Location	n: Northing: 216340.25 ft Easting: 961976.71 ft									
Ground	Surface Elevation: 43.7 (feet)									
DEPTH (FT)	STRATA DESCRIPTION	CLASS	6. ELEV. (FT)	WL	DEP	SAMP <u>TH </u>	ling Data	TEST	s	REMARKS
0.3	TOPSOIL.	SP-SN	43.4			M 8+8	+5			
- 2.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, brownish gray and orange, contains root fragments, weak limonitic comentation	SC	41.7		-		C =8"	07.0	1.5 wit bit	'- Mud rotary h 3 7/8'' drag
-	CLAYEY SAND, fine to coarse grained, moist, gray and orangeish brown.					- 4+3 N = REC	+4 7 C =13"	w=27.9	9%	
4.5	SILTY SAND, fine to medium grained, wet, orangeish brown and reddish brown.	SM	- 39.2		- 5 -	6+7	+8 15			
7.0 -			- 36.7	Ā			C =14"			
-	SILTY SAND, fine to medium, moist, gray.	SM			_		+3 7 C =14"	w=30.9 LL=N PL=N	9% P P	
	With sand.				[_10_]_		*		
-					-	3+2	+3 5			
-	-				-		2 =18"			
13.0 - - -	SANDY LEAN CLAY, fine to medium, moist, gray, contains mica.	CL	- 30.7		- - 	- - - - - - - - - - - - - - - - - - -	+5 9 C =18"	w=32.7 LL=49 PL=21	7% 9 2	
- 17.0 -			26.7							
-	fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, strong HCI reaction.	37-31	1		- - 20-	- - - - - - - - - - - - - - - - - - -	8+8 16 C =18"			
-						- -				
-	30-40% fine to coarse shell fragments, strong HCI reaction.					- 4+5 N = REC	+8 13 C =18"	w=25.2	2%	
	continued on next page						44 LEN			

	6	TEST P	Project: Ca	lvert Cliffs	s Nucle	ar Pow	er Plant	Boring	Number:	B-418
	Schna	bel Engineering LOG	Ca	Ivert Cou	nty, Ma	ryland		Contra Sheet:	ct Number: 06 2 of 7	6120048
ľ	DEPTH (FT)	STRATA DESCRIPTIO	N	CLASS.	ELEV. (FT)	WL	SAM DEPTH	IPLING DATA	TESTS	REMARKS
	- - - - - - - -	20-30% fine to coarse shell frag strong HCI reaction. 10-20% fine to coarse shell frag strong HCI reaction.	jments, jments,	SP-SM				+8+10 =18 EC =14"	w=28.4%	
	 42.0	Brownish, 0-10% fine to coarse fragments, weak HCI reaction.	shell		1.7		35[_] RE 	EC =15" ⊧1+2 =3 EC =18"		
GDT 3/6/08	- - - - -	CLAYEY SAND, fine to medium grained, wet, gray and brownish 30-40% fine to coarse shell frag strong HCI reaction.	n n white, gments,	SC			34 34 N RE 	+8+13 =21 EC =18"	w=27.4% *	47'- Grinding/ rig chatter
00 & 400.GPJ SCHNABEL	- - 52.0 -	White, 30-40% fine to coarse sh fragments, 40-50% cemented sa strong HCI reaction, strong cementation.	nell and,	SP-SC	-8.3		11 	I+13+18 =31 EC =18"		
LOG 06120048 PLOG SPT 3	- - -	fine to medium grained, wet, gra brownish white, 10-20% fine to i shell fragments, moderate HCI HCI reaction localized to shell fragments.	ay and medium reaction,	5, -50				⊧19+19 =38 EC =16"	w=23.3% *	
TEST BORING	57.0 -	SANDY SILT with clay, fine to m moist, gray, 10-20% fine to med <i>continued on next page</i>	nedium, dium	ML	-13.3					

	6	hpabel TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Borin	g Number:	B-418
	Schnal	bel Engineering LOG	с	alvert Cou	nty, Ma	ryland		Conti	act Number: 0 :: 3 of 7	6120048
	DEPTH	STRATA DESCRIPT		CLASS	ELEV.	WL	SA	MPLING	TESTS	REMARKS
	(FT)			01100.	(FT)		DEPTH	DATA		
	-	shell tragments, moderate H HCl reaction limited to shell f	Cl reaction, ragments.	ML			 	5+10+5 N =15 REC =18"		
	62.0 - - - -	SILTY SAND, fine to medium moist, gray, 0-10% fine to me fragments, weak HCI reaction reaction localized to shell frag	a grained, adium shell n, HCl gments.	SM	- 18.3		 	6+9+14 N =23 REC =18"	w=32.1%	
	67.0 - - - -	SANDY LEAN CLAY with silt medium, moist, greenish gra fine to medium shell fragmen HCI reaction, HCI reaction loo shell fragments.	, fine to y, 10-20% ts, weak calized to	CL	-23.3		 	5+9+9 N =18 REC =18"		
	72.0 - - - - -	CLAYEY SAND, fine to medi grained, wet, greenish gray, to medium shell fragments, w reaction.	um D-10% fine veak HCl	SC	-28.3		 	6+8+15 N =23 REC =18"	w=41.7%	
L.GDT 3/6/08	- - -	10-20% fine to medium shell moderate HCI reaction	fragments,				 	5+6+8 N =14 REC =18"		
PT 300 & 400.GPJ SCHNABE	82.0 - - -	SILTY SAND, fine to medium moist, greenish gray, 10-20% medium shell fragments, moo reaction.	a grained, o fine to derate HCI	SM	-38.3		 85-	10+13+10 N =23 REC =18"		
ORING LOG 06120048 PLOG S.	87.0 - - -	SANDY ELASTIC SILT with medium, moist, greenish gra fine to medium shell fragmen moderate HCI reaction.	clay, fine to y, 10-20% ts,	MH	-43.3		 	4+8+9 N =17 REC =18''	w=49.8% LL=76 PL=49 *	
FEST B		continued on next pag	<i>j</i> e							

	hnabel TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Boring	Number:	B-418
Schnal	bel Engineering LOG		alvert Cou	nty, Ma	ryland		Contra Sheet:	act Number: 06 4 of 7	6120048
DEPTH			CLASS	ELEV.	14/1	S	AMPLING	тгете	
(FT)	STRATA DESCRIP		CLASS.	(FT)	VVL	DEPTH	DATA	TESTS	REWARKS
	With sand, trace decayed or matter.	ganic	MH			 95	4+6+9 N =15 REC =18"		
97.0 - - - - - -	LEAN CLAY, fine to medium greenish gray, 10-20% fine to shell fragments, moderate H	, moist, o medium Cl reaction.	CL	-53.3		 100- - - 	4+6+9 N =15 REC =18"	w=36.7% LL=46 PL=25 *	
- - - 107.0 -		to modium	мы	-63.3		 - <u>105-</u> 	7+7+9 N =16 REC =18"		
- - -	MOIST ELASTIC SILT, fine moist, greenish gray.	to meaium,				 110	5+7+9 N =16 REC =18"	w=39.8% LL=55 PL=38 *	
112.0 - - - - -	FAT CLAY with sand, moist, gray.	greenish	СН	-68.3		 	7+8+10 N =18 REC =18"		
- - - -						 120- 	5+8+11 N =19 REC =18"		
	continued on next pa	ge					5+7+10	w=56.4%	

	hnabel DODING	Project: Calvert Cliffs	Nuclea	ar Pow	er Plant	Boring Number:	B-418
Schna	bel Engineering LOG	Calvert Cour	nty, Ma	ryland		Contract Number: 0 Sheet: 5 of 7	6120048
DEPTH	STRATA DESCRIPTIO	ON CLASS.	ELEV. (FT)	WL	SAMPLIN	NG TESTS	REMARKS
		СН	()		DEPTH DA	LL=106	
				,	_125_V REC =		
-							
-							
-						10	
1.00	weak HCl reaction.	gments,			N =23	18"	
_							
]]		
					8+8+12	1	
135.0 —			-91.3		N =19 REC =	6"	
-	greenish gray, 0-10% fine to me	edium MH					
-	shell fragments, weak not read						
-				,			
=					10+12- N =26	+14 w=64.4% LL=103	
					-140- 140 REC =	18" PL=63 *	140'- Start drilling on
-							6/29/06
-							
-							
-						18"	
145.0 —	FAT CLAY, moist, no shell fragr	ments. CH	-101.3		-145-10 11-0 -		
- 10							
					5+8+8	w=52.6%	
- deg					N =16 REC =	18" PL=27	
- 00 AU							
5 152.0 -	CLAYEY SAND fine to medium	n SC	-108.3				
- LOG	grained, moist, greenish gray, 1 fine to medium shell fragments,	10-20%					
- 1040	HCl reaction.				7+13+2 N =34	21	
<mark>س _</mark>					-155-11 REC =	14"	
	continued on next page						

Γ	6	hnahal	TEST	Project:	alvert Cliff	s Nucle	ar Pow	ver Plant	E	Boring Number:	B-418
	Schnat		BORING LOG		Calvert Cou	inty, Ma	iryland		C	Contract Number: (06120048
E	DEDTH	, and a second						s			
	(FT)	STRAT	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH		A TESTS	REMARKS
					SC						
	-							╞╶┤_			
	-							F -1M	4+8+16 N =24		
	_							_ ₁₆₀ _Ω	REC =18	,n l	
	-										
	162.0 -		andan dalambat tinan dalam di			-118.3					
		SANDY ELASTI moist, greenish g	C SILT, fine f gray.	o medium,	MH						
									4+8+15		
	-							F 1 X	N =23		
	_							-165-L	REC - 10	2	
	-										
	-										
	_										
	_	With sand.						M	3+6+9	w=57.3%	
	_							\lfloor_{170}	N =15 REC =18	" PL=49	
								[]			
	-	fine to medium,	moist, green	ish gray.							
	-										
	-							F -1M	7+9+15 N =24		
								_ ₁₇₅ _Δ	REC =18	,	
	_										
	_										
	_										
80/9		With sand, 0-10 ^o	% fine to med	lium shell					8+10+13		
0T 3/6		fragments, weak	HCI reaction	۱.				[]X	N =23	,u	
EL.G	_										
HNAB	-										
n sci	-										
00.GF	-										
0 & 4	_							M	6+9+11	w=56.7%	
PT 30	_							L ₁₈₅ _0	REC =18	" PL=60	
S 90											
048 PL	1										
1200	-							[]			
000	-										
ING L	-	No shell fragmer	nts.					F -1M	7+9+13 N =22		
BOR	_	continu	ed on next pac	ie.				_ ₁₉₀ _ ∐	REC =18	,	
EV.		conana	sa on non pay	-							

	hnahol	TEST	Project: Ca	alvert Cliffs	s Nucle	ar Pow	er Plant	E	Boring Number:	B-418
Schna	Chnabel Engineering LOG			alvert Cou	nty, Ma	ryland		S	Contract Number: 0 Sheet: 7 of 7	6120048
DEPTH (FT)	STRA	TA DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH		TESTS	REMARKS
-				MH			 	5+6+10 N =16 REC =18	μ I	
- 200.0 —	BOTTOM OF E	30RING @ 20	0.0 FT.		-156.3			6+7+9 N =16 REC =18	w=66.5% LL=109 PL=71 *	

Schnal	TEST Project: 0	Calvert C Calvert C	Cliffs Nucle County, Ma	ar Pow ryland	/er Pla	nt		Boring Contra Sheet:	Number: ct Number 1 of 4	e r: 0612	B-419
						Gro	oundw	ater Obs	ervations		
Boring C	Contractor: UNI-TECH DRILLING MALAGA, NEW JERSEY]	D	ate	Time	Depth	Casino	Caved
Boring F	oreman: J. Blemings		Enco	untere	d	6	\$/5		15.0'	20.0'	
Drilling I Drilling I	Method: Mud Rotary Equipment: CME-750 (ATV)	Γ	Start	of Da	у	e	6/6		30.0'	20.0'	
Schnabe	el Representative: M. Arles	[
Dates	Started: 6/5/06 Finished: 6/6/06										
Location	: Northing: 216267.83 ft Easting: 961895.6 ft	ŀ									
Ground	Surface Elevation: 55.3 (feet)										
DEPTH (FT)	STRATA DESCRIPTION	CLAS	SS. ELEV. (FT)	WL	DEP	S/ ТН	AMPLI D	ING ATA	TEST	s	REMARKS
0.5	Crushed Stone		54.8			M	5+8+	5		0- ct	20' Hollow
-	Clayey sand FILL, fine to coarse grained, moist, yellow, with gravel.	FILL	-		-	-Ŵ	N =13 REC :	3 =6"		50	en augers
2.0 -	Lean clay FILL, moist, orange, with	FILL	- 53.3		F .	ᅰ					
-	sand.					HXII	2+1+\ N =1	мон			
-							REC	=4"			
					- 5 -						
					L	TXI	N = V	/18" /OH/18"			
						Ш	REC	=0''			
	fine to coarse sandy, wet.]_[1+WC)H+2			
8.3	Clayey Sand PROBABLE FILL, fine to	FILL	- 47.0			Ŵ	N =2 REC :	=12"			
	coarse grained, moist, gray, contains wood fragments.				Γ			(10) (m) (3)			
					H 10-			_			
- 11.0			42.7			HXII	2+2+3 N =5	3			
- 11.6	Sandy lean clay PROBABLE FILL,	FILL	- 43.7				REC	=18"			
-	moist, gray, contains wood ragments.					4					
g 13.5	SANDY LEAN CLAY, fine to coarse,	CL	41.8		L.		3+3+{	5			
õ	moist, gray.			∇	45	Ŵ	N =8 REC :	=18"			
					– ^{15–}			100100			
						1					
17.0 -	POORLY GRADED SAND fine to	SP	38.3			+					
-	medium grained, moist, orange and				-	+					
× -	gray, 176-174 color changes.				L.		10+20	0+12			
-						Ŵ	N =32 REC :	2 =18"		2	15/16" Drag
					F ²⁰⁻					bi	t
						1					
-											
	wet, yellowish gray.				L.		7+1+1	1			
						M	N =2 REC	=6"			
	continued on next page				-25-			v			
Ľ											

	6	hashal TEST	Project: Ca	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-419
	Schnal	bel Engineering LOG	Ca	alvert Cou	nty, Ma	ryland			Contrac Sheet:	t Number: 06	6120048
	DEPTH				ELEV.		ę		G	75070	
	(FT)	STRATA DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DA	ТА	TESTS	REMARKS
				SP							
	-										
	-										
	-										28.5' Harder
	-							50/0" N =50/0	ր։		drilling 28.5'-100' 4
							-30-	REC =0	"		1/4" roller bit
	-										
	32.0 -	CILITY CAND fine to coorce	arcined	CM	23.3						
	-	moist, grayish green, with fine	e to coarse	SIVI							
	_	snell fragments, contains cen sand, strong HCI reaction, 35	-45% shell				10	17+20+	13		
		frag.					_ ₃₅ _Ľ	N =33 REC =1	8"		
	_										
	-						- 1				
		aroon						4.7.0			
	-	green					X	N =16			
	. <u> </u>						-40- 1 -		°		
	-										
	-										
	-										
	-	fine to medium grained, wet, cemented sand.	contains				10	32+12+ N =19	7		
							45/	REC =1	4"		
	-										
3/6/08	-										
GDT	-										
ABEL.	_	trace fine to medium shell fra	gments,				10	4+4+6			
SCHN	_	frag.	% shell				_ ₅₀ _/	REC =1	8"		
GPJ.											
& 400	_										
оо Т ^с											
OG SF	-										53.5' Pushed tube
148 PL	-						1				
)6120C	_						-55-				
0 00-	-										
RING L	-										
IT BOF	-	continued on next pag	<i>je</i>								
TES											

	6	hnahal	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-419
	2C	maper	BORING	с	alvert Cou	nty, Ma	ryland			Contra	ct Number: 0	6120048
	Schnat	el Engineering	LOG		1					Sneet:	3 01 4	
	EPTH (FT)	STRAT	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	DEPTH		g Ta	TESTS	REMARKS
					SM							
	-	moist, greenish coarse shell frac	white, with fir iments. conta	ne to ains				F -IM	11+10+4 N =53	43		
	_	cemented sand,	strong HCI r	eaction,				_ ₆₀ _И	REC =1	8"		
		35-45% shell fra	g.									
	1											
	-											63' Rig chatter
	_							M	8+13+2	1		
								$\lfloor_{65} \rfloor$	REC =1	8"		
	-											
	-											
	-											
	_	25-30% shell fra	g.					M	6+7+12			
	_							$\lfloor_{70} \rfloor$	N =19 REC =1	8"		
	-											
	-											
	_							L -M	4+5+9			
								Ŵ	N =14 REC =1	8"		
Ϋ́Ω	77.0 -	SANDY SILT fir	ne to medium	moist	ML	-21.7						
	_	green, trace fine	to medium s	hell								
	_	shell frag.		n, 0-3%				L IM	6+9+13			
80/								M	N =22 REC =1	8"		
9/6										-		
L.GU	-											
NABE	-											
SCH	_											
GPJ		with clay, weak l	HCI reaction,	0-5% shell				L JM	5+8+8			
400.		frag.						r - TXI	N =16	Q"		
200	_							-85-1		0		
22	-											
HLOC	_											
0048	_											
06120	83.	moderate HCI re	eaction. 0-109	% shell					5+8+12			
00	1	frag.						[]X	N =20	8"		
1.9NIX	-							<u>⊢90</u>		U		
БЧ С	-	continu	ed on next ner	1e								
3		conditu	ou on next pay	~								

	Schnabel Engineering			alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-419
Schna	Children BORING LOG Innabel Engineering LOG ITH STRATA DESCRIPTION			Calvert Cou	nty, Ma	ryland			Contra Sheet	act Number: 06	6120048
DEPTH	Set Engineering				FLEV			SAMPLI	I Glieet.		
(FT)	STRAT	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	I D4	ATA	TESTS	REMARKS
				ML							
92.0 -	SILTY SAND, fi	ine to medium	grained,	SM	-36.7						
	fragments, stro	ng HCl reactio	n, 35-45%					_			
-	shell frag.						}	6+11+ N =24	13		
_	-						_95_K	REC =	18"		
-	-										
-	-										
_	-										
_	-						10	7 4+6+9			
100.0					-44.7			N =15 REC =	18"		
100.0	BOTTOM OF B	ORING @ 10	0.0 FT.		-11.7						
00/04											
1											
ADEL.											
649											
x 400.											
nne -											
200											
1200											
5											
YO9											
2											

Schna	TEST Project: Ca bel Engineering LOG Ca	alvert Clif alvert Cou	fs Nucle unty, Ma	ar Pow ryland	ver Pla	nt	Boring Contra Sheet:	Number: Ict Number 1 of 5	er: 061200	B-420
Boring (Contractor: UNI-TECH DRILLING					Groundv	vater Obs	ervations		
2011.9	MALAGA, NEW JERSEY					Date	Time	Depth	Casing	Caved
Boring F	oreman: J. Evans		Enco	untere	d	6/6		24.0'		
Drilling	Method: Mud Rotary Fauloment: Failing-1500 (Truck)		Start	of day	y	6/7		15.0'		
Schnabe	Representative: K. Megginson / B. Bradfield									
Dates	Started: 6/6/06 Finished: 6/7/06									
Location	n: Northing: 216213.53 ft Easting: 961670.44 ft									
Ground	Surface Elevation: 62.6 (feet)									
DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	DEP	SAMPL TH [ING DATA	TEST	S F	REMARKS
0.5	Crushed stone FILL, moist, brown and dark gray, contains fine to coarse sandy silt pockets.	FILL FILL	62.1			N =1 REC	7 1 =6"	w=17.2 LL=52 PL=2	2% 2 1	
2.0 -	Fat clay PROBABLE FILL, moist, yellowish brown and light gray, with fine to medium sand, trace mica, contains root fragments.	СН	- 60.6			2+3+ N =6 REC	3 =16"	w=28.6 LL=68 PL=2: *	5% 3 3	
-	orangeish brown and light gray, trace fine to medium sand, contains iron oxide stained pockets (1/8 inch) and root fragments.				- 5 -	2+3+ N =7 REC	4 =18"	w=29.7 LL=64 PL=22	7% 4 2	
-	light gray and dark yellowish brown.					2+2+ N =5 REC	3 =18"	w=38.3 LL=7 PL=1 *	3% 1 9	
-	light gray, dark yellowish brown and dark orangeish brown gray, trace mica and organic matter (±1%) below 11 ft.					3+4+ N =1 REC	7 1 =18"			
-	contains fine to medium sandy fat clay pockets.				- 	4+5+ N =1: REC	8 3 =18"	w=42.1 LL=74 PL=3 *	% 4 1	
- - - -	gray and dark gray, contains fat clay with sand pockets.				- - 20-	7+8+ N =1 REC	9 7 =18"	w=28.6 *	5%	
22.0 -	SANDY SILT, fine to medium grained, moist, yellowish brown and dark orangeish brown, contains moderately cemented sand pockets.	ML	40.6	¥		- - -∭ 5+17	+37	w=24.4	1%	
	POORLY GRADED SAND WITH SILT,	SP-SM			-25-	N =54 REC	4 =16''	PL=N	P	
	continued on next page									

		TEST Project	Calv	ert Cliffs	Nucle	ar Pow	er Plant		Boring	y Number:	B-420
	Schna	bel Engineering LOG	Calv	ert Cou	nty, Ma	ryland			Contra Sheet:	act Number: 06	6120048
	DEPTH	STRATA DESCRIPTION	с	LASS.	ELEV.	WL		SAMPLI	NG	TESTS	REMARKS
	(F1)	fine to modium project wat brown on	4 0	DOM	(F1)		DEPTH		ATA	*	
	-	yellowish brown, contains black		P-5M							
	-	particles.									
	_										
	_	contains iron oxidized zone from 28.5	o					50			
	_	28.6 ft					_30_	REC =	:5"		
							50				
	22.0				20.0						
	32.0 -	SILTY SAND, fine to medium grained,		SM	30.6						
	-	wet, dant gray.					- 7	7 26+31	+22	w=24.2%	
	-							N =53	:16"	*	
							-35-Ľ		10		*Very to
	-										extremely difficult rotary
	37.0 -	LEAN CLAY with sand, fine to medium	t l	CL	25.6						advancement from 37 to 38.5
	-	medium shell fragments (±5%), weak								w=20%	ft (slow rotary advancement).
	-	HCI reaction.)	N =65	+50/3" /9"	LL=30	Difficult rotary advancement
	-	coarse shell fragments (±5%), contains	5 .1				-40- Ľ	- REC =	:16"	*	may be in part be due to using
	-	reaction below 39.3 ft									drag bit. *Difficult to very
	-										difficult rotary advancement
	43.5				19.1					00.5%	from 38.5 to 39.5 ft.
		SILTY SAND, fine to medium grained, wet, gray, trace fine to coarse shell		SM	10.1)	/ 5+8+1 N =19	1	w=26.5%	*Difficult to very difficult rotary
	_	fragments (±5%), weak HCl reaction.					_45_/	REC =	=18"		advancement from 42.5 to
	-										43.5 ft (slight to moderate rig
3/6/08	-										chatter).
GDT											
VABEL	-	dark gray, little fine to coarse shell fragments (+15%)						7 10+12	+12	w=28.4% *	
SCH	_	indginients (11070).					_50_	REC =	-18"		
0.GPJ	-										
0 & 40	-										
SPT 30	_										
S DOT	-	gray, trace fine to coarse shell						7 5+5+8	1	w=28.0%	
0048 P	_	tragments (±5%), very weak HCl reaction.					_55_	N =13 REC =	-18"		
0612(_										
5LOG											
ORING	_										
TEST B	_	continued on next page									

		test	Project: Ca	alvert Cliff	s Nucle	ar Pow	er Plant	В	oring Number:	B-420
	Schna	bel Engineering LOG		alvert Cou	nty, Ma	aryland		C S	ontract Number: 0 heet: 3 of 5	6120048
	DEPTH (FT)	STRATA DESCRIPT	TION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLING	TESTS	REMARKS
	-	trace fine to medium shell fra (±<5%).	gments	SM			 	3+4+5 N =9 REC =18'	w=34.9%	
	62.0 - - - -	CLAYEY SAND, few fine to c fragments (±10%), strong HC moist, olive gray.	coarse shell I reaction,	SC	0.6		 65	REC =24'	w=28.3% LL=49 PL=11 *	*Osterberg sampler tube push *Slight to moderate rotary resistance from
	67.0 - - - -	SILTY SAND, light greenish g mostly fine to coarse shell fra (±50%), contains strongly cer sand pockets (1 inch), clayey pockets and shark teeth.	gray, agments mented ⁄ sand	SM	-4.4		 - 70_	20+20+32 N =52 REC =18'	2 w=16.8%	66 to 68.5 ft.
		gray, trace fine to coarse she fragments (±5%). fine to medium grained, wet, fine to medium shell fragmen and mica, moderate HCI read	ell gray, trace ts (±1%) ction.				 	5+11+12 N =23 REC =16'	w=24.4%	
ABEL.GDT 3/6/08	-	moist, gray and light greenish trace fine to coarse shell frag (±5%), weak HCl reaction.	n gray, ments				 - 80- 	10+14+16 N =30 REC =18'	5 w=26.2% LL=48 PL=32 *	**Resumed drilling at 7:00 AM on 6/7/06.
SPT 300 & 400.GPJ SCHN/	- 83.5 - -	SANDY ELASTIC SILT, trace medium shell fragments (±<5 green.	e fine to 5%), dark	MH	20.9		 85	5+9+13 N =22 REC =18'	w=47.3% LL=60 PL=39 *	
JRING LOG 06120048 PLOG	87.0 - - -	FAT CLAY, moist, light greer trace fine to medium sand an and fine to medium shell frag (±1%), weak HCl reaction.	nish gray, Id mica, ments	СН	-24.4		 _ 90_	7+10+12 N =22 REC =18'	w=55.3% LL=90 PL=35 *	
rest bo	-	continued on next pag	<i>ge</i>							

		hnabal	TEST	Project: C	alvert Cliffs	s Nucle	ar Pow	er Plant		Boring	Number:	B-420
	Schna	bel Engineering	BORING LOG	с	alvert Cou	nty, Ma	ryland			Contra Sheet:	ct Number: 00 4 of 5	6120048
	DEPTH (FT)	STRATA	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	DEPTH	SAMPLIN		TESTS	REMARKS
	- - -	fine to medium s HCl reaction (hig	andy, gray, v jh percentage	ery weak e of sand).	СН			 95	7+12+' N =31 REC =	19 12''	w=39.4% *	
	- 98.5 - - -	SANDY SILT, we shell fragments (reaction.	et, trace fine (±5%), weak	to medium HCI	ML	-35.9		 [-100- 	5+7+12 N =19 REC =	2 18"	w=34.8% LL=49 PL=30 *	
	- 103.5 - -	SILTY SAND, m coarse shell frag HCI reaction.	oist, gray, tra ments (±5%)	ce fine to , moderate	SM	-40.9		 [-105- 	6+10+ [,] N =29 REC =	19 18"	w=38.5% LL=57 PL=42 *	
	- 108.5 - -	SANDY ELASTI gray	C SILT, with	shells,	MH	-45.9		 [110- 	7+10+ ² N =24 REC =	14 18''	w=46.4% LL=80 PL=51 *	
PJ SCHNABEL GDT 3/6/08	- 113.5 - -	FAT CLAY, gree trace fine to meo indurated lean cl	enish gray and lium sand, co lay pockets.	d gray, ontains	СН	-50.9		 115- 	7+8+12 N =20 REC =	2 18"	w=64.9% LL=118 PL=38 *	
06120048 PLOG SPT 300 & 400.G	- 118.5 - -	SANDY ELASTI fine to medium s reaction.	C SILT, dark and, modera	gray, with te HCl	MH	-55.9		 - 120- -	7+9+1 N =24 REC =	5 18"	w=41.6% LL=65 PL=40 *	
TEST BORING LOG	123.5 -	SANDY FAT CL	AY, dark gree ed on next pag	enish gray, e	СН	-60.9		 Ø	5+7+10	0	w=47.5%	

	test	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-420
Schnal	bel Engineering LOG		alvert Cou	inty, Ma	iryland			Contra Sheet:	act Number: 06 5 of 5	6120048
DEPTH (FT)	STRATA DESCRIP	FION	CLASS.	ELEV. (FT)	WL	S DEPTH		IG TA	TESTS	REMARKS
	very weak HCl reaction.		СН			125	N =17 REC ='	18"	LL=83 PL=29	
									*	
127.0 -				-64.4						
	reaction.	ak HCI	ОН							*Osterberg sampler tube
-							REC =2	22"	w=39.0% LL=59	push from 128.5 to 130.3
-						-130-			PL=34 PP=4.00 tsf *	π
-										
-										
133.5	ELASTIC SILT, moist, dark g	Ireenish	мн	-70.9			7+9+11		w=73.4%	
_	gray, trace fine to medium sa mica.	and, and				<u>135</u>	N =20 REC ='	18"	PL=75	
-										
-										
-							 		w-78.8%	
						X	7+9+11 N =20 REC =1	18"	LL=145 PL=76	
						140 _			*	
-	fine to medium shell fragme moderate HCl reaction.	nts,								
						17	7+8+11 N =19		w=58.9% LL=107	
_						_145_[/]	REC =	18"	PL=56 *	
- 10										
	weak HCl reaction, blocky.									
						$[]_{\square}$	7+12+1	2	w=74.2%	
150.0 -				-87.4		_ ₁₅₀	N =24 REC =1	18"	PL=100	
00 & 40	BOTTOM OF BORING @ 1	0.0 F I.								
40 FLQ										
DAIN										

SC	hnabel BORING	Project: C	alvert C alvert C	liffs Nucle county, Ma	ar Pow ryland	ver Pla	nt	Boring	Number: ct Numbe	er: 061200	B-421
Schnal	bel Engineering LOG		,					Sheet:	1 of 5		
Boring C	Contractor: CONNELLY AND	ASSOCIATES	, INC.				Groun	dwater Obs	ervations		
	FREDERICK, MAI	RYLAND					Date	Time	Depth	Casing	Caved
Boring F	oreman: D. Reese			Enco	untere	d	5/10		33.8'	3.5'	
Drilling	Equipment: CME 75 (Truck)			Start	of day	y	5/11		11.5'	3.5'	
Schnabe	el Representative: M. Arles		F								
Dates	Started: 5/10/06 Finished:	5/11/06	F								
Location	Northing: 216497.56 ft Easting: 961019.77 ft		╞								
Ground	Surface Elevation: 115.6 (feet)		F								
DEPTH (FT)	STRATA DESCRIPT	TION	CLAS	s. ELEV. (FT)	WL	DEP	SAM TH	PLING DATA	TEST	S F	REMARKS
0.3	ROOTMAT AND TOPSOIL.		SP-SM	115.3			M 1+	3+2	w=11.6	5%	
-	POORLY GRADED SAND V fine to medium grained, mois contains root fragments.	/ITH SILT, at, brown,	001					=5 EC =10''			
-								3+3 =6 =C =14"	w=14.8 *	%	
4.5			2.0			F 1					
	CLAYEY SAND, fine to medi grained, moist, brown.	um	SC			- 5 -		2+2 =4	w=11.9 *	9%	
70				109.6		L.		-C =12"			
7.0 -	SILTY SAND, fine to medium moist, yellowish brown.	n grained,	SM	100.0		-		2+2 =4 EC =12"	w=7.6' *	%	
				105.1		-10-		1.69 (1.69)			
10.5 -	POORLY GRADED SAND, t tan yellow	race silt,	SP	105.1				7+7 =14 EC =16"	w=11.8 LL=NI PL=NI *	9% 5 P	
- 000	fine to coarse grained.					- - 15-		+10+18 =28 EC =12"	w=9.2'	%	
	-			97.1						24	
	WELL GRADED SAND WITI trace gravel, light brown, con thick clay lenses.	⊣ SILT, tains 1/8"	SW-SI	M		- 20-		8+8 =16 EC =12"	w=9.4` *	/0	
-											
23.0 -	SILTY SAND, light brown		SM	92.1		-	-	13+14 =27 =C =14"	w=11.C LL=NI PL=N	9% 5 P	
	continued on next pag	ge				-25-					

		hnabal	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	I	Boring	Number:	B-421
	Schna	bel Engineering		c c	alvert Cou	nty, Ma	ryland		0	Contra	ct Number: 06	6120048
	DEPTH					ELEV.		s				
	(FT)	STRAT	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DAT	A	TESTS	REMARKS
					SM						*	
	-	-						- 1				
	27.0 -	POORLY GRAD	DED SAND W	ITH SILT,	SP-SM	88.6						
	-	fine to coarse g	rained, wet, o	range.								
	-	-						∏	10+14+1	5	w=15.6%	
	_	-						_ ₃₀	REC =10) ^u		
	-	-										
	-											
	-						∇		21111			
	-	wet.					-	F 1 X	N =2			
	-	-						_ ₃₅ _[1]	REC =18			
	-	-										
	-	-										
	-	-										
									4+6+5		w=17.3%	
	_							L ₄₀ _Ň	N =11 REC =14	ա		
								40				
	-											
	42.0	SANDY ELAST	IC SILT, mois	t, mottled	мн	73.6						
	-	white and orang	le.								04 504	
	-	-						M	WOH+W +1	юн	W=31.5% *	
	-	-						_ ₄₅ _[]	N =1 REC =18	ջս		
		-										
/6/08	47.0 -					68.6						
SDT 3	(2907 Å 77	SANDY FAT CL	.AY, moist, da	ark gray.	СН	and the second second						
BEL.G	7								REC =24	ա	w=28.8%	
CHNA	-								a secolar de l		LL=50 PL=18	
PJ S(-	1						-50-			*	
400.G	-	1										
300 &	-	1										
SPT ;	-	-										
PLOG	-	-						M	3+3+4 N =7		w=29.6% PP=1.00 tsf	
0048	_	4						_ ₅₅ _∐	REC =18	8"	*	
0612	-											
5LOG	-											
ORING	-											
ST BC	-	continu	ued on next pag	le				[]				
끹												

	6	hnabol TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Boring	Number:	B-421
	Schnat	Del Engineering LOG		alvert Cou	nty, Ma	ryland		Contra Sheet:	ct Number: 06 3 of 5	6120048
ŀ	DEPTH (FT)	STRATA DESCRIP	TION	CLASS.	ELEV. (FT)	WL			TESTS	REMARKS
	-			СН			R E	EC =24"	w=34.2% LL=78 PL=32 PP=1.50 tsf	
	-						 3+	4+5 =9 =0 _ 18"	w=28.6% PP=2.50 tsf	
	 67.0 - -	SILTY SAND, fine to mediur moist, greenish gray.	n grained,	SM	48.6		65 L3 \\. 4+	-5+5 =10	w=22.2%	
							₇₀ V RE X 50	EC =18" //4" =50/4"	w=24.9% *	
/6/08							75 RE 11 80 RE	EC =6" +11+45 =56 EC =14"	w=19.7% *	
T 300 & 400.GPJ SCHNABEL.GDT 3		with fine to medium shell fra (10%).	gments				 [20] 50 N RE)/4" =50/4" EC =4"	w=20.5%	
ST BORING LOG 06120048 PLOG SP		wet, greenish white, with find shell fragments (25-30%), H continued on next pa	e to coarse Cl reaction. <i>ge</i>				 	2+26+29 =55 EC =18"	w=26% *	

		hnabol	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-421
	Schna	bel Engineering	LOG	с с	alvert Cou	nty, Ma	iryland			Contra Sheet:	ct Number: 06 4 of 5	6120048
	DEPTH (FT)	STRATA	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH		G FA	TESTS	REMARKS
ľ					SM							
	92.0	POORLY GRAD	ED SAND W	ITH CLAY,	SP-SC	23.6						
		gray, with fine to	medium she	t, greenisn II							w=20.7%	
		fragments (20-30	0%), HCI read	ction.				M	6+8+50 N =58		LL=NP	
	-	contains cement medium shell fra	ed sand, with gments (10-2	n fine to 20%), HCl				_ ₉₅ _[/]	REC =18	8"	PL=NP *	
		reaction.	Contractioners Contraction	nozol zacio k uk ka ka bosha								
	97.0				SP-SM	18.6						
		fine to medium g	rained, mois	t, green,								
		(10-20%).	ie enten nugn					M	6+6+8 N =14		w=28.4%	
	-	-						_ ₁₀₀	REC =1	8"		
		-										
	102.0			unaine al	CM	13.6						
		moist, green, wit	h fine to coar	se shell								
		liagments (20-40	5 %), FICITEA					M	10+8+8		w=26%	
	-	-						_ ₁₀₅	REC =18	8"		
		-										
		-										
		-										
		-						M	6+6+7		w=26.1%	
	-	-						_ ₁₁₀	REC =18	8"	PL=NP	
		-										
		-										
8/6/08		-										
GDT 3		-						M	3+3+5		w=31.7%	
IABEL.	-	-						_ ₁₁₅	REC =18	8"		
SCHN		-										
0.GPJ		-										
0 & 40		-										
SPT 30	118.5	SANDY SILT, gr	een, with fine	e to coarse	ML	-2.9		M	10+8+9		w=27.8% LL=NP	
DOJ	-	snen nayments (,∠0-30 <i>%</i>), ⊓C	n reaction.				_ ₁₂₀	REC =18	8"	PL=NP	
20048		-										
3 061		-										
NG LOC												
BORIN		-	od on not no	10				🖂	50/4"			
TEST		continue	eu on next pag									

	6	hnabel	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		j	Boring	Number:	B-421
	Schnat		BORING LOG	C	alvert Cou	nty, Ma	ryland				Contra Sheet:	ct Number: 06	6120048
		STRATA	DESCRIPT	ION	CLASS.	ELEV.	WL		SA	AMPLINC	G	TESTS	REMARKS
	(FI)				MI	(Г)		DEPTI	H	DAT	A		
	_							-125-		REC =0"			
	=												
	-												
	-												
	_								∇	10+11+1	3	w=22.0%	
	_							-130-	ΔĮ	N =24 REC =18	3"		
	_												
	_												
	_												
	133.5	SILTY SAND, da	ark green, tra	ce fine to	SM	-17.9			∇	7+13+14	ŧ.	w=29.0%	
	_	coarse shell frag	ments (0-5%).				_135_	Ň	N =27 REC =18	3"		
	_												
	138.5	SANDY FAT CL	AY, dark grav	1	СН	-22.9				4+6+8		w=38.5%	
			,						XI	N =14 REC =18	3"	LL=53 PL=25	
								-140				*	
	440.0					00.4							
	142.0 -	SILTY SAND, fir moist, dark gree	ne to medium n. trace fine t	grained, o medium	SM	-20.4		- 1					
	_	shell fragments ((0-5%), HCl r	eaction.						6+7+8		w=46.8%	
	_								XI	N =15 REC =18	3"	*	
/08	_							-145-					
DT 3/6	_												
BEL.GI	-												
CHNAE	_									6+6+8		w=47.4%	
SL S	-								XI	N =14 REC =18	איי	*	
\$ 400.0	150.0 —	BOTTOM OF BO	DRING @ 15	D.0 FT.		-34.4		-150-1		NEO N	5		
T 300 8													
DG SP													
48 PLC													
61200													
0 90-													
RING I													
ST BO													
μ													

	-	hpabol TEST	Project: C	alvert (Cliffs	s Nucle	ar Pow	er Pla	nt		Boring	Number:		B-422
s	chnal	bel Engineering LOG	C	alvert (Cou	nty, Ma	ryland				Contra Sheet:	ct Number 1 of 4	e r: 06120	048
Во	rina C	ontractor: CONNELLY AND AS	SSOCIATES	. INC.					Gro	ound	vater Obs	ervations		
	j -	FREDERICK, MARY	/LAND	,					D	ate	Time	Depth	Casing	Caved
Bo	ring F Ilina I	oreman: D. Bender				Enco	untere	d	5	5/4		Dry		
Dri	llina F	Equipment: CME-550												
Sc	hnabe	I Representative: K. Bell		Ī										
Da	tes s	Started: 5/4/06 Finished: 5/4/	/06	ľ										
Lo	cation	Northing: 216478.23 ft Easting: 960915.01 ft												
Gr	ound	Surface Elevation: 104.0 (feet)												
DE (PTH FT)	STRATA DESCRIPTIC	ON	CLAS	SS.	ELEV. (FT)	WL	DEP	S/ TH	AMPL C	ING DATA	TEST	s I	REMARKS
3	0.3	TOPSOIL.		SM	1	103.7			М	1+2+	1			
	-	SILTY SAND, fine to coarse gramoist, brown and orangeish bro trace root fragments.	ained, own,						Ĭ	N =3 REC	=14"			
2	2.5 -	LEAN CLAY with sand, moist, I	brown,	CL		101.5			-M	2+1+	2			
	_	fragments.	ba						Δ	REC	=14"			
	_	yellowish brown, trace root frag	gments.					- 5 -	M	2+3+ N =7	4			
	-									REC	=18"			
	7.5	SILTY SAND, fine to coarse gr	ained,	SM	1	96.5		L .		6+6+	8			
		moist, yellowish brown, trace ro fragments.	oot						Ň	N =1 REC	4 =18"			
											90 - 1930-			
	_									5+7+	9			
	-								Ň	N =10 REC	6 =13"			
	_													
1	3.5	POORLY GRADED SAND WIT	TH CLAY,	SP-S	sc	90.5				6+8+	9			
2	_	fine to coarse grained, moist, o and brownish white, trace grav	orange rel.					-15-	Ň	N =1 REC	7 =14"			
ABEL.G	_													
0CHN	_							L .						
29														
& 400	_	brownish orange, no gravel.								5+4+	5			
								20	Ň	N =9 REC	=13"			
5 90								_ 20						
040 PL														
N2 00														
200								[3+2+	2			
DKING	_							['		N =4 REC	=16"			
		continued on next page	NOT					-25-						

	hashol TEST	Project:	Calvert Cliff	s Nucle	ar Pow	er Plant	Borir	ng Number:	B-422
Schnal	BORING		Calvert Cou	nty, Ma	iryland		Cont	ract Number: 06	6120048
DEDTU	Ser Engineering EOO					6		1. 2 01 4	
(FT)	STRATA DESCRIP	ION	CLASS.	ELEV.	WL		DATA	TESTS	REMARKS
25.5				78.5					
-	grained, moist, orange and g	um rayish							
-	white.								
-									
-	medium to coarse grained, o	range and				M	1+1+3 N =4		
_	yenowish brown, trace grave					_ ₃₀ 0	REC =18"		
_									
33.5	LEAN CLAY with sand mois	t brownish		70.5			1+1+2		
_	orange and reddish gray.	t, brownish				F 1 X	N =3		
-						-35-14	REC - 10		
-									
-									
-									
						-40-			
_						╞╴╶┤ ^{┻╸} │			
_									
-									
43.5	FAT CLAY with sand, moist,	gray.	СН	60.5			2+3+5		
	in E and Loman E Ene Schulder & September & and Bendersteiner		5 20 a 10				N =8		
_									
1 200									
						╶╶┤			
								FF-24.0 IST	
						-50-			
						[
8 –									
- FOG						M	5+7+8		
1040						L ₅₅ _0	N =15 REC =18"		
00120									
FOG									
						[]			
ă –	continued on next pa	<i>je</i>							
Ľ									

ſ		hashal TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Во	ring Number:	B-422
	Schna	bel Engineering LOG	GC	alvert Cou	nty, Ma	iryland		Co	ntract Number: 0	6120048
ŀ	DEPTH			01.000	ELEV.		S			
	(FT)	STRATA DESCRI	TION	CLASS.	(FT)	WL	DEPTH	DATA	TESTS	REMARKS
				СН						
	- 59.5		ureo arainad		44.5			7+11+26		
		moist, dark gray, trace orga	inic matter,				-60-IX	N =37		1/4 inch orgnic
	-	organic oder.						REC - 10		changed to a 2
	-									
	63 5				40.5					
	-	SILTY SAND, fine to coarse moist, light gray.	e grained,	SM			M	30+7+100/4 N =107/10"	4"	
	-						-65-	REC =13"		
	-									
	-									
	-									
	-	light gray and white.					M	69+100		
	_						-70-	REC =14"		
	-									
	_									
	_									
		wet, light grav and white, w	ith fine to					17+15+18		
	-	coarse shell fragments, stro	ong HCI				F 7	N =33 REC =15"		
	-									
	-									
	- 78.5				25.5			ander af turning		
ß	79.4	POORLY GRADED SAND fine to coarse grained, wet,	WITH SILT, light gray	SP-SM	24.6			100/5" N =100/5"		
3/6/0		and white, with fine to coars fragments, strong HCI reac	se shell /	SM	100 C.		-80-	REC =12"		
GDT.	-	SILTY SAND, fine to mediu	m grained,							
NABEI	-	coarse shell fragments, mo	derate HCI							
SCH	-									
0.GPJ	-	fine to coarse grained, light	greenish				🖾	100/4"		
0 & 40	_	fragments, strong HCI reac	tion.				-85-	REC =5"		
SPT 30	_									
S 901	-									
048 P.	-									
0612C	24	trace fine to medium shell f	ragments,					5+5+8		
LOG	-	moderate HCI reaction.					[]	N =13 REC =18"		
RING	_									
EST BC	-	continued on next p	age				[]			

	bashal	TEST	Project:	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-422
Schna		BORING		Calvert Cou	nty, Ma	ryland			Contra Sheet:	ct Number: 0	6120048
DEDTU	ber Engineering	200		Τ					Sheet.	4 01 4	
(FT)	STRAT	A DESCRIPT	ION	CLASS.	FT)	WL	DEPTH			TESTS	REMARKS
				SM							
·	-										
÷	-										
l .	_						1	6+7+10	o		
							05	N =17 REC =	18"		
_	-						-95	- 11 - 30-1 - 120 - 4	21. 976		
· ·	-										
-	-										
	-										4/4 in the shall
98.5	POORLY GRAI	DED SAND W	ITH SILT,	SP-SM	5.5		17	5+6+8			1/4 inch shell lense
100.0 -	brownish gray,	grained, wet, trace fine to m	gray and nedium		40			REC =	18"		
100.0	Shell fragments	, weak HCI re	eaction.								
			0.011.								
8											
5 5											
ביפר											
E											
D.											
36											
5											
100 100											
ă 2											

	hnabel TEST	Project:	Calvert	Cliffs	Nucle	ar Pow	er Pla	nt		Boring	Number:			B-423
Schna	bel Engineering LOG		Calvert	Coun	ity, Ma	ryland				Contra Sheet:	t Number 1 of 7	er: 06 ⁻	12004	48
Boring C	Contractor: UNI-TECH DRILLIN	NG					1	Gr	oundw	ater Obs	ervations			
Doring D	MALAGA, NEW JE	RSEY		<u> </u>	_			D	ate	Time	Depth	Casi	ng	Caved
Drilling I	Method: Mud Rotary				Enco	untere	d	6	5/8		10.5'		Ş	
Drilling	Equipment: Failing-1500 (Truck))			Start	of day	/	6	/12		30.0'			
Schnabe	Representative: K. Megginsor	י ר			Start	of day	/	6	/13		4.0'		2	
Dates	Started: 6/8/06 Finished: 6/	14/06			Start	ofday	,	6	/14		0.0'			
Location	Northing: 216331.76 ft Easting: 960850.21 ft				oturt		,	-	/1-1	0112090	0.0			direbeer
Ground	Surface Elevation: 110.1 (feet)													
DEPTH (FT)	STRATA DESCRIPT	ION	CLA	SS. ^E	ELEV. (FT)	WL	DEP	S. TH	AMPL C	ING DATA	TEST	s	R	EMARKS
-	SILTY SAND, fine to medium moist, brown, trace organic m (±1%).	grained, atter	SN	Л				-0	2+3+3 N =6 REC	3 =10"			*5.4" bit fro feet.	O.D. Drag om 0 to 20
_	brown and light brown.						_	-0	2+2+3 N =5 REC	3 =11"	w=4.9' *	%		
_	contains clayey sand pockets						- 5 -	M	5+10·	+8				
-									REC	=14"				
-	brown.							\mathbb{N}	4+5+0 N =11 REC	6 				
-	fine to coarse grained, wet, br	rown and				⊻	-10-	-M	4+4+1	6				
-	sand with silt lenses.	raded						Μ	REC) =7"				
- 20	yellowish brown.						- —15-	8	5+6+8 N =14 REC	3 4 =6"	w=12.3 LL=NI PL=N	9% > P		
							- ·		2+5+ N =17 REC	12 =8"	w=10.4	%	*4-3/- Drag	4" O.D. bit used
													belov	v 20 ft.
23.5	POORLY GRADED SAND W fine to medium grained.	ITH SILT,	SP-9	SM	86.6		-	-	13+13 N =29	3+16 } =10"	w=16.6 *	5%		
	continued on next page	е					-25-		NEU	-10				

Comments:

 Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
 Downhole geophysical logging performed on 6/14/06.
 * = See Appendix I for additional lab testing data.
 Ground Water Observation Well OW-423 installed at a nearby location
| | | TEST Pr | oject: Ca | alvert Cliffs | s Nucle | ar Pow | er Plant | E | Boring N | Number: | B-423 |
|----------|--------|---|------------------|---------------|---------|--------|----------------------|-----------------------|----------|------------------|---------|
| | Schnal | BORING | Ca | alvert Cou | nty, Ma | ryland | | | Contrac | t Number: 06 | 6120048 |
| ł | DEDTH | | | | EL EV | | s | | | | |
| | (FT) | STRATA DESCRIPTION | u | CLASS. | (FT) | WL | DEPTH | DAT | A | TESTS | REMARKS |
| | | stratified light brown and yellowis | sh | SP-SM | | | | | | | |
| | - | prown below 24.5 π . | | | | | | | | | |
| | - | | | | | | | | | | |
| | | | | | | | | | | | |
| | 28.5 | SILTY SAND, yellowish brown a | nd light | SM | 81.6 | | M | 4+5+8 | | w=17.4% | |
| | | brown. | | | | | _ ₃₀ _0 | REC =7" | | | |
| | _ | | | | | | | | | | |
| | | | | | | | | | | | |
| | _ | | | | | | | | | | |
| | - | | | | | | | | | w=13.6% | |
| | - | yellowish brown. | | | | | X | 8+11+11
N =22 | | LL=NP | |
| | | | | | | | _ ₃₅ _[] | REC =10 | " | FL-INF
* | |
| | - | | | | | | | | | | |
| | 37.0 - | | | | 73.1 | | | | | | |
| | - | and light grayish brown, contains | clayey | 30 | | | | | | | |
| | _ | sand lenses. | | | | | M | 4+3+8 | | w=43.9% | |
| | 39.5 | SILTY SAND, fine to coarse grain | ned. | SM | 70.6 | | La M | N =11
REC =12 | n | LL=43
PL=15 | |
| | | wet, yellowish brown. | , | | | | -40 | | | * | |
| | - | | | | | | | | | | |
| | 42.0 - | FAT CLAY, moist, gray, with fine | to | СН | 68.1 | | | | | | |
| | - | medium sand, trace mica. | | | | | | | | | |
| | - | | | | | | M | 2+3+4
N =7 | | w=30.9%
LL=55 | |
| | | | | | | | _45_[]] | REC =18 | 0 | PL=20
* | |
| | | | | | | | | | | | |
| 8/6/08 | - | | | | | | | | | | |
| SDT 3 | - | | | | | | | | | | |
| NBEL.(| _ | gray and light greenish gray, trac | e fine | | | | M | 3+3+4 | | w=36.6% | |
| CHN/ | | to medium sand, contains organi
matter pocket. | c | | | | En M | N =7
REC =18 | , | LL=61
PL=16 | |
| S L S | | and the second | | | | | | a nov-12823 - 25 - 55 | | * | |
| 400.0 | 10 | | | | | | | | | | |
| 300 & | - | | | | | | | | | | |
| SPT
3 | - | | | | | | | | | 00.404 | |
| PLOC | - | trace mica and organic matter (± | 1%). | | | | M | 4+4+6
N =10 | | w=38.1%
LL=80 | |
| 20048 | _ | | | | | | _ ₅₅ _ // | REC =18 | u | PL=34
* | |
| 3 061. | - | | | | | | | | | | |
| G LOC | _ | | | | | | | | | | |
| ORIN | _ | | | | | | | | | | |
| EST E | | continued on next page | | | | | | | | | |

	-	test	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring Number:	B-423
-	Schna	bel Engineering LOG		alvert Cou	nty, Ma	ryland			Contract Number: 0 Sheet: 3 of 7	06120048
D	EPTH (FT)	STRATA DESCRIP	TION	CLASS.	ELEV. (FT)	WL	s DEPTH	SAMPLIN	G TESTS	REMARKS
3	58.5	ELASTIC SILT, gray		МН	51.6		17	6+7+10	w=33.8%	
	1						_ ₆₀	N =17 REC =1	8" PL=45	
	-									
	- 63.5				46.6			1	w=21.9%	
	-	SANDY SILI, gray						N =14 REC =1	8" PL=27	
	_						65		*	
	-									
	-				11 6					*Switched to 5"
		SILTY SAND, trace fine to m sand and organic matter (±1	nedium %), mostly	SM	41.0		2	34+50/2 N =50/2	w=25.4%	O.D. Tri-cone roller bit below
		indulated lean day layers (±	100%).				—70—	REC -0	, , , , , , , , , , , , , , , , , , , ,	oo π. *Moderately
	-									difficult rotary advancement
	-									from 69.5 to 72 ft (slow rotary advancement)
	-						⊠	50 REC =5	w=22.8%	
	_						-75-			
	_									
	-									
	78.5 -	SANDY SILT, wet, mostly fir shell fragments (±70%), stro	ne to coarse ng HCl	ML	31.6		17	16+18+ N =39	21 w=21.9%	
L 3/6/08	—	reaction.	5				_ ₈₀ _//	REC =1	2"	
BEL.GD										
SCHNAI	_									*Switched to
00.GPJ	83.5	SILTY SAND, gray and light	greenish	SM	26.6		17	9+8+17 N =25	w=25.6%	4-3/4" O.D. Drag bit below 83.5.ft
300 & 40	_	pockets.	shee Sana				_ ₈₅ _/	REC =1	4"	*Extreme difficultly in
OG SPT	-									rotary advancement from 85.5 to
048 PLC	-									88.5 ft (moderate rig
06120	-	little fine to coarse shell frag	ments					25+11+	12 w=23.1%	chatter, slow advancement). *Switched to 5"
NG LOG		(±15%), contains black parti- inch).	cies (1/16				_ ₉₀ _[/	REC =1	8"	O.D. Tri-cone roller bit below
EST BORI	-	continued on next pa	ge							88.5 π.

	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Boring	Number:	B-423
Schna	bel Engineering LOG		alvert Cou	nty, Ma	aryland	-	Contra Sheet:	ct Number: 06 4 of 7	6120048
DEPTH (FT)	STRATA DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	SAN DEPTH	MPLING DATA	TESTS	REMARKS
-	gray and dark gray, trace fine medium shell fragments (±5% HCl reaction.	e to 6), weak	SM			 	+6+10 ↓=16 REC =18"	w=29.8% *	*Very difficult rotary advancement from 88.5 to 92 ft (strong rig chatter).
- - 100.0 — -	light greenish gray and gray, coarse shell fragments (±10% POORLY GRADED SAND V gray, trace fine to medium sh fragments (±5%), moderate h reaction.	few fine to 6). /ITH CLAY, iell ICI	SP-SC	• 10.1		 	3+13+18 I =31 EC =18"	w=27.4% *	
						R 105- ■ 	REC =21"	w=23.1% LL=24 PL=18 *	*Osterberg sampler tube push from 103.5 to 105.3 ft
-	greenish gray and blueish gra fine to medium shell fragmen very weak HCl reaction.	ay, trace ts (±1%),				 	+8+9 I =17 REC =18"	w=30.8% *	
						 ■ R 115- 	REC =0"		*Osterberg sampler tube push ftom 113.5 to 113.8 ft *Slight to moderately difficult rotary advancement
	SILTY SAND, fine to medium wet, gray and light greenish g fine to coarse shell fragments strong HCI reaction.	ı grained, jray, mostly s (±70%),	SM	-6.9		 120- 	+16+50/4" I =66/10" REC =18"	w=26.2% LL=NP PL=NP *	from 113.5 to 118.5 ft (slight to moderate rig chatter). **Resumed drilling at 10:30 AM on 6/12/06. *Slight to moderate difficulty in rotary advancement from 118.5 to
	gray and greenish gray, wea continued on next pag	k HCl ge					+11+19	w=33.9%	120 ft (slight rig chatter).

00

		TEST	Project: Ca	alvert Cliffs	s Nucle	ar Pow	er Plant		Boring	Number:	B-423
	Schna	bel Engineering LOG	Ca	alvert Cou	nty, Ma	iryland			Contrac	t Number: 00	6120048
	DEPTH				FLEV		s		G		
	(FT)	STRATA DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DA	ТА	TESTS	REMARKS
		reaction.		SM			М	N =30	o"	*	
	_						-125-12		•		
		-									
		-									
		-									
		-					– –M	11+17+2	20	w=31.9%	
	_						_ ₁₃₀	N =37 REC =1	8"		
							100				
					0000000 2000						
	132.0	SANDY SILT, fine to medium	, moist,	ML	-21.9						
		fragments (±5%), contains in	durated silt					224 01.250 0010		w-27 10/	
		pockets, very weak HCI read	ion.				M	6+12+18 N =30	8	w=37.1% *	
	-	trace fine to medium shell fra	gments				_ ₁₃₅ _[]	REC =1	8"		
		-									
	137.0			~~~	-26.9						
		SILTY SAND, moist, greenist trace fine to medium shell fra	n gray, gments	SM							
		(±5%), very weak HCl reactio	n.				Π	8+10+14	4	w=45.1%	
							T TX	N =24	8"	*	
	-						-140-				
		-									
		-									
		-									
		dark greenish gray, few fine t	o coarse				M	7+9+17		w=38.9% *	
	_	matter (±1%), contains claye	/ sand				_ ₁₄₅ _0	REC =1	8"		
6/08		layers (nigh percentage of sa	na).								
DT 3/											
BL.G	,	strong HCI reaction									
CHNAE		1						7.40.4	_	w=32.8%	
J SC		1					X	N =33		*	
100.GF	-	4					- <u>150-</u> []	REC =1	8"		
00 & 4		4									
SPT 3	152.0		modium	0	-41.9						
DOL		moist, dark greenish gray, tra	ce fine to	0L							
048 F		HCI reaction.	o), strong					5+9+13		w=44.9%	
0612C								N =22 REC =1	8"		
POG											
RING		1					- 1				
ST BO.		continued on next pag	e								
TES											

		TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	В	oring Nu	umber:	B-423
	Schn	abel Engineering LOG	С	alvert Cou	nty, Ma	iryland		C S	ontract heet: 6	Number: 06 of 7	6120048
	DEPTH (FT)	STRATA DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLING	A	TESTS	REMARKS
	158.5	 ORGANIC CLAY, trace fine to shell fragments (±5%) and min contains indurated lean clay p weak HCl reaction. 	o coarse ca, oockets,	CL OH	-48.4		 160	REC =19"	P	w=44.9% LL=74 PL=18 PP=>4.5 tsf	*Osterberg sampler tube push from 158.5 to 160.0 ft
	162.0 -	ELASTIC SILT, moist, dark gr gray, trace fine to medium sar mica, weak HCI reaction.	eenish nd and	MH	-51.9		 165-	8+10+14 N =24 REC =18"		w=59.7% *	
	167.0	SILT, moist, dark greenish gra fine to medium sand, trace fin coarse shell fragments (±5%) HCI reaction.	ay, with e to , moderate	ML	-56.9		 170-	4+7+11 N =18 REC =18"		w=41.0% *	
	172.0	SILTY SAND, moist, gray		SM	-61.9		 175-	8+8+12 N =20 REC =18"		w=49.7% *	
SCHNABEL.GDT 3/6/08	-	- - _ contains indurated elastic silt - -	pockets.				 180 	REC =16"	P	w=41.5% LL=64 PL=34 PP=>4.5 tsf *	*Osterberg sampler tube push from 178.5 to 179.5 ft *Swiched to 5" O.D. Tri-cone roller bit below 178.5 ft.
148 PLOG SPT 300 & 400.GP	185.0 -	 greenish gray, very weak HCI ELASTIC SILT, moist, dark gr gray, trace fine to medium sar mica, weak HCI reaction. 	reaction. eenish nd and	МН	· -74.9		 - <u>185-</u> 	6+8+11 N =19 REC =18"		w=73.3% *	**Resumed drilling at 7:00 AM on 6/13/06.
TEST BORING LOG 061200	-	trace fine sand, mostly indura silt layers.	ted elastic e				 -190-	REC =8"		w=72.4% LL=111 PL=70	*Osterberg sampler tube push from 188.5 to 190.0

	hnabel TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Вс	oring Number:	B-423
Schnal	bel Engineering LOG		alvert Cou	nty, Ma	ryland		Co Sh	ontract Number: 0 neet: 7 of 7	6120048
DEPTH (FT)	STRATA DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	DEPTH		TESTS	REMARKS
	contains indurated elastic silt weak HCl reaction.	pockets,	MH			 195- - - 	5+10+14 N =24 REC =18"	w=71%	π
199.0 - 	LEAN CLAY, moist, greenish dark greenish gray, with fine sand, trace mica, weak HCl r	gray and to medium eaction.	CL	-88.9		 	6+9+15 N =24 REC =18"	w=45.3% *	**Resumed grouting at 7:00 AM on 6/14/06.
	BOTTOM OF BORING @ 20	1.5 FT.		-91.4					

Schnal	TEST Project: C bel Engineering LOG C	alvert C alvert C	Cliffs Nucle County, Ma	ear Pow aryland	ver Pla	nt	B	oring ontra	Number: oct Number	er: 06120	B-424
Conna						Gr	oundwater	Ohe	ervations	1	
Boring C	Contractor: UNI-TECH DRILLING					חט ח	oto Ti	mo	Donth	Casing	Caved
Boring F	oreman: J. Blemings	ŀ	Enco	untere	ed	4	/27 -		23.5'		
Drilling I	Method: Mud Rotary	ŀ									
Drilling I	Equipment: CME-750										
Schnabe	el Representative: B. Bradfield										
Dates	Started: 4/27/06 Finished: 4/28/06										
Location	: Northing: 216263.3 ft Easting: 960818.6 ft	ŀ									
Ground	Surface Elevation: 118.9 (feet)										
DEPTH (FT)	STRATA DESCRIPTION	CLAS	SS. ELEV.	WL	DEP	S/ ТН	AMPLING DATA		TEST	s i	REMARKS
0.3	ROOTMAT AND TOPSOIL.	CM	118.6	1			1+2+2				
-	SILTY SAND, fine to medium grained, moist, light brown, contains root fragments.					Ī	N =5 REC =15"				
2.5 -	SANDY LEAN CLAY, fine to medium, moist, orangeish brown.	CL	116.4		- 1	-0	1+2+3 N =5 REC =13"				
_					- 		2+2+4				
-					- 1	-8	N =6 REC =2"				
7.0 -	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, brownish orange, w/ iron staining.	SP-S	M 111.9			-8	2+1+3 N =4 REC =12"				
-	orangeish brown, no iron staining.				-10-		2+5+4				
-	vollowish brown trace gravel w/slt_iren				-	10	N =9 REC =12"				
-	staining.				-	-	E . 7 . 0				
					- 	-	N =15 REC =12"				
17.0 -	SILTY SAND modium to poorco	SM			[$\left \right $					
	grained, moist, orangeish brown, trace fine to medium gravel.				- - 20-	-	10+10+9 N =19 REC =13"				
-					-						
- 22.0	POORLY GRADED SAND WITH SILT, fine and coarse grained, wet, orangeish brown and gray, trace fine to medium gravel. moist, orangeish brown and gray.	SP-S	M 90.9	Ā	-	-	6+13+12 N =25 REC =14"				
	continued on next page						province 2021 37 5				

	TEST Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	Boring Number:	B-424
Schna	bel Engineering LOG	alvert Cou	nty, Ma	ryland		Contract Number: 0	6120048
DEDTH					SAMPLI		
(FT)	STRATA DESCRIPTION	CLASS.	(FT)	WL		TESTS	REMARKS
		SP-SM					
-							
-	brownish orange and grav						
-							
_	fine to medium grained.				6+9+1	5	
					00 N =24	14"	
_							
-							
-	orangeish brown and brown, <1/2 '' clay						
-	lenses.						
-						17	
_					-35 REC =	14"	
-	brownish orange and gray.						
-							
-							
-					_40 REC =	15"	1/4" clay lense
-							
	brownish orange and mottled gray, <1/8" clay lenses						
-							
-							
44.8 _	CLAYEY SAND, fine to medium	SC	74.1		_45[/]		
-	grained, moist, brownish orange and gray.						
. 16/08							
년 	POORLY GRADED SAND WITH SILT.	SP-SM	70.4		M 9+11+	16	
ANHO	medium to coarse grained, wet, orange	128-D TERTOTER			N =27	16"	
ы — М					-50-1-1 11-0 -		
- 400.G							
8 52.0 -	LEAN CLAY with sand, moist_dark	CL	66.9				
- SPT 3	gray.						
-00							
048 F					N =11 REC =	18"	
06120							
- 90 0					- 11		
57.0 -	FAT CLAY with sand, moist, dark gray.	СН	61.9				
- B0	continued on next page						
TES							

ſ	6	hpabol TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant	I	Boring	Number:	B-424
	Schnal	BORING		alvert Cou	nty, Ma	ryland		0	Contra Sheet:	ct Number: 06	6120048
ł	DEPTH				ELEV.		s		G		
	(FT)	STRATA DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DAT	TA	TESTS	REMARKS
ſ				СН				WOH+5-	+7	PP=1.25 tsf	
	-						f 1XI	N =12	יי יים		
							-60-L	REC = 18	5		
	-										
	-										
	_						M	WOH+4-	+5	PP=2.50 tsf	
	64.5	CLAYEY SAND, fine to medi	um	SC	54.4		_ ₆₅ _Å	N =9 REC =18	З"		
		grained, moist, dark gray.									
	07.0				51.0						
	67.0 -	FAT CLAY with sand, moist,	gray.	СН	51.9						
	-									PP=3.00 tef	
	_						10	3+6+9 N =15		11-0.00 (3)	
	<u> </u>						_ ₇₀ _[]]	REC =18	3"		
	_										
	72.0 -	CLAYEY SAND fine to medi	um	SC	46.9						
	-	grained, moist, gray.	am								
	_						M	4+6+7			
	_						_ ₇₅ _0	REC =18	3"		
	-										
	77.0				41.0						
	77.0 -	POORLY GRADED SAND, f	ine to reenish	SP	41.9						
	_	gray, trace clay, glauconite						33+50/3"	n -		
08	-	comonation.					- 10	N =50/3"			
T 3/6/	_						-80-	REC -0			
EL.GD	-										
INABE	_										
J SCF	-										
00.GP	-							50/2"			
0 & 4(_						-85-	REC =2"	'		
SPT 30	-										
S 901	-										
048 P.		with fine to medium shell frag strong HCI reaction.	gments,								
06120								50/4"			
DOG								N =50/4"	'		
RING	_						-90-				
ST BO	-	continued on next pa	ge				- 1				
Ш											

50	chnabel	Project:	Calvert Cliff	s Nucle	ar Pow	er Plant	E	Boring Number:	B-424	
Schna	abel Engineering			iity, ivia	iyiand		S	Sheet: 4 of 4	6120048	
DEPTH (FT)	STRAT	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLING	A TESTS	REMARKS
92.0	CLAYEY SAND	, fine and coa	rse	SP SC	26.9					
-	grained, moist, g to coarse shell fi reaction.	ragments, str	e, with fine ong HCI				 95	9+9+17 N =26 REC =18		
	gray and browni	sh white, trac	e gravel.				M	4+19+27 N =46		Hard drilling
100.0 -	BOTTOM OF BO	ORING @ 10	0.0 FT.		18.9		100[/]	REC =18	n	
00/0/0										
HINABEL. GUI										
& 400.6FJ 00										
06 00120040										

	hnabel BOBING	Project:	Calvert (Cliffs	Nuclea	ar Pow	er Pla	nt		Boring	Number:		B-425
Schna	bel Engineering LOG			Jou	nty, Ma	ryland				Contra Sheet:	1 of 4	er: 06120	048
Boring C	Contractor: UNI-TECH DRILL	ING					I	Gro	ound	vater Obs	ervations	Oreite	
Boring F	MALAGA, NEW J	ERSEY			Ener	unter-	4	<u>ט</u>		Time	Depth	Casing	Caved
Drilling	Method: Mud Rotary				Enco	untere	u	4.	120				
Drilling	Equipment: FAILING-1500											-	
Schnabe	el Representative: R. Vinzant												
Dates	Started: 4/28/06 Finished:	5/1/06											
Locatior	1: Northing: 216247.5 ft Easting: 961274.7 ft												
Ground	Surface Elevation: 118.4 (feet)												
DEPTH (FT)	STRATA DESCRIP	ΓΙΟΝ	CLAS	SS.	ELEV. (FT)	WL	DEP	S⊿ ТН	AMPL [.ING DATA	TEST	s i	REMARKS
	POORLY GRADED SAND V	VITH SILT,	SP-S	δM				M	2+6+	8	w=13.7	%	
-	brown, trace organic matter.	st, reaalsn						W	REC	4 =18"			
-								$\left \right $					
-								-					
-								-M	3+3+ N =7	4	w=7.3'	%	
_							- 5 -	H	REC	=13" 3	w=2.5	%	
-							L .	-IXI	N =7	-10"	*		
-							L .		REC	-10			
_							L.						
	brown.						L.	М	2+2+	3	w=10.8	%	
							10	M	N =5 REC	=14"			
								M	3+3+ N =7	4	w=14.2	:%	
-								ΠΔ	REC	=14"			
-								1					
- 0												0/	
- 2/0/2								HM	6+5+ N =1	6 1	w=16.4	-%	
	fine to medium grained moi	st brown					-15-		REC	=14"			
- NABE	trace fine gravel.	,,					- ·	$\left \right $					
- NCH													
- CEP													
- n x 40							L.						
												~	
त १ २								M	8+9+ N =1	9 8	w=11.1 *	%	
148 1							[.	ΠΩ	REC	=15"			
-							- ·	1					
	•						- •	1					
- IC								+					
	continued on next ba	ge					-25-	$\left - \right $					
2		• sed											

	hnabal	TEST	Project:	Calvert Cliff	s Nucle	ar Pow	er Plant		Boring	y Number:	B-425
Schnal	bel Engineering	BORING LOG		Calvert Cou	nty, Ma	iryland			Contra	act Number: 0	6120048
DEPTH					EL EV		s		G		
(FT)	STRAT	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DA	ГА	TESTS	REMARKS
				SP-SM			M	15+19+1	14	w=11.6%	
-							F 10	REC =1	8"		
-	orangeish browi	n.									
-											
-											
							[∞] M	13+14+1 N =29	15	w=15.2%	
-							F 70	REC =1	3"		
-											
-											
-											
_							-35	10.10		w=12%	
_							L JX	N =27	14	*	
								REC =1:	3"		
							Γ				
-											
-											
-								14+17+	19	w=14.9%	
-							X	N =36	יי זיי	*	
41.5	WELL GRADED	SAND WITH	I SILT,	SW-SM	76.9				2		
	medium grained	l, wet, orange	eish brown.								
-							F 1				
-							⁻⁴⁵⁻ M	17+17+1	19	w=13.7%	
-							M	N =36 REC =10	6"		
- 30	dark brown, with	n fine gravel.									
- 19											
							50				
								11+14+1 N =28	14	w=12.1%	
					66.9		F 70	REC =1	4"	PL=17 *	
× _	grained, wet, or	SLAY, fine to ange.	medium								
							-55			W=28.20/	
7 00								3+3+4 N =7		LL=46	
								REC =1	8"	PL=19	
57.0 -	FAT CLAY, with	i sand, wet, g	ray.	СН	1 61.4			REC =2	4"	w=31.2%	
-	continu	ued on next pag	<i>j</i> e				╞╴╶┤ ╨ ┻				
2											

	6	hnabol -	TEST	Project: Ca	alvert Cliffs	s Nucle	ar Pow	er Plant		Boring	Number:	B-425
	Schnal	Del Engineering	ORING	Ca	alvert Cou	nty, Ma	ryland			Contra Sheet:	ct Number: 00 3 of 4	6120048
	DEPTH (FT)	STRATA D	ESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH		IG TA	TESTS	REMARKS
					СН						PL=25 *	
	-											
								⁻⁶⁰⁻	3+3+4		w=35.1% LL=63	
	_							- 14	REC =	18"	PL=21 *	
	_											
	_											
	_							-65				
	_								REC =2	<u>2</u> 4"	W=39.5% LL=69 PL=28	
	-										*	
	-											
	-											
	70.0 —	ELASTIC SILT, gray	y		MH	48.4		-70-	6+6+9		w=38.4%	
	-							Ŭ	N =15 REC ='	18"	PL=42	
	-											
	-											
	-					12.4						
	75.0	CLAYEY SAND, da	rk gray		SC	43.4			REC =2	24"	w=21.8% LL=41	
	-										PL-20 *	
3/6/08	_							-80-N	22+35+	-50/4"	w=31.7%	
L.GDT	81.0 - 81.5	SILTY SAND, fine g	rained, m	oist, dark	SM	37.4 36.9		Ŭ	N =85/ REC =	10" 18"	*	
HNABE	-	reddish brown, with fragments.	fine to co	arse shell	SP	00.0						
RJ SC	-	POORLY GRADED medium grained, we	SAND, fi et, dark gr	ne to ay, with								
\$ 400.G	-	shell fragments.										
T 300 §								⁻⁸⁵⁻	7+10+2 N =34	24	w=19% *	
OG SF	_							[][REC =	16"		
0048 PL	_											
06120	_											
JOI DI	_							-90-	120.40	17	w=20.5%	
BORIN	-	continued	n nevt neo					⊢ _IX	N = 36	-17	*	
TEST		cominaea c	л пехтрау	0								

	hnabel	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-425
Schna	bel Engineering	LOG		alvert Cou	nty, Ma	ryland			Contra Sheet:	act Number: 00 4 of 4	6120048
DEPTH (FT)	STRATA	DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLIN	IG TA	TESTS	REMARKS
				SP			X	REC =	18"		
-	-										
-							-95-×	50/4"		w=17.9%	
- 96.5				014	21.9			N =50/4 REC =4	4" 4"		
-	wet, light gray, wi	to medium th fine grave	grained, el	5101							
_											
_	-						-100-	50/0 5"			
101 5	-				16.9			N =50/0 REC =0).5")"		
	BOTTOM OF BO	RING @ 10	1.5 FT.		10.0						
00/0/0											
פר פר											
NULL NO											
0.650											
200 & 4L											
200											
00120											
NG LOC											

Schna	TEST Project: C bel Engineering LOG C	Calvert C Calvert C	liffs N County	∖uclea ∕, Ma	ar Pow ryland	er Plar	nt		Boring Contra Sheet:	Number: ct Number 1 of 4	e r: 06	1200	B-426
Boring							Gro	oundv	vater Obs	ervations			
Bonny	FREDERICK, MARYLAND	5, INC.					D	ate	Time	Depth	Casi	ng	Caved
Boring	Foreman: W. Wolf		E	Enco	untere	d	7.	/28	-	9.0'		8	
Drilling			;	Start	of day	/	7.	/31		11.5'			
Schnab	el Representative: K. Bell / K. Megginson	F	5	Start	of day	,	8	3/1	·	43.5'			
Dates	Started: 7/28/06 Finished: 8/3/06	Γ	:	Start	of day	7	6	3/2		43.5'		0	
Locatio	n: Northing: 216193.04 ft Easting: 961386.57 ft	ŀ			-								
Ground	Surface Elevation: 83.7 (feet)												
DEPTH (FT)	STRATA DESCRIPTION	CLAS	s. El	LEV. FT)	WL	DEP [.]	S/ ТН	AMPL C	ING DATA	TEST	s	R	EMARKS
	POORLY GRADED WITH SILT, fine and coarse grained, moist, brown, trace root fragments.	SP-SI	м				M	3+3+: N =6 REC	3 =14"			AWJ	rods used
	yellowish brown, trace gravel.						Ø	2+3+ N =7 REC	4 =16"				
-						- 5 -	Ø	4+4+ N =8 REC	4 =16"				
	wet, yellowish brown and orangeish brown.				⊻		8	2+2+3 N =5 REC	3 =12"				
-	moist, orangeish brown and reddish brown.					—10— 	-0	3+4+ N =9 REC	5 =12"				
12.0	CLAYEY SAND, fine to coarse grained, wet, yellowish brown and orangeish brown.	SC		1.7				3+2+	3			*4-1/ Hollo Auge	/4" I.D. ow Stem ers used
	-					—15— 	Ň	N =5 REC	=17"			ft. *Swi 3-7/8 Tri-c	tched to 3" O.D. one roller
17.0	SILTY SAND, fine to coarse grained, wet, yellowish brown, trace fine grave.	SM	6	6.7								ft.	
-	-					 —20—		3+2+ N =3 REC	1 =0"				
				_			$\left \right $					*01:~	ht to
22.0	FAT CLAY, wet, grayish brown and orangeish brown, trace fine to medium sand.	СН		51.7				1+0+	3			mod chat ft.	erate rig ter at 22.5
-	gray and dark gray, trace mica, contains clayey sand and silty sand pockets <i>continued on next page</i>					 25	W	N =5 REC	=18"				

	6	TEST Proje	ect: Ca	alvert Cliffs	s Nucle	ar Pow	er Plant	Boring	Number:	B-426
	Schnat	el Engineering LOG	Ca	alvert Cou	nty, Ma	ryland		Contra Sheet:	ct Number: 06 2 of 4	6120048
	DEPTH (FT)	STRATA DESCRIPTION		CLASS.	ELEV. (FT)	WL	SAI	MPLING DATA	TESTS	REMARKS
		below 24 ft.		СН						
	27.0				56.7					
	-	ELASTIC SILT, moist, gray and dar gray, trace fine to medium sand, mi- and organic matter (±1%), contains	k ca,	MH	00.7					
	-	clayey sand lenses					🛛 🖻	3+3+3 N =6		
	_							REC =18"		
	_									
	_	gray.					<u>M</u> a	3+3+5 N =8		
	_						F	REC =18"		
	37.0				46.7					
	57.0	SANDY LEAN CLAY, fine to medium moist, gray, trace mica, contains lig	n, ht	CL	40.7					
	-	indurated sandy lean clay pockets.					∭3	3+4+5 N =9		
	_						_40_[/] F	REC =18"		
	42.0				<i>4</i> 1 7					
	42.0	CLAYEY SAND, fine to medium grained, moist, gray, mostly indurate	ed	SC	41.7					*Slight to moderate rig
	44.0 -	SILTY SAND, fine to medium graine	ed.	SM	39.7		<u>M</u> a	3+13+43 N =56		chatter at 43 ft.
	_	moist, dark orangeish brown, dark yellowish brown and light brown,	.:14				_45[/] F	REC =18"		
\$/08	-	layers and pockets, and dark reddis brown lense (oxidized) from 44 to 4	4.1							
GDT 3/(_	ft.								*Lost ~80 gal of
INABEL.	_	wet, gray.					M ?	7+5+3 N =8		to 53.5 ft. Thickened mud.
PJ SCH	_						[] F	REC =15"		*Lost another 160 gal of mud (2 batabas)
& 400.G	-									*Rotary bit
SPT 300							-]			pecame frictionally seized at 47 ft
PLOG 5	-	few fine to coarse shell fragments (±10%), contains shell bed laver fro	m					19+36+50 N =86		(presumaedly by running
1612004£	_	54 to 54.3 ft, strong HCl reaction.					_ <u>55</u> _ () F	REC =18"		4-1/4" I.D. HSA to 53.5 ft to free
5 LOG 0	-									rod. *Switched to 3-7/8" O D
BORING							_]			Tri-cone roller
TEST I		continued on next page								

1	6	hnabel	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-426
	Schnal	bel Engineering	BORING LOG	c	alvert Cou	nty, Ma	iryland		Ī	Contra Sheet:	ct Number: 00 3 of 4	6120048
	DEPTH (FT)	STRATA	DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLIN	G TA	TESTS	REMARKS
		moist, mostly stro layers (±90%), fe fragments (±10%	ongly cemen w fine to coa).	ted sand arse shell	SM			⊠ 60 	50/5" N =50/5 REC =2	ун ул		bit below 53.5 ft. *Slight to moderate difficulty in rotary advancement from 53.5 to
	62.0 - - - -	CLAYEY SAND, grained, moist, gr contains strongly pockets, trace fin fragments (±5%).	fine to mediu ray and olive cemented s e to coarse s	um ish gray, and shell	SC	21.7		 	6+50 N =50 REC =1	4"		57.5 ft (slight rig chatter). *Very to extremely difficult rotary/auger advancement from 57.5 to 58.5 ft. *Lost additional 90 gol of mud
	67.0 - - - -	SILTY SAND, fin wet, gray, little fir fragments (±15% reaction.	e to medium le to coarse), moderate	grained, shell HCI	SM	• 16.7		 	6+7+11 N =18 REC =1	8"		between 53.5 to 58.5 ft. With rig off, can hear mud quickly draining into formation. *Ran 4-1/4" I.D. HSA to 58.5 ft. *Sampler refusal at 58.9
	72.0 - - - -	CLAYEY SAND, grained, wet, gra trace fine to coars (±5%), contains s weak HCI reactio	fine to mediu y and greeni se shell frag andy silt poo n.	um sh gray, ments ckets,	SC	11.7		 	5+5+9 N =14 REC =1	8"		ft. **Resumed drilling at 7:20 AM on 8/1/06. *Due to significant mud loss, attempted to run augers to 63.5 ft in order to socket
EL.GDT 3/6/08	77.0 - - - -	SILTY SAND, fin wet, gray and ligh fine to medium sh very weak HCl re	e to medium It greenish g nell fragmen action.	grained, ıray, trace ts (±<5%),	SM	6.7		 	4+5+8 N =13 REC =1	8"		augers in a low permeable strata. However, augers became sand-locked overnight due to running sands. Augers
2048 PLOG SPT 300 & 400.GPJ SCHNAB	82.0 - - - - -	CLAYEY SAND, grained, wet, gray gray, trace fine to fragments (±5%), particles (1/16 ind reaction.	fine to medii y and light g medium sh contains bla ch), very wea	um reenish ell ack ak HCl	sc	1.7		 85- 	4+4+7 N =11 REC =1	8"		un-sand-locked with considerable effort. **Resumed drilling at 12:40 PM on 8/2/06. *Moderate to very difficult rotary advancement from 59 to 60.5 ft (moderate to
EST BORING LOG 0612		light greenish gra mostly fine to coa (±70%), contains sand pockets, str light greenish gra <i>continue</i>	y and green arse shell fra moderately ong HCI rea y, some fine d on next pag	ish gray, gments cemented ction. e to coarse e				 	18+7+9 N =16 REC =1	8"		strong rig chatter). *Moderate to difficult rotary advancement from 60.5 to 62

SC	hnabel BORING	Calvert Cliff Calvert Cou	s Nucle nty, Ma	ar Pow ryland	er Plant	Boring	g Number:	B-426
Schna	bel Engineering LOG			·		Sheet	: 4 of 4	
DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMP DEPTH	LING DATA	TESTS	REMARKS
	shell fragments (±30%) below 89 ft.	SC						ft. *Ran 4-1/4" I.D.
92.0 -	SILTY SAND, fine to medium grained, wet, gray and greenish gray, few fine to coarse shell fragments (±10%), weak HCI reaction.	SM	-8.3		 6+8· 6+8· N =1 REC	⊦10 8 ; =18"		HSA to 63.5 ft. *More mud loss. *Modrate to difficult rotary advancement from 88 to 88.5 ft (moderate to strong rig chattor)
97.0 -			-13.3					challer).
-	grained, wet, greenish gray, trace fine t medium shell fragments (±1%), moderate HCI reaction.	io SC			 	+18 29		
100.0 —	BOTTOM OF BORING @ 100.0 FT.		-16.3			; =18"		

Sc	hnabel Boring	Project: (Calvert (Calvert (Cliffs Cou	s Nucle nty, Ma	ar Pow ryland	er Pla	nt		Boring Contra	Number: ct Numbe	er: 06	1200	B-427
Schnat	bel Engineering LOG									Sheet:	1 of 5			
Boring C	ontractor: CONNELLY AND	ASSOCIATE	S, INC.					Gro	oundw	ater Obs	ervations			
J	FREDERICK, MAR	RYLAND	,					D	ate	Time	Depth	Cas	ing	Caved
Boring F	oreman: D. Reese				Enco	untere	d	5	6/2		44.0'	3.5	5'	
Drilling	Method: Mud Rotary				Start	of day	/	5	3		17.0'	5.0	יכ	
Drilling E	Equipment: CME-75					n manaa maadada y								
Scinabe	Representative. M. Alles													
Dates \$	Started: 5/2/06 Finished: 5	/2/06												
Location	: Northing: 216164.05 ft Easting: 961272.73 ft													
Ground	Surface Elevation: 116.3 (feet)													
DEPTH (FT)	STRATA DESCRIPT	ΓΙΟΝ	CLA	ss.	ELEV. (FT)	WL	DEP	S/ ТН	AMPL C	ING DATA	TEST	s	R	EMARKS
0.3	ROOTMAT AND TOPSOIL.				116.0			M	1+5+	4	PP=4.50	tsf	Holl	ow stem
-	SILTY SAND, fine to medium moist, orangeish brown.	n grained,	510	1				-Ň	N =9 REC	=16"			auge	er
-									3+3+3	3	w=9.4	%		
								M	N =6 REC	=14"	*		Mud	l rotary
_							- 5 -							
-								-M	1+2+2 N =4	2				
70					100.3		L.		REU	-14				
7.0	POORLY GRADED SAND W fine to medium grained, mois	VITH SILT, st, orange	SP-S	SM	105.5				4+5+	7	w=7.9	%		
-							L .	Ň	N =12 REC	2 =18"				
_							-10-	$\left \right $						
-								-M	3+3+3 N =6	3				
-									REČ	=18"				
-														
								M	4+4+4 N =8	4				
							-15-		REC	- 10"				
					000		- ·	1						
0 17.0 -	SILTY SAND, fine to medium moist, orange	n grained,	SN	1	99.3		[]						
& 400.							[4+4+	5	w=8.2	%		
								W	N =9 REC	=18"	*			
								$\left \right $						
22.0 -		4711 OF 7			94.3		L .							
	FOORLY GRADED SAND W fine to coarse grained, moist	vi i H SILT, , orange.	SP-8	SM	1936(5313			$\left \right $						
							L .	-M	9+13 N =27	+14				
	continued on next pag	ge					-25-		REC	=15"				

		hnabal	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-427
	Schnal		BORING	с	alvert Cou	nty, Ma	ryland			Contra Sheet	ct Number: 00	6120048
	DEPTH	OTDAT			01.000	ELEV.	14/1	5		G		DEMA DIZO
	(FT)	STRATA	A DESCRIPT	ION	CLASS.	(FT)	WL	DEPTH	DA	ТА	TESTS	REMARKS
					SP-SM							
	-											
	-											
	-										10.00/	
	-							10	7+9+7 N =16		₩-12.270 *	
	_							/	REC =1	10"		
	-											
	-											
	-											
	33.5	POORLY GRAD	ED SAND, fi	ne to	SP	82.8		10	11+12+	·12		
		coarse grained, with fine gravel.	moist, orange	eish white,				_ ₃₅ _Å	N =24 REC =1	4"		
								55				
	-											
											w-13.6%	
	-	orange.						10	10+15+ N =28	13	*	
								-40-L	REC =1	18"		
	-											
	-											
	-											
	43.5	POORLY GRAD	ED SAND W	/ITH SILT,	SP-SM	72.8	Ā	10	10+12+	·13		
	_	fine to medium g	grained, wet,	orange.				Å	N =25 REC =1	15"		
	_											
/08												
DT 3/6	-											
EL.GD											w=18.6%	
HNABI	-							10	N =25	13	*	
U SCI	_							-50-1	REC =1	15"		
00.GP	-											
00 & 4	-											
SPT 3	(2-1)/1012 - +							-				
, DOJ	53.5	SILTY SAND, fir	ne grained, m	noist,	SM	62.8		10	5+9+15			
0048 F	_	mottled orange a	and white.					L_55_ Å	REC =1	15"		
06120	_											
LOG												
RING	-							- 1				
ST BC	-	continu	ed on next pag	je								
Щ												

	20	hnabel	TEST BORING	Project: C	alvert Cliff alvert Cou	s Nucle nty, Ma	ar Pow ryland	er Plant	_	Boring Contra	Number: ct Number: 06	B-427
	Schnal	bel Engineering	LOG							Sheet:	3 of 5	
	DEPTH (FT)	STRAT	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	S DEPTH	AMPLING	G TA	TESTS	REMARKS
	58.5		ini alevicave.			57.8			4.5.7			
	-	sand.	oist, dark gray	y, with				X	N =12			
								_ ₆₀ _[/]	REC =1	8"		
	-											
	_											
	-											
	63.5	SANDY, ORGAI	NIC CLAY, m	oist, dark	ОН	52.8			REC =2	4"	w=32.8%	
		gray.						65			PL=36	
								00			PP=2.50 tst *	
	-											
	-											
	-											
	-	trace sand.							5+7+5 N =12			
	_							_ ₇₀ _[1]	REC =1	8"		
	-											
	-											
	-											
	73.5 -	CLAYEY SAND	, fine grained	, moist,	SC	42.8			REC =1	6"		
		dark gray.						_75_				
	_											
	-											
	- 78.5		aa ta maadiuma	arainad	CM	37.8			44,50/2		w=23.1%	
80	-	moist, dark brow	nish orange.	grameu,				Ň	N =50/3	, ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	*	
3/6/0	_							-80-	REC =1	0.		
L.GD1	-											
NABE	-											
l SCF	-											
00.GP.									50/4"	u		
0 & 4C	_							-85-	REC =4			
PT 30	_											
-0G S	_											
048 PI												
06120	_	trace fine to me	dium shell fra	aments					50/2"			
DOG	_	weak HCI reaction	on.						N =50/2			
RING	_							-90-				
ST BO	-	continu	ied on next pag	e								
ЦЩ												

	6	hashal T	EST	Project: C	Calvert Cliff	s Nucle	ar Pow	er Plant		Boring	g Number:	B-427
	Schnal	Del Engineering	ring Og	C	Calvert Cou	nty, Ma	ryland			Contra Sheet:	act Number: 00 4 of 5	6120048
	DEPTH (FT)	STRATA DES	CRIPTI	ION	CLASS.	ELEV. (FT)	WL	DEPTH	SAMPLI	NG ATA	TESTS	REMARKS
					SM							
	_											D : 1 //
	_								⊴ _{50/4"}		w=12.0%	Rig chatter
								-95-	N =50 REC :	/4" =3"		
	_											
	-											
	-											
	-	fine to medium graine green, trace fine to me	d, moist edium sl	, grayish nell				[]	5+7+8 N =15	3		
		fragments, weak HCl ı	reaction					-100-1	REC	=18"		
	<u>. </u>											
	103.5	POORLY GRADED S	AND W	ITH SILT,	SP-SM	12.8			8+12+	-13	w=24.8%	
	_	green, with fine to coa	d, moist arse she reaction	, grayisn ell				_105_	REC :	=16"		
	-	nagmente, weat her	ouotion									
	-											
	- 108.5	CILITY CAND find to r	nodium	aroinod	SM	7.8		 		1		
	-	moist, grayish green, t coarse shell fragments	race fin s. mode	e to rate HCl	SIVI				N =20	=18"		
	_	reaction.	,									
	_											
3/6/08												
L.GDT	113.5 -	POORLY GRADED S fine to medium graine	AND W d, moist	ITH SILT, , grayish	SP-SM	2.8		[]	9+9+8 N =17	3		
HNABE	_	green, trace fine to co fragments, weak HCl i	arse sh reaction	ell				-115-1	REC	=13"		
sPJ SC	-											
& 400.C	-											
3PT 300	- 118.5 -	SILTY SAND, fine to r	nedium	grained,	SM	-2.2			7 3+3+4	1	w=29.2%	
PLOG S	_	moist, grayish green, t coarse shell fragments	race fin s, mode	e to rate HCl				_120_		=18"		
20048	_											
190 DC	-											
RING L	-		odiume +	0.000700						14		
FEST BO	-	continued on	next page	e e					11+0	-14		

	6	hnabel	TEST	Project: C	alvert Cliff	s Nucle	ar Pow	er Plant		Вс	oring Numbe	r:	B-427
	Schnat	pel Engineering	LOG		alvert Cou	nty, ivia	ryland			Co Sh	eet: 5 of 5	ber: 06	6120048
D	EPTH (FT)	STRAT/	A DESCRIPT	ION	CLASS.	ELEV. (FT)	WL	DEPTH	SAN I	MPLING DATA	TES	тѕ	REMARKS
	_	shell fragments, sand, moderate	contains cen HCl reaction	nented	SM			_125_		N =25 REC =18"			
	-												
	-												
	-										24	40/	
	-))+11+14 N =25	w=31	.4%	
	_							- <u>1</u> 30-		KEC =18"			
	-												
]												
	-								7	7+8+8			
	_							_135_/		REC =12"			
	-												
	-												
	-							 	7 -		w=38	5%	
	-									N =13 REC =18"	*		
									1				
	_												
	_												
	-	with sand, trace fragments, mode	fine to medi	um shell ction					77	'+5+8 ∖ =13	PP=3.0	00 tsf	
m	_							-145-V	R	REC =18"			
T 3/6/0	-												
JEL.GD	-												
SCHNAE		fine to medium	arained, mois	st, green.					7 5	5+6+9	w=44	.3%	
	50.0 -			, 0		-33.7				N =15 REC =18''	*		
00 & 400		BOTTOM OF BO	DRING @ 15	0.0 FT.									
SPT 30													
8 PLOG													
612004													
LOG C													
SORING													
TESTE													

		hnabel TEST	Project:	Calvert	Cliffs	s Nucle	ar Pow	er Pla	nt		Boring	Number:		B-428
	Schna	bel Engineering LOG		Calvert	Cou	nty, Ma	ryland				Contra Sheet:	ct Number 1 of 5	er: 06120	048
	Boring C	Contractor: UNI-TECH DRILLI	NG						Gro	oundv	vater Obs	ervations		
		MALAGA, NEW JE	RSEY						D	ate	Time	Depth	Casing	Caved
1	Boring F	oreman: J. Evans				Enco	untere	d	5	5/2		Dry		
1	Drilling I	Fauinment: FAILING-1500 (Tru	ck)											
1	Schnabe	el Representative: R. Vinzant	ony											
	Dates	Started: 5/2/06 Finished: 5/	3/06											
3	Locatior	Northing: 216109.19 ft Easting: 961210.06 ft												
	Ground	Surface Elevation: 114.1 (feet)												
	DEPTH (FT)	STRATA DESCRIPT	ION	CLA	ss.	ELEV. (FT)	WL	DEP	S/ TH	AMPL r		TEST	s I	REMARKS
ŀ	0.4	ROOTMAT AND TOPSOIL				113.7			M	3+4+	4			
	-	LEAN CLAY, fine to medium moist, reddish brown.	grained,		-				Ŵ	N =8 REC	=14"			
	_							L .	M	3+3+	3			
	40 -					110 1		L .	M	N =6 REC	=16"			
	1.0	CLAYEY SAND, fine to media grained, moist, reddish browr	um 1.	sc		110.1		5						
									M	2+3+ N =6	3			
	6.5	SILTY SAND fine to medium	arained	SN	1	107.6		- ·	ΠU	REC	=18"			
	-	moist, reddish brown.	granica,		/					1.121	2			
	-								IXI	N =4	401			
	-	light reddish brown.								REC	=16.			
	-							-10-						
	-								-M	3+4+ N =8	4			
	12.0 -		ne to		_	102.1				REC	=16"			
	-	medium grained, moist, light l	brown,					L .	$\left \right $					
/6/08	_	trace line gravel.						L .	M	5+6+	7			
SDT 3	15.0 —					99.1		_15_	Ň	N =13 REC	3 =15"			
BELG	10.0	CLAYEY SAND, fine to media grained, moist, reddish browr	um 1.	sc)	00.1								
CHNA	_							[
S L4	-								1					
400.0	-													
300 &	-								IXI	15+1 N =2	5+12 7			
SPT SPT	20.0 —	SILTY SAND, fine to medium	grained,	SN	/	94.1		-20-		REC	=18"			
PLOG	-	moist, light orangeish brown.							$\left \right $					
20048	-								$\left \right $					
061								- ·						
3 LOG	-							L.		14+1	4+16			
ORIN	-							25-	Ň	N =30 REC) =14"			
EST B		continued on next pag	e					-20-			er de			
≓L		1												

	TEST	Project: (Calvert Cliff	s Nucle	ar Pow	er Plant	1	Boring I	Number:	B-428	
Schnabel Engineering LOG				alvert County, Maryland					Contract Number: 06120048		
DEPTH			ELEV				Gileett	2 01 0			
(FT)	STRATA DESCRIPT	CLASS.	(FT)	WL	DEPTH DA		A	TESTS	REMARKS		
	medium to coarse grained.		SM								
	1										
	-										
	-					┝╶┤					
	-					10	11+13+1 N =29	6			
-	-					_ ₃₀ _[/]	REC =13	3"			
	-										
,	-										
	_										
						L _M	24+16+1	0			
_	fine to medium grained, dark brown, with fine gravel				_ ₃₅ _0	N =26 REC =4"					
	fine to medium grained, wet, brown.	light									
27.0				77.1							
57.0	POORLY GRADED SAND V	VITH SILT, light	SP-SM								
	brown.						11+13+1	1			
						X	N =24	5"			
40.0 -	CLAYEY SAND, fine to med	ium	SC	74.1							
	black, trace fine rock fragme	nts.									
	-										
	-										
	-					IX	16+9+10 N =19)			
-	orange, no rock fragments.					_ ₄₅ _[]	REC =13	3"			
30/00	-										
	-										
ABEL	-					M	6+9+6				
王 か 50.0 -				64.1		_ ₅₀ _0	REC =18	3"			
Light .	FAT CLAY, moist, gray.										
- 1 & 4U											
0 0 0							4+3+5				
0487 0							N =8 REC =18	3"			
07190											
200	1					[]					
SMING	1					╴ ┤∎	REC =21	1"	PP=1.00 tsf		
	continued on next pa	ge				╞╴╶┤ ┉ ┻					
Ľ											

ſ	6	hnabol T	Calvert Cliff	s Nucle	ar Pow	er Plant		Boring	Number:	B-428			
	Schnabel Engineering LOG				Calvert Cou	alvert County, Maryland					Contract Number: 06120048		
ł	DEDTH	STRATA DESCRIPTION				FLEV				SAMPLING			
	(FT)					(FT)	WL			TA	TESTS	REMARKS	
ľ					СН								
	59.0 -	FAT CLAY, moist, gra	y, with	sand.	СН	55.1							
	_	-						-60-	REC =2	<u>م</u> ۳	w=37.1%		
	-										LL=61 PL =17		
	_										PP=2.00 tsf		
									REC =2	24"	PP=2.00 tsf		
	_								REC =2	20''			
	-												
	-							-65-					
	-								RFC =2	24"	PP=2.50 tsf		
	-												
	_												
	_												
								70	REC =7	711			
								70					
	71.0 -	CLAYEY SAND, fine t	o medi	um	SC	43.1							
	-	grained, moist, dark gi	ay.										
	-												
	-							17	9+10+1	2			
	_							_ ₇₅ _0	REC =1	8"			
	_	with fine rock fragmen	IS.										
								[]					
	-										PP=1 50 tsf		
ŝ	-								N =50/4"	l"	11 1.00 (5)		
3/6/0	_							-80-	REC =4				
GDT	-												
ABEL	-												
SCHN	_												
GPJ									50/3"				
\$ 400.								[_]	N =50/3	5'')''			
3005	85.0 —	SILTY SAND, fine gra	ned, m	ioist, gray,	SM	29.1		-85-		•			
SPT SPT	-	with fine to coarse she moderate HCI reaction	ii tragn i.	nents,									
PLOC	-												
20048	-												
061	-								50/4"				
3 LOG	_							_90_	REC =4				
ORINC													
ST BC	-	continued on	iext pag	le				[]					
۳L													

	hnabol	TEST	Project:	Calvert Cliff	s Nucle	ar Pow	er Plant	Borii	ng Number:	B-428	
Schnabel Engineering LOG				Calvert County, Maryland					Contract Number: 06120048		
DEDTH	ч						s		a. 4 01 5		
(FT)	STRATA	ION	CLASS.	(FT)	WL	DEPTH		TESTS	REMARKS		
				SM							
-	-										
-											
-	-						M	7+13+50/2"			
_	-						_95_	REC =19"			
	_										
-								7.0.0			
-	-						X	N =16			
	-						- <u>100</u> -10	REC =18"			
-	-										
-	-										
-	-										
-	-						M	14+15+19			
105.0 -					91		_ ₁₀₅	N =34 REC =18"			
100.0	POORLY GRAD	ED SAND, fi moist. grav.	ne to	SP	0.1		100				
-		,,3,									
-	-										
-	-										
-	-						M	19+24+30 N =54			
-							- <u>110-</u> [1]	REC =18"			
-	-										
-	-										
20/9/ -	-										
	trace fine to med	dium shell fra	gments.				M	4+5+10			
			5				Å	N =15 REC =18"			
TIO.0	CLAYEY SAND,	, fine to coars	e grained, to coarse	SC	-0.9		115				
	shell fragments,	strong HCI re	eaction.								
-	-										
- 10	-										
	-						M	10+18+25 N =43			
- Loc	-						_ ₁₂₀ _Δ	REC =18"			
- 20048	-										
	-										
Č u -	4										
							<u> </u>	30+47+36			
	continu	ied on next pag	e								

<sup>Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.
3. Ground Water Observation Well OW-428A installed at a nearby location</sup>

	hashal	Project:	Calvert Cliffs Nuclear Power Plant					Boring Number: B-428			
Schnabel Engineering LOG				Calvert County, Maryland					Contract Number: 06120048		
DEPTH					EI EV		s				
(FT)	STRATA DESCRIPT		ION	CLASS.	(FT)	WL	DEPTH		TA TESTS		REMARKS
				SC				N =83	70		
_	trace fine to co	arse shell frag	ments,				125-123		1		
-	moderate HCI	reaction.									
-	-										
-	-										
_							L -M	8+10+17	7		
							L ₁₂₀ M	N =17 REC =1	8"		
-							1				
-	-						- 1				
-	-										
-	-						M	11+17+ N =39	22		
_	-						_ ₁₃₅ _[]	REC =1	8"		
	-										
_											
_								10+13+	18		
-							X	N =31	0"		
_							-140-1		8		
-											
-	-										
-	-										
- <u></u>	-						M	7+12+1	7		
							L ₁₄₅	N =29 REC =1	8"		
202	with fine to coa	arse shell fragn reaction	nents,				140				
- 10	1										
- 6											
							╞╶┤				
- ^	-						10	6+8+13 N =21			
150.0 —	BOTTOMOE		0.0 FT	_	-35.9		_ ₁₅₀ _Δ	REC =1	8"		
⊂ & 1	BOTTOWOTT		0.011.								
05 1											
0 0 0											
148											
071.90											
500											
С С											