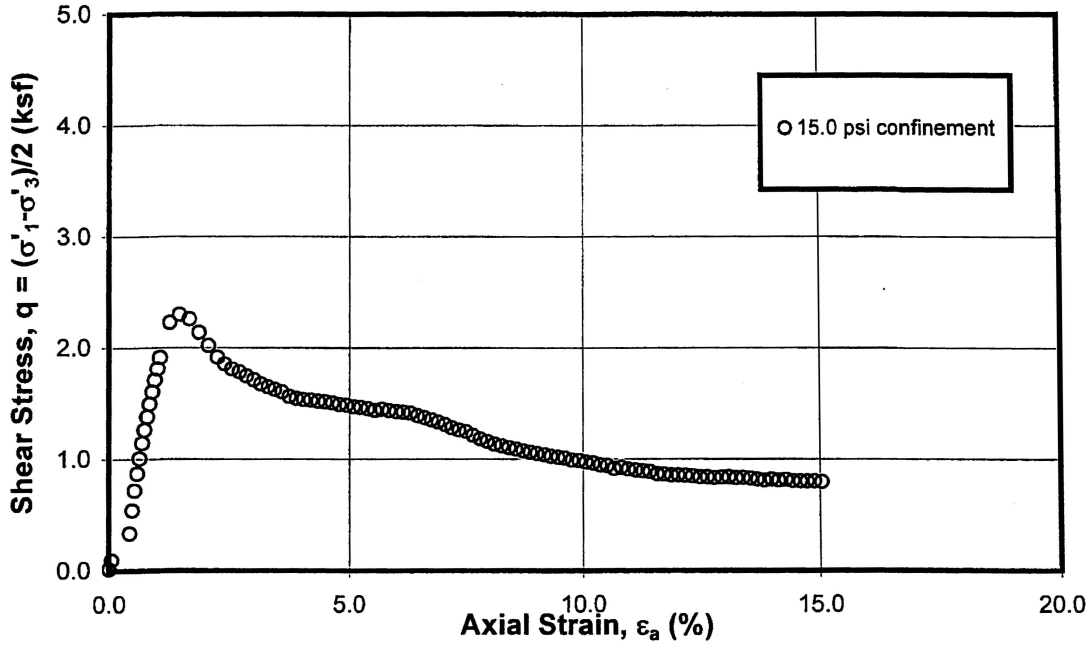
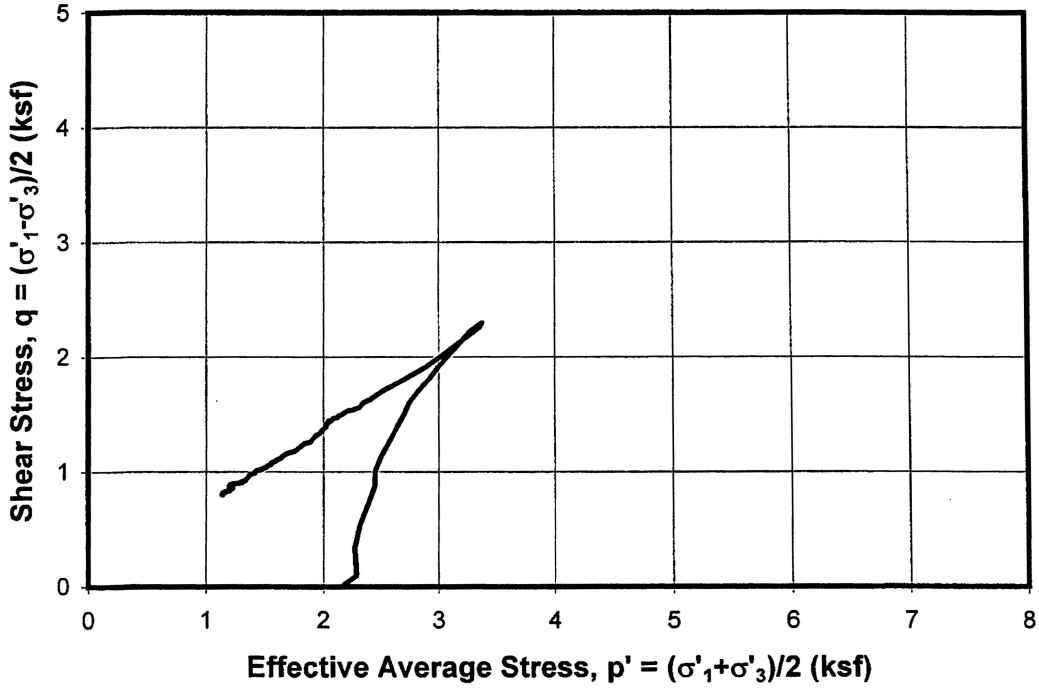
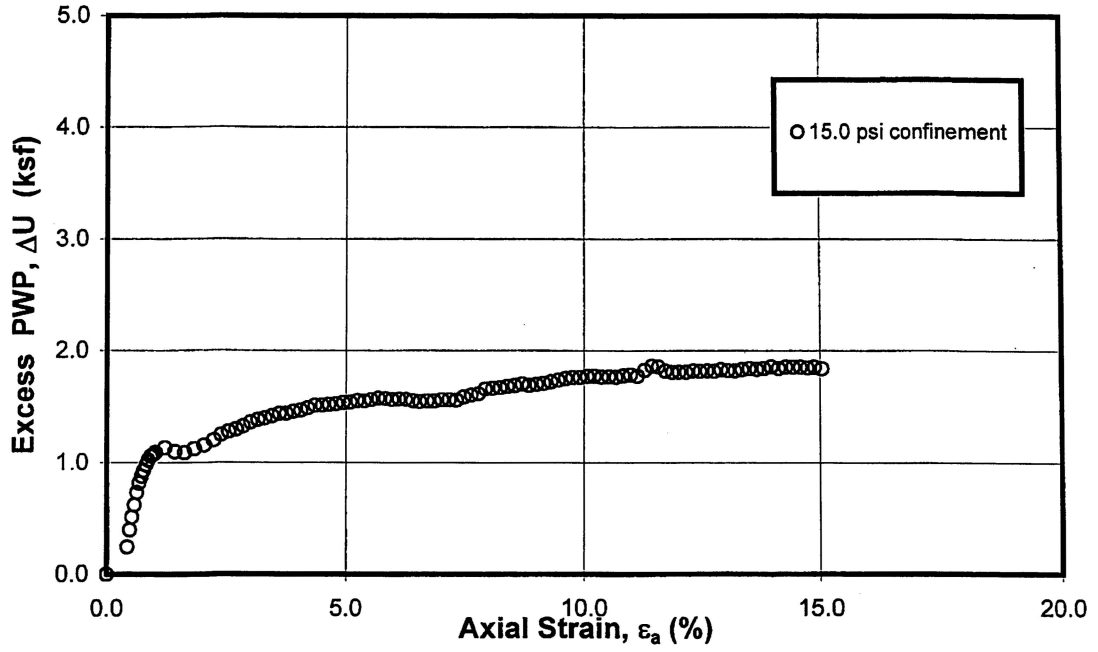
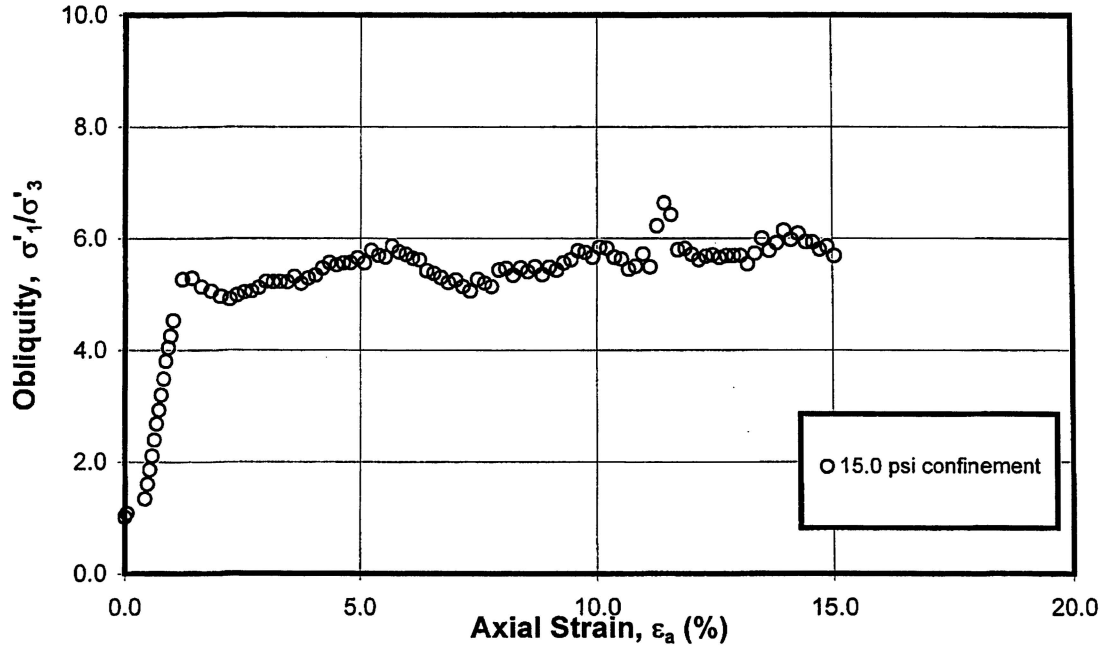




UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated
Sample: UD5c - Depth: 17.0-18.7 ft
Boring B-2321UD

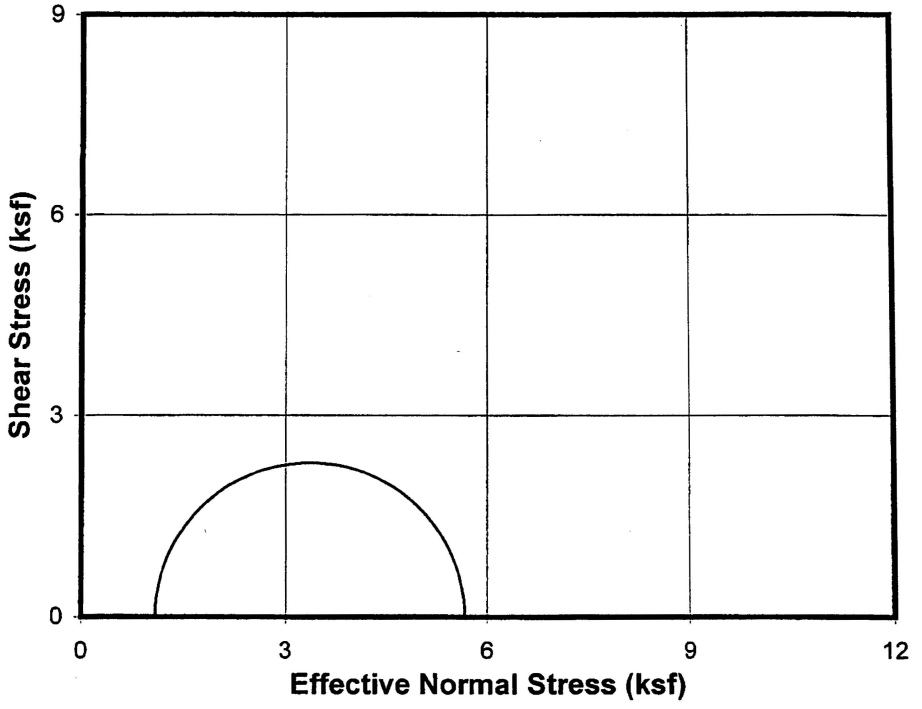
Reviewed By: WTP

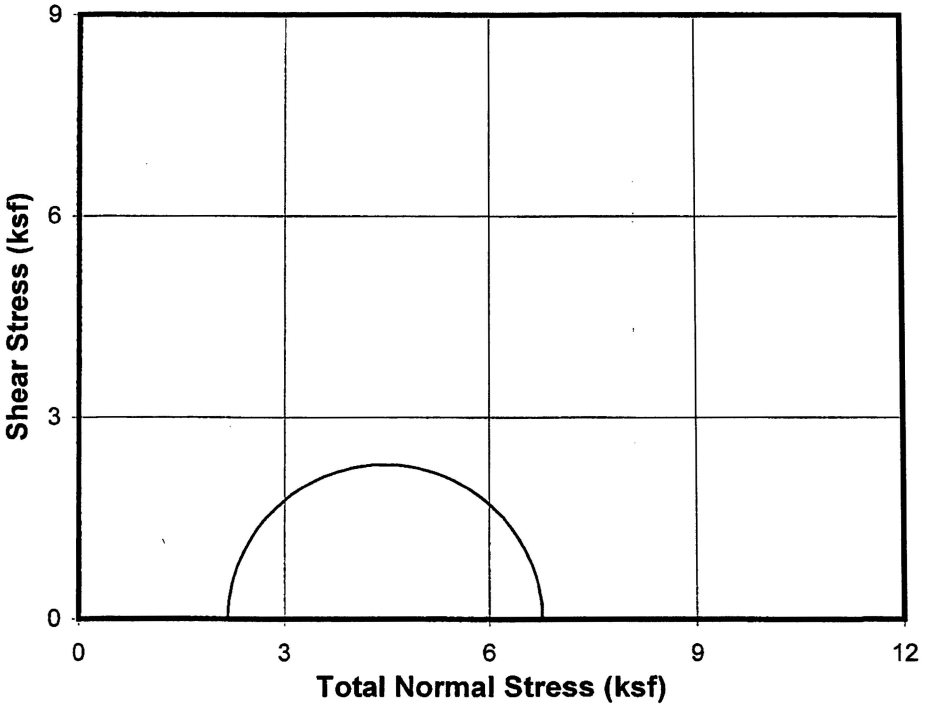




UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated
Sample: UD5c - Depth: 17.0-18.7 ft
Boring B-2321UD

Reviewed By: WLD





UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated- Mohr's Circles
Sample: UD5c - Depth: 17.0-18.7 ft
Boring B-2321UD

Reviewed By: WJD

TRIAXIAL TEST (ASTM D 4767-04): Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Type: CIU Triaxial | Cell No.: TRX-8 | File Name: 2321UD_UD9
Task No.: NA | Test Stress(es), σ'_c or $\sigma'_{v,c}$ = 6.48 , NA , NA & NA ksf
Project Name: Exelon (Victoria) | k ($\sigma'_{h,c}$ / $\sigma'_{v,c}$) = 1.00 | Induced OCR = 1.00 | K_{ua} ($\sigma_{d,ua}/2\sigma'_{v,c}$) = NA

Assig. Remarks: | Specific Gravity: 2.680 [X] Meas.; [ ] Assumed

[X] Tube [ ] Field Extruded	[ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	
Boring No.: B-2321UD	[ ] Reconstituted	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	
Sample No.: UD9	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =	
Depth (ft): 58.5-61.0	Specimen No.: c	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) =	Dia. (in.) =	
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort =	% Comp. =	± Opt. =

Type Consolidation :	X	Isotropic		K_o stress path	X	Used automated system: Drained Axial Strain Rate, $\varepsilon_{a,rate}$ (%/h) = NA											
		Anistropic		45° stress path		Remarks:											
Loading Conditions :	X	Static	X	Undrained	X	Comp.	X	Strain	[ ] Stress	X	Constant Cell Pressure	[ ] Cyclic (Hz)		[ ] Stress	[ ] Strain		
	[ ]	Post Cyclic	[ ]	Drained	[ ]	Ext.	[ ]	Stress Path		[ ]	Variable Cell Pressure	Rate: [ ] 0.1;		[ ] 1; Other:			

Water Content (WC);	Initial - Trimming Location			Final, W_{at}
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	(see below)
Container No	C4	4241	5065	622
Mass Moist Soil + Cont. (g)	87.51	89.59	88.96	122.06
Mass Dry Soil + Container (g)	78.37	79.72	79.26	107.17
Mass Container (g)	32.33	30.22	31.00	32.07
Water Content, $W_{o,n}$ (%)	19.85	19.94	20.10	19.83
Avg. Initial WC, $W_{o,avg}$ (%)	19.96	Final (W_{at}); X Slice ; [ ]		Whole Spec.
[ ] See attached data sheet(s) for additional water contents				

SOIL MASSES:	Initial	Final
Moist + Tare (etc.)(g)	459.56	461.35
Tare (etc.) (g)	0.00	0.00
Mass Moist Spec., M_{tn} (g)	459.56	461.35
Excess Dry Soil (soil not included in final mass measurement)		
Container No.		
Mass Dry Soil + Cont. (g)		
Mass Container (g)		
Mass Excess Dry Soil, $M_{d,es}$ (g)		0.00

Specimen Dimensions, (mm)

	Height			Dia., X indicates with membrane		
	Initial (H_o)	Final (H_{at})		Initial (D_o)	Final (D_{at})	
GB	100.000	100.000	1 T	51.00	58.20	For
1	9.88	-5.94	2 M	51.00	58.00	Wedge
2	9.85	-6.16	3 B	51.00	57.50	Failure
3	9.87	-6.00	1'T		52.60	= d_{max}
4	9.81	-5.90	2'M		52.00	= d_{min}
5	9.91	-5.88	3'B			= Δd
Avg.	109.86	94.02	Avg.	51.00	55.66	xxxxx

Measuring Devices:
Pi Tape: [X] Dia
Calipers: [ ] Ht.; [ ] Dia
Dial Comparator [X] Ht.; [ ] Dia
Remarks: ID# PI-002

$A_o = \pi D^2/400$ (cm^2)	20.43
V_o (cm^3)	224.43
$A_{atb,m}=\pi (D^*_{at})^2/400$ (cm^2)	24.17
$A_{atw,m}=(d_{min}-2\Delta d)d_{max}\pi/400$ (cm^2)	NA
$D^*_{at}=(D_T+2D_M+D_B)/4$ (mm)	55.47

Estimated Initial Unit Weight

Total, $\gamma_{t,o}$ (lb/ft^3) = 127.83 | Dry, $\gamma_{d,o}$ (lb/ft^3) = 106.56

Membrane / Filter Paper / Apparatus

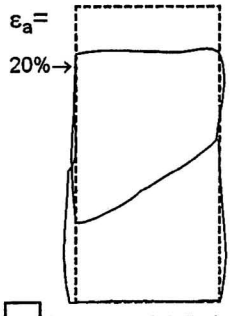
Membrane (mm):		Top	Bottom
Number:	Thickness:	0.72	0.61
= 1	[ ] Single; [X] Double	0.73	0.60
	Circumference ($C_{rm,o}$)	148.0	148.0
		Total Thickness	Dia.($C_{rm,o}/\pi$)
	Average:	0.33	47.11

Filter Paper: Top + Bottom: [ ] Yes ; [X] No
Filter Strips: [X] Yes ; [ ] No Number = 8
Type of Filter Strips [ ] Vertical: ¼ in. & Whatman #54
[X] Sprial: ¼ in. & Whatman #1

Apparatus: Mass Top Cap, M_{tc} = 53.4 g, 0.12 lbf
Mass Displ. System, M_{ds} (cap, dial, piston, etc.) = NA g, NA lbf

[ ] Photo Taken.

Failure Sketch



[ ] See more detailed sketch on attached sheet.

Failure Mode:
[X] Bulge
[ ] Wedge
[ ] Parabolic
Wedge/Bulge Ht.=
NA (mm)

NA - Not Applicable
GB - Gage Block
Other Remarks:
LL=49 PL=14 PI=35

Top Cap Attached: [ ] Yes; [X] No;
Piston Dia.(in.): [X] ½; [ ] ¾; [ ]
Load Cell: [ ] External [X] Internal
Top Cap - Rotation: [ ] Fixed,<1°; [X] Limited,<5°; [ ] Unlimited, >5°
With: [ ] Frictionless End Caps; [ ] Internal LVDT Jacket; [ ] Lat. Movement Top Cap

Final Visual Classification: Mottled Very Pale Brown and Brownish Yellow Lean CLAY with Sand (CL)

Trimmed / Reconstituted By: AW | Date: 3/4/2008
Set Up By: TP | Date: 3/4/2008
Taken Down By: TP | Date: 4/7/2008
Prelim. Calc. By: TP
Final Calc. By: TP
Reviewed By: WJP

Remarks:

KAW 5/13/08

MULTISTAGE TRIAXIAL TEST: Specimen Calculations & Summary(1)

Project Number: 0411-08-1686 | Cell No.: TRX-8 | File Name: 2321UD_UD9c
Task Number: NA | Specific Gravity: 2.680 [X] Measured; [##] Assumed
Boring No.: B-2321UD | Sample No.: UD9 | Specimen No.: c | Depth (ft): 58.5-61.0
Type Test: CIU Triaxial | Specimen: [X] "Undisturbed"; [ ] Reconstituted; [ ]
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm

	Inital Water Contents (WC), (W_o) over Saturation, (S_o), in (%):						Calculated Mass of Dry Soil (g)	
	Top, $W_{o,1}$	Botttom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selct., $W_{o,s}$	Back Cal., $W_{o,bc}$	Initial Selected WC, w_o (%)	19.96
W_c	19.85	19.94	20.10	19.96	19.96	19.36	Initial , $M_{d,o}$	383.09
S_o	94.0	94.3	94.7	94.3	94.3	92.8	Final, $M_{d,at}$	385.01
					Measured final mass of moist soil, $M_{t,at}$ (g)	461.35	Selected, M_d	385.01
					Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)	461.35		

Consolidation Data	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	
Changes in Height (mm) and Volume (cm^3) Within Given Consolidation Stages/Columns	At Initial Seating Stress	During Back-Pressuring	1st Consol. Increment (1)	Column 2 or 3 to **1st Test** Stage (1)	Column 4 to **2nd Test** Stage	Column 5 to **3rd Test** Stage	Column 6 to **4th Test** Stage	
Sign Convention: (+) Deformation in compression or Flow out of spec.; (-) Deformation in extension (swell) or Flow into spec.								
Change in Height, $\Delta H_{c,n}$	-0.06	-0.41		1.61	NA	NA	NA	
Sum of changes in (+ out)				8.09	NA	NA	NA	
burette readings, $\Delta b_{r,n}$ (- in)	-0.41	-10.56	NA	14.78	NA	NA	NA	(2)
Theoretical $\Delta V_{ct,n} = (3V_o \times \Delta H_{c,n}/H_o)$	-0.39	-2.52		9.85	NA	NA	NA	
Vol. Factor, $F_v = \Delta b_{r,n} / \Delta V_{t,n}$				0.82	NA	NA	NA	
Corrected $\Delta V_{ct,n} = F_v \times \Delta V_{t,n}$			NA	0.00	NA	NA	NA	(3)
Selected $\Delta V_{c,n}$	-0.39	-2.52		8.09	NA	NA	NA	

Summary For Test Stages					
Test Stage:	1st = 1	2nd = 2	3rd = 3	4th = 4	
Cell Pressure, $\sigma_{c,n}$ (psi)	135.28	NA	NA	NA	Number of
Back Pressure, $U_{b,n}$ (psi)	90.19	NA	NA	NA	Test Stages = 1
Axial Force Reading, $P_{r,n}$ (lbf)	1.50	NA	NA	NA	t_{50} = 190 min
Eff. Consol. Stress (σ'_c or $\sigma'_{v,c}$) (4), (ksf)	6.52	NA	NA	NA	
t_c, ON or in [X] days [ ] hrs	4.00	NA	NA	NA	

At Final Test Stress/Stage - Summary of Calculation of ΔV_c (cm^3) by Different Procedures

By Selected Volumes	By Saturation = 100 %	By Change in Mass (5)	For Diff. in Meas. Vol. (V_o-V_{at}),	For Selected ΔV_c, required
ΔV_c = 5.18	ΔV_c = 4.04	ΔV_c = 9.16	& corr. for ΔH_{td} ΔV_c=	G_s for S_c = 100 %: 2.701

At Final Test Stress/Stage - Consolidation Conclusions

$\Delta H_{c,f}$ (mm) = 1.13	$\Delta V_{c,f}$ (cm^3) = 5.18	Back Cal. G_s for S=100% = 2.701	Normalized	Ht. Ch. (%) =	0.07
$\varepsilon_{ac,c}$ (%) = 1.03	$\varepsilon_{vc,f}$ (%) = 2.31		Diff. in:	Vol. Ch. (%) =	

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.680 Measured / **Condition:**	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Unit Weight Total (pcf)	Unit Weight Dry (pcf)	Saturation (%)	Void Ratio e	Volumetric Water Content	Porosity n	Skempton B parameter %(6)
Initial:	109.86	224.43	20.43	19.36	127.83	107.09	92.7	0.560	0.3327	0.359	90.0
After to 1st σ'_c	108.73	219.25	20.16	19.83	131.36	109.62	101.5	0.524	0.3488	0.344	
Consol.: to 2nd σ'_c											
to 3rd σ'_c											
to 4th σ'_c											

Notes: (1) If the consol. stress in the 1st consol. increment & 1st test stage are equal, log the data in Column 4.

(2) The height changes occuring within each shearing and unloading stage (1 - 4) are recorded in these rows (after Column 3).

(3) The volume changes occuring within each shearing and unloading stage (1 - 4) are calculated/recorded in these rows (after Column 3).

(4) Stresses are corrected for membrane. (5) ~ $M_{t,o}$-($M_{tat,c}$+ρ_{water}x$\Delta V_{in,column1\&2}$)

(6) Initial value is after back pressuring

NA - Not Applicable ON - Over Night WC - Water Content Remarks: Wet Method used in the Saturation Stage

Calculated By: TP Reviewed By: HP

MULTISTAGE TRIAXIAL TEST: Specimen Calculations Summary(2)

Project Number: 0411-08-1686 | Test Type: CIU Triaxial | App. No.: TRX-8 | File Name:-2321UD_UD9
Project Name: Exelon (Victoria) | Task No.: NA | Test No.: 0 | Test Series for: 0

X Tube	Field Extruded	Liner	Remolded	Tamping	Constant Effort: Blows/Tamps per Layer =
Boring No.: B-2321UD		Reconstituted		Impact/Rammer	Rammer Wgt.(lbf)= No. Layers =
Sample No.: UD9	Compostite No.:			Pluviated:	Tamper Force (lbf)= Drop (in.) =
Depth (ft): 58.5-61.0	Specimen No.: c			Kneading	Undercompaction: U_{ni} (%) = Dia. (in.) =
Spec. Selection by X-ray;		Geomarine Sample			Ref. Effort = % Comp. = ± Opt. =

Type Consolidation	X	Isotropic		K_o stress path	X	Used automated system	Drained Axial Strain Rate, $\varepsilon_{a,rate}$ (%/hr.)= NA									
		Anistropic		45° stress path	Remarks:											
Loading Conditions	X	Static	X	Undrained	X	Comp.	X	Strain	Stress	X	Constant Cell pressure		Cyclic (Hz)		Stress	Strain
		Post Cyclic		Drained		Ext.		Stress Path			Variable Cell pressure	Rate:	0.1;		1;	Other:

Specific Gravity: G_s = 2.680 Measured	Height	Volume	Area	Water Content	Unit Weight Total	Unit Weight Dry	Saturation	Void Ratio	Skempton B para-
Condition:	(mm)	(cm^3)	(cm^2)	(%)	(pcf)	(pcf)	(%)	e	meter %(1)
Initial:	109.86	224.43	20.43	19.36	127.83	107.09	92.74	0.56	90.0
After to 1st σ'_c	108.73	219.25	20.16	19.83	131.36	109.62	101.50	0.52	
Consol.: to 2nd σ'_c									
to 3rd σ'_c									
to 4th σ'_c									

Unit for Stresses: (ksf)

Consolidation Stress Summary and Loading Summary

Item	Unit	1st Stage	2nd Stage	3rd Stage	4th Stage
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	1.031	NA	NA	NA
Vol. Strain during Consol., $\varepsilon_{v,c}$:	%	2.308	NA	NA	NA
Effective Vertical Stress, σ'_v	(ksf)	6.516	NA	NA	NA
Effective Horizontal Stress, σ'_h:	(ksf)	6.470	NA	NA	NA
Consol. Stress Ratio, k (σ'_h / σ'_v) :	-	0.993			
Induced OCR :	-	1.00	NA	NA	NA
Eff. Average Stress, (σ'_v + σ'_h)/2 :	(ksf)	12.985			
Eff. Mean Stress, (σ'_v + 2*σ'_h)/3 :	(ksf)	6.485			
Undr. Ambient Shear Stress, τ_{ua} :	(ksf)	NA	NA	NA	NA
Undr. Ambient Shear Strain, $\varepsilon_{a,ua}$	%	NA	NA	NA	NA

Notes: See Fugro South, Inc. Notation Listing for definition of symbols and acronyms.
(1) Initial B is after saturation
NA - Not Applicable

Membrane Correction
Type: Bulge
Modulus: 150.0 psi
Diameter: 47.11 mm
Thickness: 0.33 mm

Area Correction
Type: Bulge

Stage	Area Corr. Const.:	Final Area (cm^2):
1st	1.138	24.17
2nd		
3rd		
4th		

Filter Paper Correction
Type: None Type Strips: Sprial #1
Strips: 8
Force: 0.000 lbf/strip

Final Visual Description and Remarks: Mottled Very Pale Brown and Brownish Yellow Lean CLAY with

Loading Summary

Stage	Stress Status	ε_a (%)	q (ksf)	p' (ksf)	ΔU (ksf)	σ_1' (ksf)	σ_3' (ksf)
1st	Max Shear Stress	5.71	3.126	7.757	1.848	10.883	4.632
	Max Obliquity	3.78	2.999	7.240	2.227	10.239	4.241
2nd	Max Shear Stress						
	Max Obliquity						
3rd	Max Shear Stress						
	Max Obliquity						
4th	Max Shear Stress						
	Max Obliquity						

Remarks: Strain Rate (%/min) =2.11E-03

STAGE 1

Project: 0411-08-1686 Boring No.: B-2321UD Depth (ft.): 58.5-61.0
Test Type: CIU Triaxial Sample No.: UD9 Stage No.: 1
Specimen No.: c

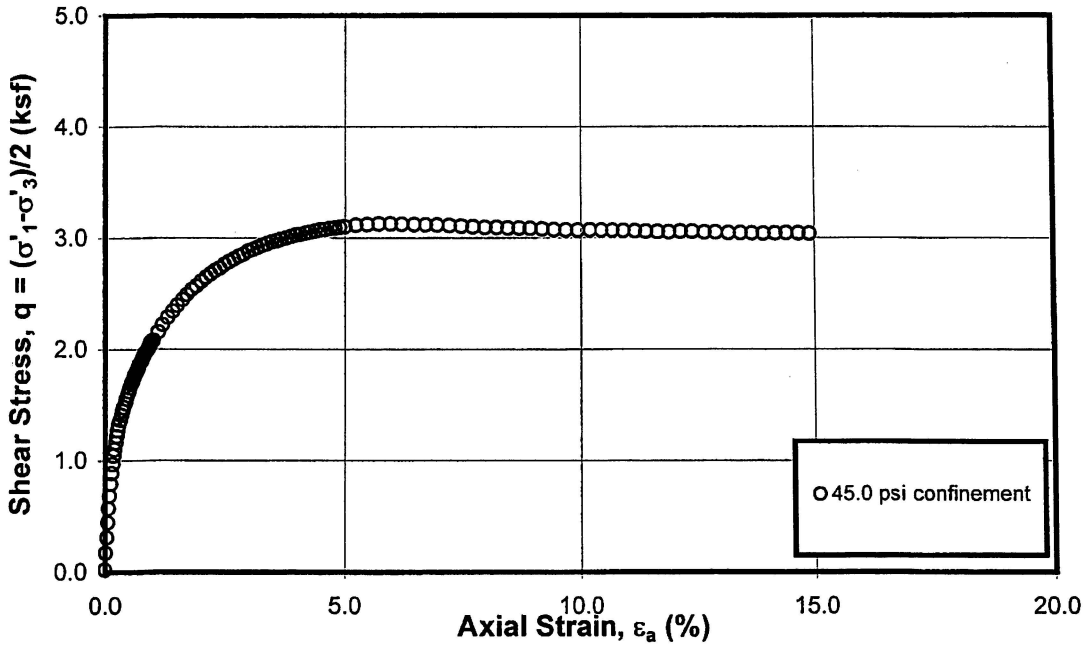
Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
0.0	0.000	0.023	6.493	0.000	0.000	1.007	0.000	-	-
10.7	0.017	0.176	6.627	0.018	0.000	1.054	0.059	1837.8	1515.4
21.5	0.039	0.311	6.702	0.082	0.000	1.097	0.136	1466.1	1312.6
32.2	0.058	0.446	6.776	0.154	0.000	1.141	0.165	1455.1	1492.3
42.9	0.075	0.574	6.792	0.259	0.000	1.185	0.229	1476.7	1323.0
53.6	0.095	0.686	6.810	0.356	0.000	1.224	0.260	1394.4	973.5
64.3	0.120	0.791	6.837	0.428	0.000	1.262	0.276	1283.4	913.9
75.0	0.140	0.889	6.802	0.562	0.000	1.301	0.321	1238.9	901.6
85.8	0.159	0.969	6.786	0.660	0.000	1.333	0.345	1188.9	757.3
96.5	0.181	1.043	6.786	0.731	0.000	1.363	0.356	1129.2	595.1
107.2	0.204	1.101	6.752	0.830	0.000	1.390	0.380	1058.6	532.9
117.9	0.226	1.163	6.731	0.912	0.000	1.418	0.396	1010.1	526.3
128.6	0.250	1.222	6.700	0.992	0.000	1.446	0.413	959.8	530.8
139.3	0.268	1.274	6.675	1.069	0.000	1.472	0.427	933.3	552.1
150.0	0.287	1.325	6.642	1.151	0.000	1.498	0.443	906.8	390.2
160.8	0.320	1.365	6.645	1.197	0.000	1.517	0.443	839.3	272.1
171.5	0.349	1.409	6.621	1.272	0.000	1.541	0.454	793.8	343.3
182.2	0.370	1.449	6.589	1.332	0.000	1.564	0.466	771.3	383.2
192.9	0.387	1.482	6.574	1.378	0.000	1.582	0.472	753.5	287.7
203.6	0.422	1.516	6.547	1.443	0.000	1.603	0.482	708.0	274.6
214.3	0.443	1.554	6.556	1.475	0.000	1.621	0.479	690.7	326.4
225.1	0.467	1.590	6.551	1.522	0.000	1.641	0.481	670.7	279.8
235.8	0.493	1.623	6.521	1.578	0.000	1.663	0.491	649.2	257.7
246.5	0.518	1.655	6.506	1.624	0.000	1.682	0.496	630.4	246.6
257.2	0.544	1.686	6.512	1.651	0.000	1.699	0.494	611.6	229.6
267.9	0.568	1.713	6.500	1.695	0.000	1.716	0.498	595.0	214.7
278.6	0.595	1.741	6.482	1.731	0.000	1.734	0.503	577.1	241.8
289.4	0.616	1.770	6.500	1.750	0.000	1.748	0.498	567.0	212.7
300.1	0.645	1.791	6.454	1.809	0.000	1.768	0.511	548.6	188.2
310.8	0.666	1.816	6.469	1.814	0.000	1.780	0.507	538.1	218.6
321.5	0.691	1.841	6.457	1.849	0.000	1.798	0.510	526.4	268.0
332.2	0.707	1.868	6.448	1.882	0.000	1.816	0.512	521.8	227.8
342.9	0.746	1.893	6.441	1.926	0.000	1.833	0.514	501.1	176.0
353.6	0.769	1.918	6.437	1.966	0.000	1.849	0.515	493.1	199.2
364.4	0.794	1.940	6.444	1.962	0.000	1.862	0.513	482.8	216.3
375.1	0.811	1.962	6.437	1.994	0.000	1.877	0.514	478.1	184.5
385.8	0.848	1.983	6.447	2.007	0.000	1.888	0.512	462.3	139.3
396.5	0.874	2.004	6.445	2.028	0.000	1.903	0.512	453.6	166.2

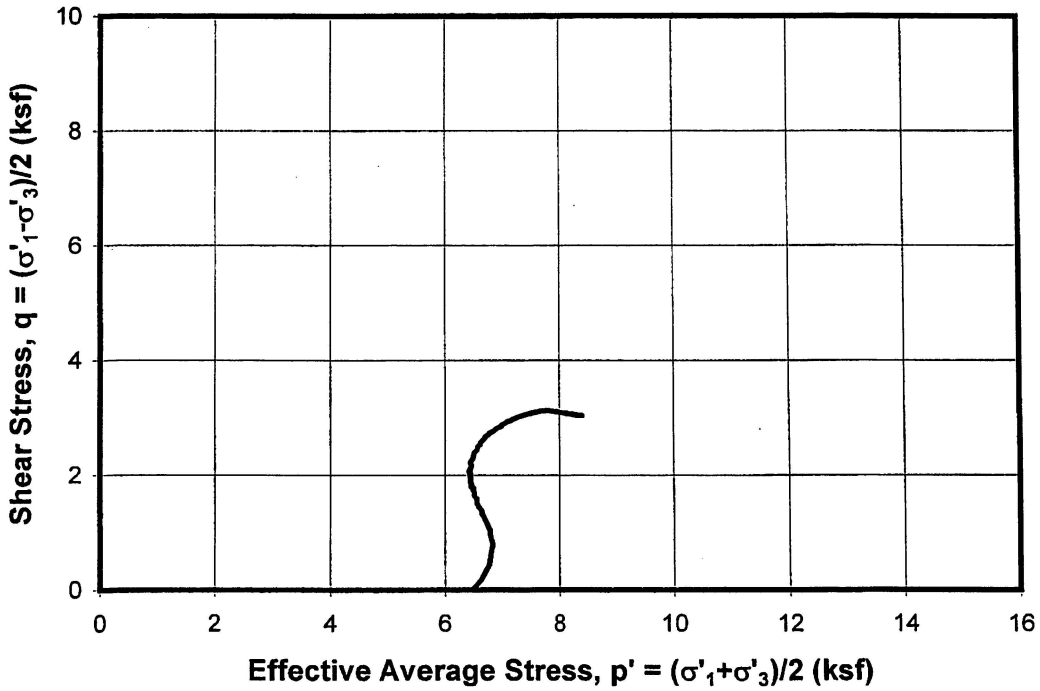
STAGE 1

Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
407.2	0.895	2.022	6.431	2.063	0.000	1.917	0.515	446.6	168.9
417.9	0.919	2.042	6.443	2.083	0.000	1.928	0.512	439.6	229.1
428.7	0.933	2.063	6.412	2.107	0.000	1.949	0.520	437.2	190.9
439.4	0.972	2.082	6.431	2.127	0.000	1.958	0.515	423.5	116.5
482.2	1.080	2.156	6.455	2.172	0.000	2.003	0.509	394.9	138.2
525.1	1.172	2.220	6.440	2.255	0.000	2.052	0.512	374.9	134.3
567.9	1.276	2.287	6.478	2.279	0.000	2.091	0.503	354.8	115.4
610.8	1.381	2.340	6.498	2.321	0.000	2.126	0.499	335.7	104.0
653.7	1.480	2.393	6.509	2.356	0.000	2.163	0.497	320.3	99.5
696.5	1.591	2.444	6.558	2.379	0.000	2.188	0.486	304.5	94.0
739.4	1.686	2.489	6.564	2.398	0.000	2.222	0.486	292.6	94.3
782.2	1.787	2.537	6.614	2.402	0.000	2.244	0.476	281.4	82.2
825.1	1.876	2.568	6.617	2.427	0.000	2.269	0.476	271.3	75.6
868.0	1.982	2.611	6.666	2.416	0.000	2.288	0.467	261.2	77.4
910.8	2.083	2.648	6.693	2.429	0.000	2.310	0.462	252.1	65.4
953.7	2.177	2.675	6.711	2.438	0.000	2.326	0.459	243.6	62.5
996.5	2.274	2.708	6.760	2.426	0.000	2.337	0.450	236.2	56.6
1039.4	2.371	2.730	6.777	2.433	0.000	2.349	0.447	228.3	57.1
1082.3	2.467	2.763	6.838	2.407	0.000	2.356	0.437	222.2	57.9
1125.1	2.567	2.786	6.866	2.392	0.000	2.366	0.432	215.3	47.1
1168.0	2.668	2.810	6.894	2.391	0.000	2.377	0.428	209.0	47.9
1210.8	2.773	2.836	6.937	2.389	0.000	2.383	0.421	202.9	41.8
1253.7	2.875	2.854	6.980	2.359	0.000	2.383	0.414	196.9	44.9
1296.5	2.972	2.880	7.000	2.361	0.000	2.398	0.411	192.3	41.6
1339.4	3.072	2.895	7.031	2.339	0.000	2.400	0.406	187.0	32.5
1382.3	3.170	2.912	7.058	2.336	0.000	2.405	0.402	182.3	38.8
1425.1	3.273	2.934	7.090	2.313	0.000	2.412	0.397	177.9	34.0
1468.0	3.372	2.947	7.124	2.297	0.000	2.411	0.392	173.4	30.7
1510.8	3.472	2.964	7.167	2.267	0.000	2.411	0.385	169.4	26.0
1553.7	3.574	2.973	7.178	2.275	0.000	2.414	0.384	165.1	23.2
1596.6	3.668	2.987	7.215	2.235	0.000	2.413	0.378	161.6	26.4
1639.4	3.776	2.999	7.240	2.227	0.000	2.415	0.374	157.6	23.3
1682.3	3.876	3.011	7.274	2.214	0.000	2.413	0.369	154.2	24.0
1725.1	3.979	3.024	7.301	2.194	0.000	2.414	0.365	150.8	18.2
1768.0	4.079	3.030	7.334	2.166	0.000	2.408	0.360	147.4	18.6
1810.8	4.183	3.043	7.352	2.156	0.000	2.412	0.358	144.4	21.6
1853.7	4.279	3.051	7.395	2.132	0.000	2.405	0.351	141.6	16.9
1896.6	4.381	3.060	7.429	2.096	0.000	2.400	0.346	138.6	17.9
1939.4	4.484	3.070	7.448	2.094	0.000	2.402	0.343	135.9	13.6
1982.3	4.585	3.073	7.477	2.074	0.000	2.396	0.339	133.1	14.6
2025.1	4.688	3.085	7.519	2.040	0.000	2.391	0.332	130.6	13.1
2068.0	4.791	3.087	7.531	2.041	0.000	2.389	0.331	127.9	8.8
2110.9	4.885	3.093	7.547	2.027	0.000	2.389	0.328	125.7	11.7

STAGE 1

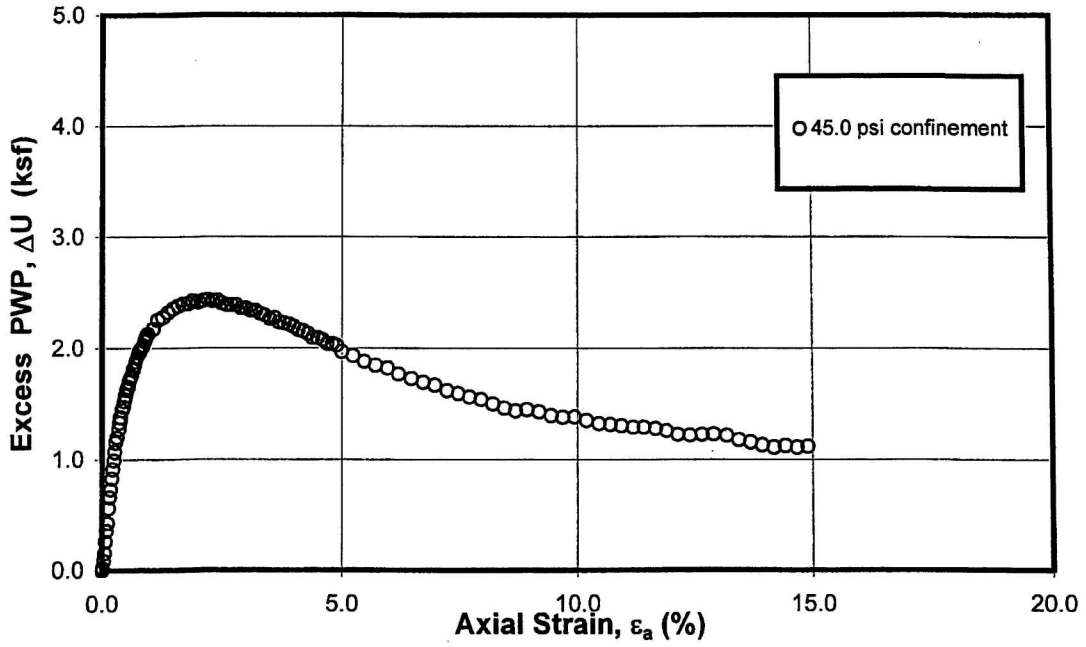
Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
2153.7	4.990	3.099	7.596	1.969	0.000	2.378	0.321	123.3	10.7
2260.9	5.230	3.112	7.656	1.931	0.000	2.370	0.312	118.1	8.4
2368.0	5.471	3.119	7.708	1.881	0.000	2.359	0.304	113.2	5.6
2475.2	5.711	3.126	7.757	1.848	0.000	2.350	0.296	108.7	2.0
2582.3	5.961	3.123	7.776	1.822	0.000	2.343	0.293	104.0	-1.4
2689.4	6.198	3.122	7.823	1.767	0.000	2.328	0.285	100.0	-1.9
2796.6	6.460	3.119	7.863	1.727	0.000	2.315	0.279	95.8	-2.5
2903.7	6.716	3.116	7.902	1.692	0.000	2.302	0.272	92.1	-2.2
3010.9	6.963	3.113	7.912	1.667	0.000	2.297	0.270	88.8	-2.4
3118.0	7.222	3.109	7.968	1.619	0.000	2.280	0.261	85.5	-3.4
3225.2	7.469	3.105	7.987	1.595	0.000	2.272	0.258	82.5	-4.7
3332.3	7.714	3.098	8.008	1.563	0.000	2.262	0.254	79.7	-4.7
3439.5	7.957	3.093	8.033	1.540	0.000	2.252	0.249	77.2	-2.3
3546.6	8.203	3.092	8.071	1.499	0.000	2.242	0.243	74.8	-2.8
3653.7	8.445	3.086	8.096	1.462	0.000	2.232	0.238	72.6	-1.4
3760.9	8.686	3.089	8.125	1.437	0.000	2.227	0.234	70.6	-1.0
3868.0	8.924	3.084	8.100	1.449	0.000	2.230	0.237	68.6	-4.3
3975.2	9.175	3.078	8.111	1.427	0.000	2.223	0.235	66.6	-3.8
4082.3	9.432	3.075	8.144	1.394	0.000	2.213	0.229	64.7	-3.6
4189.5	9.681	3.069	8.167	1.380	0.000	2.204	0.225	62.9	-2.6
4296.6	9.935	3.068	8.158	1.382	0.000	2.205	0.226	61.3	0.9
4403.8	10.195	3.071	8.196	1.351	0.000	2.199	0.221	59.8	0.1
4510.9	10.457	3.068	8.236	1.323	0.000	2.187	0.214	58.2	-2.6
4618.1	10.706	3.065	8.216	1.313	0.000	2.190	0.217	56.8	-2.4
4725.2	10.946	3.062	8.236	1.304	0.000	2.184	0.213	55.5	-2.5
4832.3	11.199	3.059	8.254	1.289	0.000	2.177	0.210	54.2	-2.7
4939.5	11.431	3.056	8.243	1.288	0.000	2.178	0.211	53.1	-2.2
5046.6	11.684	3.053	8.266	1.278	0.000	2.171	0.207	51.9	-1.8
5153.8	11.924	3.052	8.288	1.258	0.000	2.165	0.204	50.8	0.8
5260.9	12.169	3.055	8.308	1.223	0.000	2.163	0.201	49.8	1.4
5368.1	12.419	3.055	8.312	1.217	0.000	2.162	0.200	48.8	-2.5
5475.2	12.674	3.049	8.304	1.222	0.000	2.160	0.201	47.7	-2.4
5582.4	12.911	3.049	8.296	1.226	0.000	2.162	0.202	46.9	-3.0
5689.5	13.183	3.041	8.299	1.215	0.000	2.157	0.201	45.8	-2.3
5796.6	13.440	3.042	8.343	1.174	0.000	2.148	0.194	44.9	-0.8
5903.8	13.687	3.039	8.362	1.155	0.000	2.142	0.190	44.1	-2.4
6010.9	13.932	3.036	8.386	1.129	0.000	2.135	0.186	43.3	0.1
6118.1	14.177	3.039	8.401	1.109	0.000	2.133	0.184	42.5	1.7
6225.2	14.412	3.040	8.391	1.123	0.000	2.136	0.185	41.9	-0.4
6332.4	14.671	3.038	8.407	1.110	0.000	2.132	0.183	41.1	-1.3
6431.9	14.900	3.037	8.414	1.116	0.000	2.130	0.181	40.5	-0.3

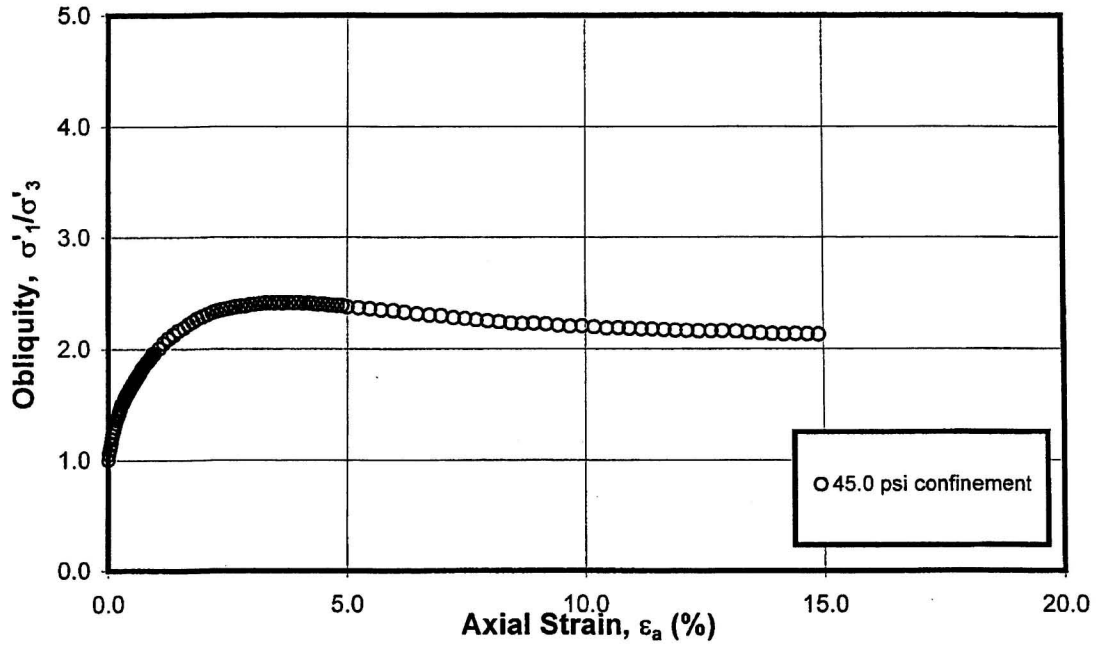




UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated
Sample: UD9c - Depth: 58.5-61.0 ft
Boring B-2321UD

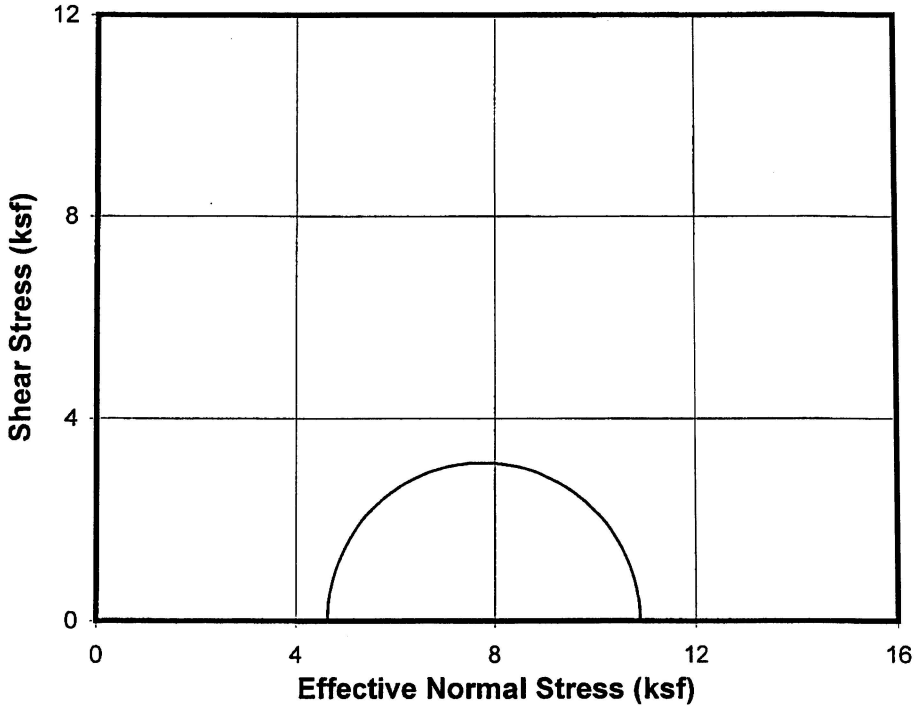
Reviewed By: WLD

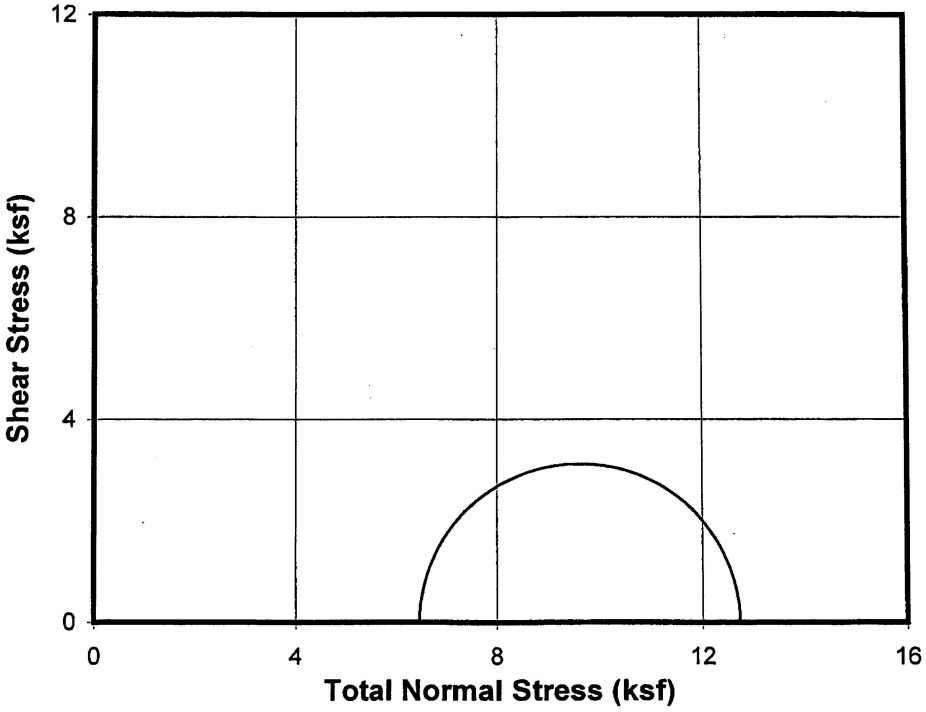




UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated
Sample: UD9c - Depth: 58.5-61.0 ft
Boring B-2321UD

Reviewed By: WED





UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated- Mohr's Circles
Sample: UD9c - Depth: 58.5-61.0 ft
Boring B-2321UD

Reviewed By: WTD

TRIAXIAL TEST (ASTM D 4767-04): Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Type: CIU Triaxial | Cell No.: TRX-7 | File Name: 2321UD_UD1

Task No.: NA | Test Stress(es), σ'_c or $\sigma'_{v,c}$ = 11.52 , NA , NA & NA ksf

Project Name: Exelon (Victoria) | k ($\sigma'_{h,c}$ / $\sigma'_{v,c}$) = 1.00 | Induced OCR = 1.00 | K_{ua} ($\sigma_{d,ua}/2\sigma'_{v,c}$) = NA

Assig. Remarks: | Specific Gravity: 2.710 [X] Meas.; [ ] Assumed

[X] Tube [ ] Field Extruded	[ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2321UD	[ ] Reconstituted	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =
Sample No.: UD15	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =
Depth (ft): 130.5-132.5	Specimen No.: c	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) =	Dia. (in.) =
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort =	% Comp. = ± Opt. =

Type Consolidation :	[X] Isotropic	[ ] Anistropic	[ ] K_o stress path	[ ] 45° stress path	[X] Used automated system:	Drained Axial Strain Rate, $\varepsilon_{a,rate}$ (%/h) = NA	Remarks:											
Loading Conditions :	[X] Static	[ ] Post Cyclic	[X] Undrained	[ ] Drained	[X] Comp.	[ ] Ext.	[X] Strain	[ ] Stress	[ ] Stress Path	[X] Constant Cell Pressure	[ ] Variable Cell Pressure	[ ] Cyclic (Hz)	Rate:	[ ] 0.1;	[ ] Stress	[ ] Strain	[ ] 1;	Other:

Water Content (WC);	Initial - Trimming Location			Final, W_{at}
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	(see below)
Container No	137	581	5001	609
Mass Moist Soil + Cont. (g)	62.28	62.96	82.50	116.21
Mass Dry Soil + Container (g)	56.89	57.40	74.14	101.00
Mass Container (g)	30.03	31.64	30.72	31.63
Water Content, $W_{o,n}$ (%)	20.07	21.58	19.25	21.93
Avg. Initial WC, $W_{o,avg}$ (%)	20.30	Final (W_{at}); [X] Slice ; [ ] Whole Spec.		

[ ] See attached data sheet(s) for additional water contents

SOIL MASSES:	Initial	Final
Moist + Tare (etc.)(g)	483.35	489.84
Tare (etc.) (g)	0.00	0.00
Mass Moist Spec., M_{tn} (g)	483.35	489.84
Excess Dry Soil (soil not included in final mass measurement)		
Container No.		
Mass Dry Soil + Cont. (g)		
Mass Container (g)		
Mass Excess Dry Soil, $M_{d,es}$ (g)		0.00

Specimen Dimensions, (mm)

Height		Dia., X indicates with membrane			
Initial (H_o)	Final (H_{at})	Initial (D_o)		Final (D_{at})	
GB 100.000	100.000	1 T	51.00	57.70	For
1 15.27	-0.89	2 M	50.90	57.80	Wedge
2 15.24	-1.55	3 B	50.90	58.90	Failure
3 15.24	-2.14	1'T		54.40	= d_{max}
4 15.30	-2.85	2'M		51.70	= d_{min}
5 15.27	-1.30	3'B			= Δd
Avg. 115.26	98.25	Avg.	50.93	56.10	xxxxx

Measuring Devices:
Pi Tape: [X] Dia
Calipers: [ ] Ht.; [ ] Dia
Dial Comparator [X] Ht.; [ ] Dia
Remarks: ID# PI-002

$A_o = \pi D^2/400$ (cm^2)	20.37
V_o (cm^3)	234.85
$A_{atb,m}=\pi (D^*_{at})^2 /400$ (cm^2)	24.38
$A_{atw,m}=(d_{min}-2\Delta d)d_{max}\pi/400$ (cm^2)	NA
$D^*_{at}=(D_T+2D_M+D_B)/4$ (mm)	55.71

Estimated Initial Unit Weight

Total, $\gamma_{t,o}$ (lb/ft^3) = 128.49 | Dry, $\gamma_{d,o}$ (lb/ft^3) = 106.80

Membrane / Filter Paper / Apparatus

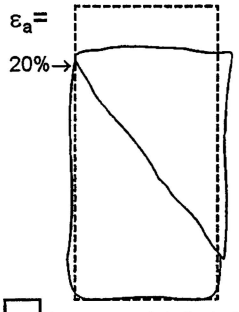
Membrane (mm):	Top	Bottom
Number: = 1 Thickness: [ ] Single; [X] Double	0.57	0.69
	0.58	0.69
Circumference ($C_{rm,o}$)	150.0	150.0
Total Thickness	Dia.($C_{rm,o}/\pi$)	
Average: 0.32	47.75	

Filter Paper: Top + Bottom: [ ] Yes ; [X] No
Filter Strips: [X] Yes ; [ ] No Number = 8
Type of Filter Strips [ ] Vertical: ¼ in. & Whatman #54
[X] Sprial: ¼ in. & Whatman #1

Apparatus: Mass Top Cap, M_{tc} = 53.4 g, 0.12 lbf
Mass Displ. System, M_{ds} (cap, dial, piston, etc.) = NA g, NA lbf

[ ] Photo Taken.

Failure Sketch



[ ] See more detailed sketch on attached sheet.

Failure Mode:
[ ] Bulge
[X] Wedge
[ ] Parabolic
Wedge/Bulge Ht.= NA (mm)

NA - Not Applicable
GB - Gage Block
Other Remarks: LL=61 PL=17 PI=44

Top Cap Attached: [ ] Yes; [X] No; Piston Dia.(in.) [X] ½: [ ] ¾; [ ] Load Cell: [ ] External [X] Internal
Top Cap - Rotation [ ] Fixed,<1°; [X] Limited,<5°; [ ] Unlimited, >5°
With: [ ] Frictionless End Caps; [ ] Lat. Movement Top Cap
[ ] Internal LVDT Jacket

Final Visual Classification: Pale Yellow Fat CLAY with Sand (CH)

Trimmed / Reconstituted By: AW | Date: 3/24/2008
Set Up By: TP | Date: 3/24/2008
Taken Down By: AW | Date: 4/14/2008
Prelim. Calc. By: TP
Final Calc. By: TP
Reviewed By: WFD

Remarks:

KAW 6/13/08

MULTISTAGE TRIAXIAL TEST: Specimen Calculations & Summary(1)

Project Number: 0411-08-1686 | Cell No.: TRX-7 | File Name: 2321UD_UD15c
Task Number: NA | Specific Gravity: 2.710 [X] Measured; [##] Assumed
Boring No.: B-2321UD | Sample No.: UD15 | Specimen No.: c | Depth (ft): 130.5-132.5
Type Test: CIU Triaxial | Specimen: [X] "Undisturbed"; [ ] Reconstituted; [ ]
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm

	Inital Water Contents (WC), (W_o) over Saturation, (S_o), in (%):						Calculated Mass of Dry Soil (g)	
	Top, $W_{o,1}$	Botttom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selct., $W_{o,s}$	Back Cal., $W_{o,bc}$	Initial Selected WC, w_o (%)	20.30
W_c	20.07	21.58	19.25	20.30	20.30	20.31	Initial , $M_{d,o}$	401.79
S_o	94.1	97.8	92.0	94.7	94.7	94.7	Final, $M_{d,at}$	401.75
	Measured final mass of moist soil, $M_{t,at}$ (g)					489.84	Selected, M_d	401.79
	Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)					489.84		

Consolidation Data	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	
Changes in Height (mm) and Volume (cm^3) Within Given Consolidation Stages/Columns	At Initial Seating Stress	During Back-Pressuring	1st Consol. Increment (1)	Column 2 or 3 to **1st Test** Stage (1)	Column 4 to **2nd Test** Stage	Column 5 to **3rd Test** Stage	Column 6 to **4th Test** Stage	
Sign Convention: (+) Deformation in compression or Flow out of spec.; (-) Deformation in extension (swell) or Flow into spec.								
Change in Height, $\Delta H_{c,n}$	-0.02	-0.12		0.80	NA	NA	NA	
Sum of changes in (+ out)	0.31			25.72	NA	NA	NA	
burette readings, $\Delta b_{r,n}$ (- in)		-8.22	NA	16.27	NA	NA	NA	(2)
Theoretical $\Delta V_{ct,n} = (3V_o \times \Delta H_{c,n}/H_o)$	-0.09	-0.72		4.89	NA	NA	NA	
Vol. Factor, $F_v = \Delta b_{r,n} / \Delta V_{t,n}$				5.26	NA	NA	NA	
Corrected $\Delta V_{ct,n} = F_v \times \Delta V_{t,n}$			NA	0.00	NA	NA	NA	(3)
Selected $\Delta V_{c,n}$	-0.09	-8.22		8.72	NA	NA	NA	

Summary For Test Stages					
Test Stage:	1st = 1	2nd = 2	3rd = 3	4th = 4	
Cell Pressure, $\sigma_{c,n}$ (psi)	129.87	NA	NA	NA	Number of
Back Pressure, $U_{b,n}$ (psi)	49.72	NA	NA	NA	Test Stages = 1
Axial Force Reading, $P_{r,n}$ (lbf)	1.51	NA	NA	NA	t_{50} = 160 min
Eff. Consol. Stress (σ'_c or $\sigma'_{v,c}$) (4), (ksf)	11.49	NA	NA	NA	
t_c, ON or in [X] days [ ] hrs	14.00	NA	NA	NA	

At Final Test Stress/Stage - Summary of Calculation of ΔV_c (cm^3) by Different Procedures

By Selected Volumes	By Saturation = 100 %	By Change in Mass (5)	For Diff. in Meas. Vol. (V_o-V_{at}),	For Selected ΔV_c, required
ΔV_c = 0.41	ΔV_c = -1.89	ΔV_c = 1.72	& corr. for ΔH_{td} ΔV_c=	G_s for S_c = 100 %: 2.753

At Final Test Stress/Stage - Consolidation Conclusions

$\Delta H_{c,f}$ (mm) = 0.67	$\Delta V_{c,f}$ (cm^3) = 0.41	Back Cal. G_s for S=100% = 2.753	Normalized	Ht. Ch. (%) = -0.06
$\varepsilon_{ac,c}$ (%) = 0.58	$\varepsilon_{vc,f}$ (%) = 0.17		Diff. in:	Vol. Ch. (%) =

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.710 Measured / **Condition:**	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Unit Weight Total (pcf)	Unit Weight Dry (pcf)	Saturation (%)	Void Ratio e	Volumetric Water Content	Porosity n	Skempton B para-meter %(6)
Initial:	115.26	234.85	20.37	20.30	128.49	106.80	94.6	0.581	0.3479	0.368	95.0
After to 1st σ'_c	114.60	234.44	20.46	21.91	130.44	106.99	102.7	0.579	0.3762	0.366	
Consol.: to 2nd σ'_c											
to 3rd σ'_c											
to 4th σ'_c											

Notes: (1) If the consol. stress in the 1st consol. increment & 1st test stage are equal, log the data in Column 4.

(2) The height changes occuring within each shearing and unloading stage (1 - 4) are recorded in these rows (after Column 3).

(3) The volume changes occuring within each shearing and unloading stage (1 - 4) are calculated/recorded in these rows (after Column 3).

(4) Stresses are corrected for membrane. (5) ~ $M_{t,o}$-($M_{tat,c}$+ρ_{water}x$\Delta V_{in,column1\&2}$)

(6) Initial value is after back pressuring

NA - Not Applicable ON - Over Night WC - Water Content Remarks: Wet Method used in the Saturation Stage

Calculated By: TP Reviewed By: HP

MULTISTAGE TRIAXIAL TEST: Specimen Calculations Summary(2)

Project Number: 0411-08-1686 | Test Type: CIU Triaxial | App. No.: TRX-7 | File Name: 2321UD_UD1

Project Name: Exelon (Victoria) | Task No.: NA | Test No.: 0 | Test Series for: 0

[X] Tube [ ] Field Extruded [ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =		
Boring No.: B-2321UD [ ] Reconstituted	[ ] Impact/Rammer	Rammer Wgt.(lbf)=		No. Layers =	
Sample No.: UD15 Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=		Drop (in.) =	
Depth (ft): 130.5-132.5 Specimen No.: c	[ ] Kneading	[ ] Undercompaction:	U_{ni} (%) =	Dia. (in.) =	
[ ] Spec. Selection by X-ray; [ ] Geomarine Sample		Ref. Effort =	% Comp. =	± Opt. =	

Type Consolidation	[X] Isotropic [ ] Anistropic	[ ] K_o stress path [ ] 45° stress path	[X] Used automated system	Drained Axial Strain Rate, $\varepsilon_{a,rate}$ (%/hr.)= NA												
Loading Conditions	[X] Static [ ] Post Cyclic	[X] Undrained [ ] Drained	[X] Comp. [ ] Ext.	[X] Strain [ ] Stress Path	[ ] Stress	[X] Constant Cell pressure [ ] Variable Cell pressure	[ ] Cyclic (Hz) Rate: [ ] 0.1;	[ ] 1;	[ ] Stress [ ] Strain Other:	Remarks:						

Specific Gravity: G_s = 2.710 Measured	Height	Volume	Area	Water Content	Unit Weight Total	Unit Weight Dry	Saturation	Void Ratio	Skempton B para-meter %(1)
Condition:	(mm)	(cm^3)	(cm^2)	(%)	(pcf)	(pcf)	(%)	e	
Initial:	115.26	234.85	20.37	20.30	128.49	106.80	94.64	0.58	95.0
After Consol.: to 1st σ'_c	114.60	234.44	20.46	21.91	130.44	106.99	102.66	0.58	
to 2nd σ'_c									
to 3rd σ'_c									
to 4th σ'_c									

Unit for Stresses: (ksf)

Consolidation Stress Summary and Loading Summary

Item	Unit	1st Stage	2nd Stage	3rd Stage	4th Stage
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	0.579	NA	NA	NA
Vol. Strain during Consol., $\varepsilon_{v,c}$:	%	0.175	NA	NA	NA
Effective Vertical Stress, σ'_v	(ksf)	11.492	NA	NA	NA
Effective Horizontal Stress, σ'_h:	(ksf)	11.438	NA	NA	NA
Consol. Stress Ratio, k (σ'_h / σ'_v) :	-	0.995			
Induced OCR :	-	1.00	NA	NA	NA
Eff. Average Stress, (σ'_v + σ'_h)/2 :	(ksf)	22.930			
Eff. Mean Stress, (σ'_v + 2*σ'_h)/3 :	(ksf)	11.456			
Undr. Ambient Shear Stress, τ_{ua} :	(ksf)	NA	NA	NA	NA
Undr. Ambient Shear Strain, $\varepsilon_{a,ua}$	%	NA	NA	NA	NA

Notes: See Fugro South, Inc. Notation Listing for definition of symbols and acronyms.

(1) Initial B is after saturation

NA - Not Applicable

Membrane Correction

Type: Bulge

Modulus: 150.0 psi

Diameter: 47.75 mm

Thickness: 0.32 mm

Area Correction

Type: Bulge

Stage	Area Corr. Const.:	Final Area (cm^2):
1st	1.157	24.38
2nd		
3rd		
4th		

Filter Paper Correction

Type: None Type Strips: Sprial #1

Strips: 8

Force: 0.000 lbf/strip

Final Visual Description and Remarks: Pale Yellow Fat CLAY with Sand (CH)

Loading Summary

Stage	Stress Status	ε_a (%)	q (ksf)	p' (ksf)	ΔU (ksf)	σ_1' (ksf)	σ_3' (ksf)
1st	Max Shear Stress	2.21	3.352	4.728	10.053	8.079	1.376
	Max Obliquity	2.21	3.352	4.728	10.053	8.079	1.376
2nd	Max Shear Stress						
	Max Obliquity						
3rd	Max Shear Stress						
	Max Obliquity						
4th	Max Shear Stress						
	Max Obliquity						

Remarks: Stain Rate (%/min) = 2.50E-03

STAGE 1

Project: 0411-08-1686 Boring No.: B-2321UD Depth (ft.): 130.5-132.5
Test Type: CIU Triaxial Sample No.: UD15 Stage No.: 1
Specimen No.: c

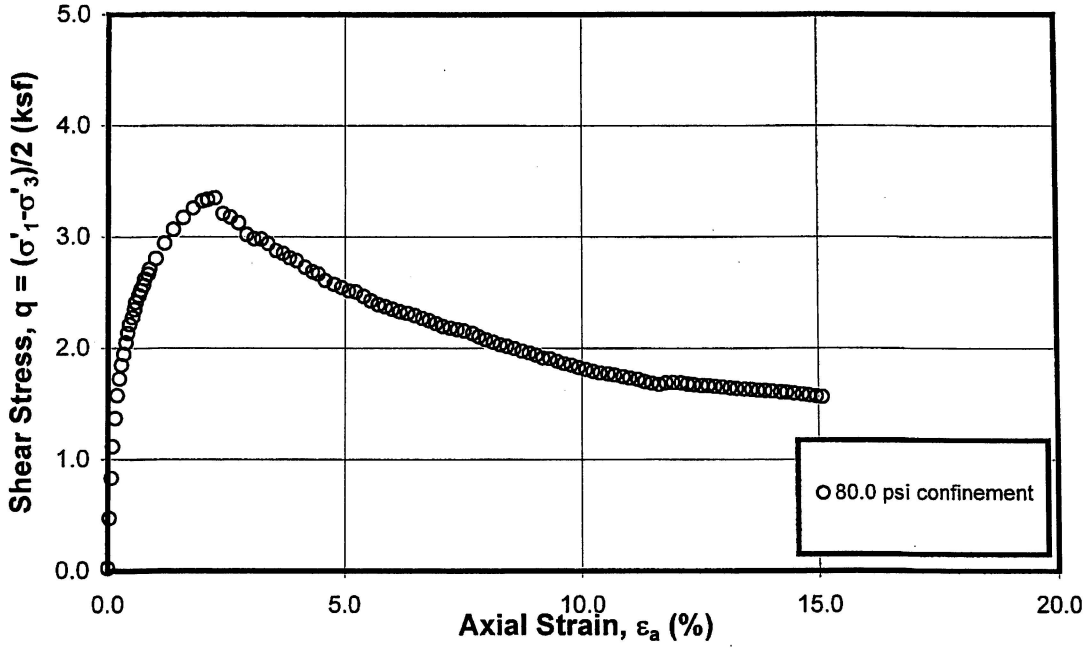
Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
0.0	0.000	0.027	11.465	0.000	0.000	1.005	0.000	-	-
20.0	0.032	0.473	11.698	0.214	0.000	1.084	0.239	2775.0	2428.4
40.0	0.074	0.835	11.831	0.439	0.000	1.152	0.274	2190.3	2049.7
60.0	0.102	1.116	11.874	0.676	0.000	1.207	0.312	2135.7	1272.9
80.0	0.152	1.368	11.882	0.920	0.000	1.260	0.344	1769.2	1222.1
100.0	0.191	1.576	11.851	1.163	0.000	1.307	0.375	1622.4	917.6
120.0	0.237	1.724	11.749	1.413	0.000	1.344	0.416	1429.3	601.3
140.0	0.283	1.847	11.628	1.653	0.000	1.378	0.455	1284.8	507.4
160.0	0.325	1.947	11.489	1.888	0.000	1.408	0.494	1182.4	370.3
180.1	0.377	2.051	11.361	2.124	0.000	1.441	0.526	1073.9	681.4
200.1	0.411	2.137	11.215	2.361	0.000	1.471	0.559	1027.1	357.1
220.1	0.446	2.212	11.055	2.594	0.000	1.500	0.594	980.6	401.2
240.1	0.505	2.277	10.855	2.857	0.000	1.531	0.635	891.0	314.8
260.1	0.546	2.346	10.717	3.062	0.000	1.560	0.661	849.1	349.6
280.1	0.576	2.409	10.554	3.285	0.000	1.592	0.691	826.7	318.2
300.1	0.636	2.469	10.401	3.495	0.000	1.623	0.718	768.1	-2842.9
320.1	0.672	2.519	10.256	3.695	0.000	1.651	0.743	741.8	219.0
340.1	0.728	2.564	10.092	3.909	0.000	1.681	0.770	697.5	256.1
360.1	0.756	2.623	9.964	4.097	0.000	1.715	0.789	687.2	288.2
380.1	0.820	2.664	9.806	4.300	0.000	1.746	0.815	643.6	298.0
400.1	0.851	2.710	9.672	4.469	0.000	1.779	0.834	630.6	147.2
450.1	0.974	2.805	9.306	4.930	0.000	1.863	0.888	570.8	174.0
530.1	1.153	2.941	8.772	5.608	0.000	2.009	0.962	505.6	145.4
610.1	1.335	3.066	8.298	6.217	0.000	2.172	1.021	455.4	120.4
690.1	1.541	3.171	7.792	6.813	0.000	2.372	1.084	408.0	83.3
770.1	1.750	3.258	7.216	7.479	0.000	2.646	1.158	369.3	72.6
850.1	1.943	3.322	6.506	8.253	0.000	3.086	1.253	339.2	49.4
893.1	2.052	3.337	5.861	8.919	0.000	3.643	1.346	322.6	20.8
953.1	2.207	3.352	4.728	10.053	0.000	5.870	1.513	301.3	-2.9
1013.1	2.378	3.207	4.947	9.693	0.000	4.686	1.525	267.5	-80.8
1073.1	2.533	3.176	4.799	9.815	0.000	4.912	1.558	248.6	-151.6
1133.1	2.705	3.123	4.800	9.759	0.000	4.727	1.576	229.0	-28.2
1193.1	2.878	3.019	5.290	9.167	0.000	3.659	1.532	208.0	-151.2
1253.1	3.031	2.981	5.343	9.087	0.000	3.525	1.536	194.9	-29.1
1313.1	3.194	2.978	5.039	9.380	0.000	3.889	1.589	184.8	-25.7
1373.1	3.341	2.939	5.209	9.172	0.000	3.589	1.574	174.3	-38.3
1433.1	3.516	2.875	5.528	8.778	0.000	3.168	1.542	162.0	-45.7
1493.1	3.666	2.849	5.521	8.768	0.000	3.132	1.553	154.0	-55.3
1553.1	3.810	2.811	5.609	8.640	0.000	3.009	1.552	146.2	-23.1
1613.1	3.962	2.785	5.404	8.821	0.000	3.127	1.599	139.2	-64.1
1673.1	4.141	2.728	5.588	8.568	0.000	2.908	1.588	130.5	-48.3
1733.1	4.301	2.687	5.458	8.664	0.000	2.939	1.629	123.7	-32.7

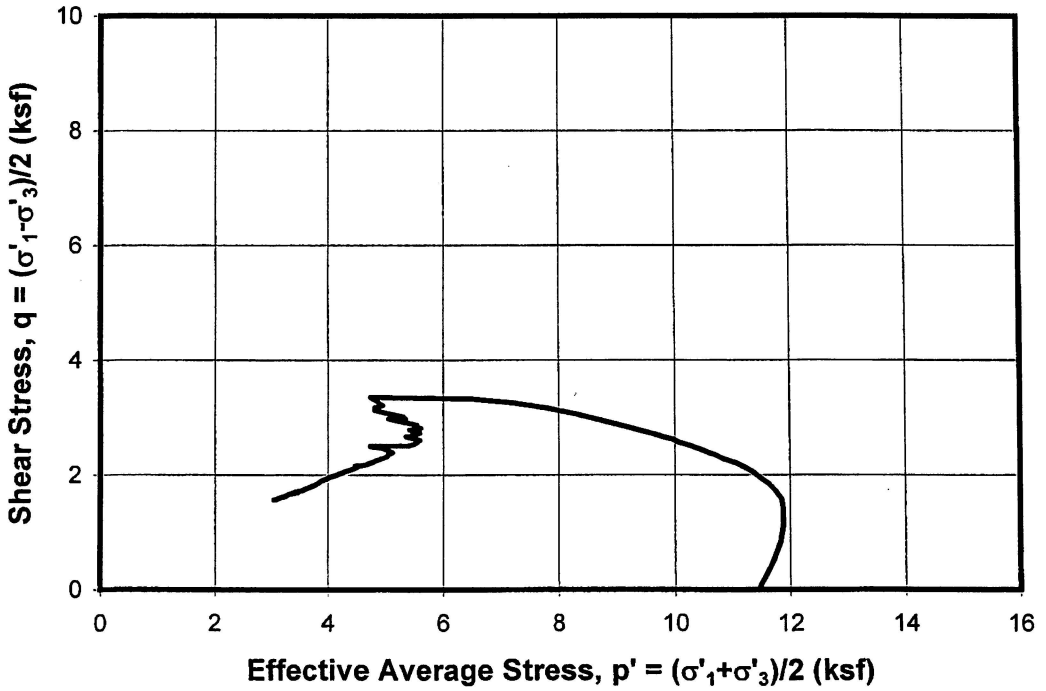
STAGE 1

Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
1793.1	4.434	2.667	5.345	8.761	0.000	2.993	1.659	119.1	-70.1
1853.1	4.580	2.606	5.588	8.459	0.000	2.748	1.639	112.6	-54.6
1913.1	4.762	2.572	5.536	8.468	0.000	2.735	1.665	106.9	-36.9
1973.1	4.925	2.544	5.488	8.492	0.000	2.728	1.687	102.2	-39.8
2033.1	5.086	2.513	5.404	8.551	0.000	2.739	1.719	97.8	-34.0
2093.1	5.241	2.506	4.722	9.211	0.000	3.261	1.860	94.6	-31.0
2153.1	5.406	2.465	4.954	8.954	0.000	2.980	1.835	90.2	-56.6
2213.1	5.550	2.424	5.033	8.826	0.000	2.858	1.842	86.4	-41.5
2273.1	5.706	2.389	5.113	8.712	0.000	2.755	1.844	82.8	-38.4
2333.1	5.846	2.372	5.073	8.740	0.000	2.756	1.863	80.2	-28.5
2393.1	5.996	2.349	5.030	8.757	0.000	2.752	1.886	77.5	-25.2
2453.1	6.149	2.326	5.020	8.731	0.000	2.726	1.902	74.8	-26.0
2513.1	6.300	2.312	4.997	8.753	0.000	2.721	1.915	72.5	-20.5
2573.1	6.454	2.293	4.947	8.784	0.000	2.729	1.938	70.2	-30.8
2633.1	6.615	2.267	4.883	8.819	0.000	2.733	1.969	67.7	-30.9
2693.1	6.761	2.246	4.816	8.860	0.000	2.748	1.998	65.6	-40.2
2753.1	6.903	2.221	4.760	8.902	0.000	2.750	2.027	63.6	-26.7
2813.1	7.050	2.196	4.692	8.936	0.000	2.760	2.061	61.6	-20.9
2873.1	7.201	2.182	4.669	8.948	0.000	2.755	2.076	59.9	-20.3
2933.1	7.353	2.167	4.593	9.014	0.000	2.786	2.106	58.2	-17.7
2993.1	7.499	2.156	4.459	9.128	0.000	2.872	2.145	56.8	-21.1
3053.1	7.677	2.133	4.500	9.065	0.000	2.803	2.153	54.9	-40.3
3113.1	7.811	2.105	4.431	9.108	0.000	2.810	2.192	53.2	-35.2
3173.1	7.959	2.077	4.355	9.152	0.000	2.824	2.234	51.5	-42.3
3233.2	8.122	2.054	4.277	9.203	0.000	2.849	2.273	49.9	-18.5
3293.2	8.264	2.034	4.234	9.236	0.000	2.848	2.301	48.6	-23.1
3353.2	8.412	2.018	4.202	9.257	0.000	2.848	2.323	47.4	-33.7
3413.2	8.571	2.000	4.159	9.284	0.000	2.852	2.352	46.0	-18.4
3473.2	8.741	1.977	4.085	9.330	0.000	2.875	2.392	44.6	-30.8
3533.2	8.893	1.958	4.042	9.353	0.000	2.880	2.421	43.4	-33.4
3593.2	9.040	1.939	3.990	9.382	0.000	2.891	2.454	42.3	-26.6
3653.2	9.183	1.913	3.940	9.406	0.000	2.889	2.494	41.1	-25.1
3713.2	9.327	1.905	3.914	9.439	0.000	2.897	2.510	40.3	-19.2
3773.2	9.480	1.883	3.865	9.456	0.000	2.899	2.548	39.2	-27.9
3833.2	9.625	1.864	3.844	9.456	0.000	2.883	2.574	38.2	-26.3
3893.2	9.775	1.849	3.817	9.474	0.000	2.879	2.598	37.3	-23.5
3953.2	9.928	1.825	3.784	9.491	0.000	2.864	2.635	36.2	-24.1
4013.2	10.085	1.810	3.746	9.515	0.000	2.870	2.664	35.4	-24.5
4073.2	10.237	1.792	3.694	9.534	0.000	2.885	2.701	34.5	-15.0
4133.2	10.389	1.777	3.666	9.549	0.000	2.881	2.728	33.7	-18.3
4193.2	10.557	1.769	3.643	9.558	0.000	2.888	2.745	33.0	-14.5
4253.2	10.700	1.760	3.608	9.590	0.000	2.904	2.767	32.4	-12.8
4313.2	10.869	1.744	3.564	9.620	0.000	2.917	2.800	31.6	-15.3
4373.2	11.015	1.732	3.564	9.619	0.000	2.892	2.816	31.0	-16.3
4433.2	11.180	1.722	3.514	9.645	0.000	2.922	2.845	30.3	-13.5
4493.2	11.321	1.702	3.434	9.698	0.000	2.966	2.897	29.6	-28.6
4553.2	11.469	1.687	3.389	9.747	0.000	2.983	2.932	29.0	-26.9
4613.2	11.620	1.674	3.350	9.757	0.000	2.998	2.963	28.4	-3.4
4673.2	11.770	1.691	3.465	9.657	0.000	2.905	2.904	28.3	25.3
4733.2	11.922	1.693	3.452	9.684	0.000	2.924	2.905	27.9	-4.5

STAGE 1

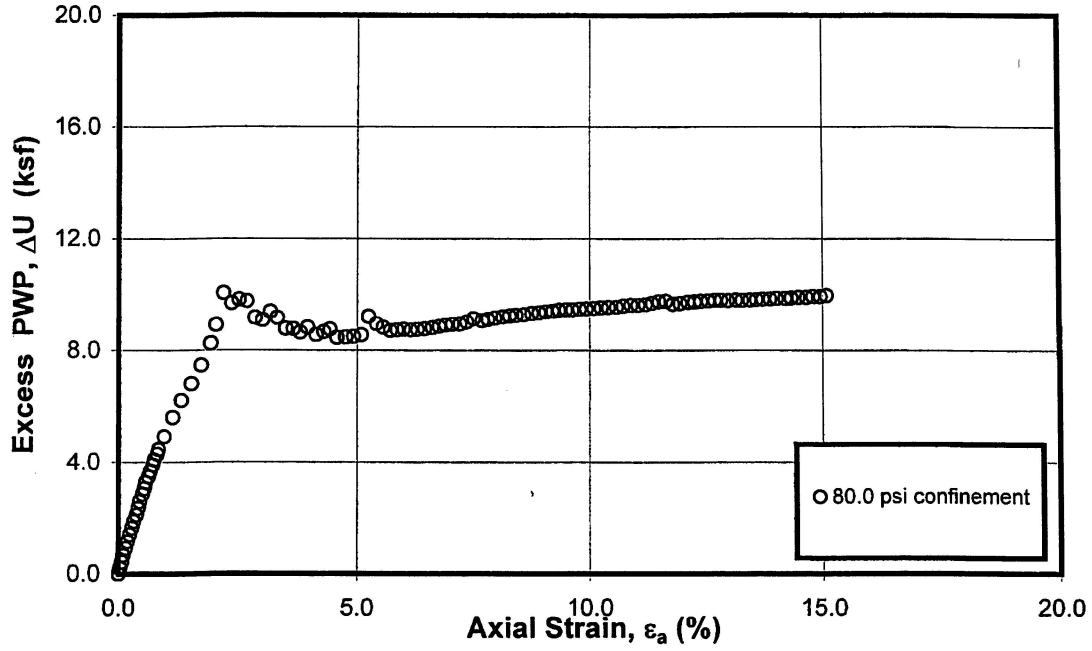
Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
4793.2	12.091	1.689	3.405	9.724	0.000	2.970	2.924	27.5	-0.7
4853.2	12.230	1.679	3.382	9.737	0.000	2.972	2.946	27.0	-15.9
4913.2	12.365	1.673	3.365	9.755	0.000	2.978	2.960	26.6	-8.4
4973.2	12.521	1.663	3.336	9.767	0.000	2.988	2.984	26.1	0.6
5033.2	12.666	1.664	3.316	9.790	0.000	3.015	2.989	25.9	-10.1
5093.2	12.807	1.659	3.312	9.790	0.000	3.008	2.997	25.5	-11.5
5153.2	12.960	1.652	3.298	9.788	0.000	3.008	3.012	25.1	0.3
5213.2	13.133	1.644	3.282	9.810	0.000	3.007	3.031	24.6	-9.0
5273.2	13.271	1.638	3.275	9.789	0.000	3.002	3.041	24.3	-10.7
5333.2	13.438	1.633	3.258	9.811	0.000	3.009	3.055	23.9	-3.4
5393.3	13.585	1.629	3.243	9.818	0.000	3.018	3.065	23.6	-7.9
5453.3	13.730	1.622	3.234	9.829	0.000	3.012	3.080	23.2	-6.5
5513.3	13.881	1.618	3.207	9.844	0.000	3.036	3.096	22.9	-11.0
5573.3	14.028	1.616	3.197	9.860	0.000	3.043	3.102	22.7	-3.9
5633.3	14.205	1.607	3.184	9.865	0.000	3.039	3.120	22.3	-8.6
5693.3	14.333	1.604	3.169	9.876	0.000	3.049	3.131	22.0	-3.7
5753.3	14.489	1.596	3.136	9.899	0.000	3.073	3.153	21.7	-15.6
5813.3	14.658	1.587	3.126	9.896	0.000	3.062	3.173	21.3	-4.2
5873.3	14.802	1.577	3.087	9.935	0.000	3.089	3.202	20.9	-12.6
5933.3	14.957	1.568	3.068	9.936	0.000	3.092	3.224	20.6	-14.5
5993.3	15.085	1.564	3.048	9.962	0.000	3.106	3.238	20.4	-144.7

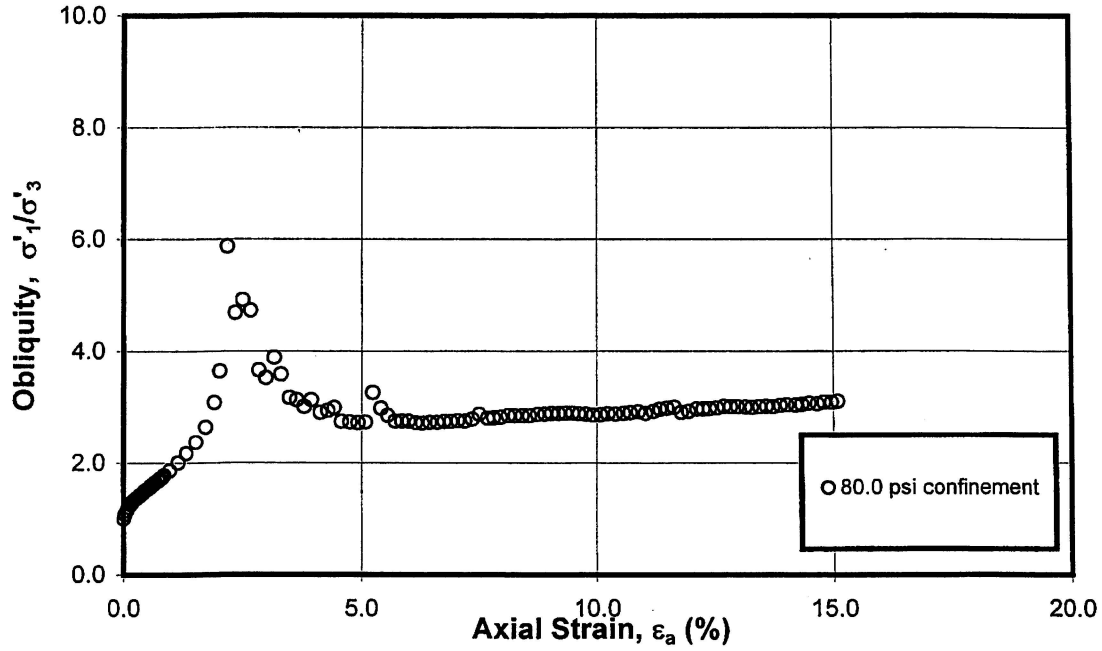




UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated
Sample: UD15c - Depth: 130.5-132.5 ft
Boring B-2321UD

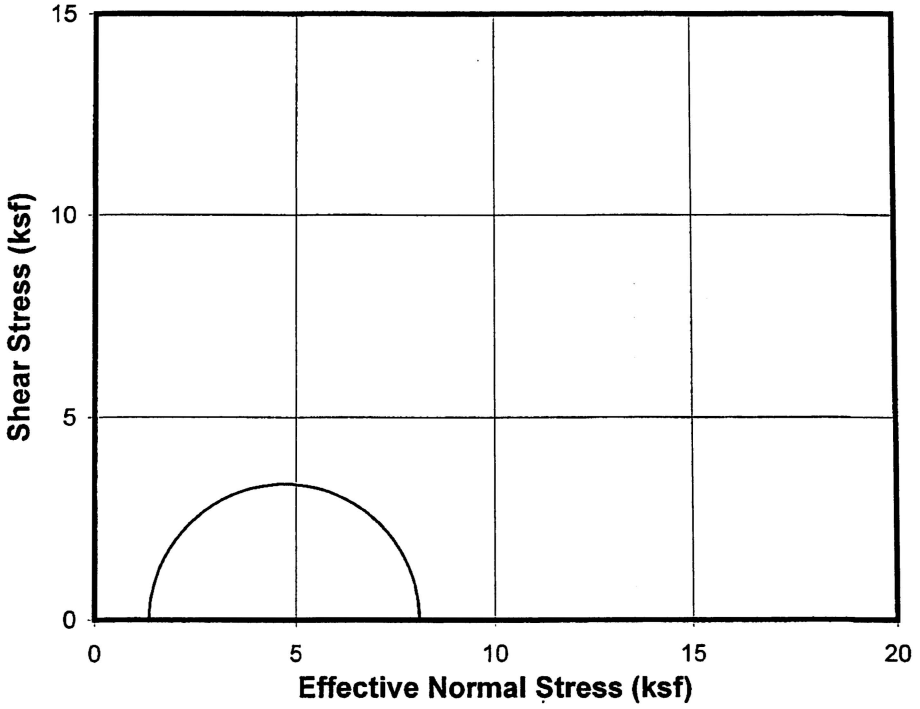
Reviewed By: WJD

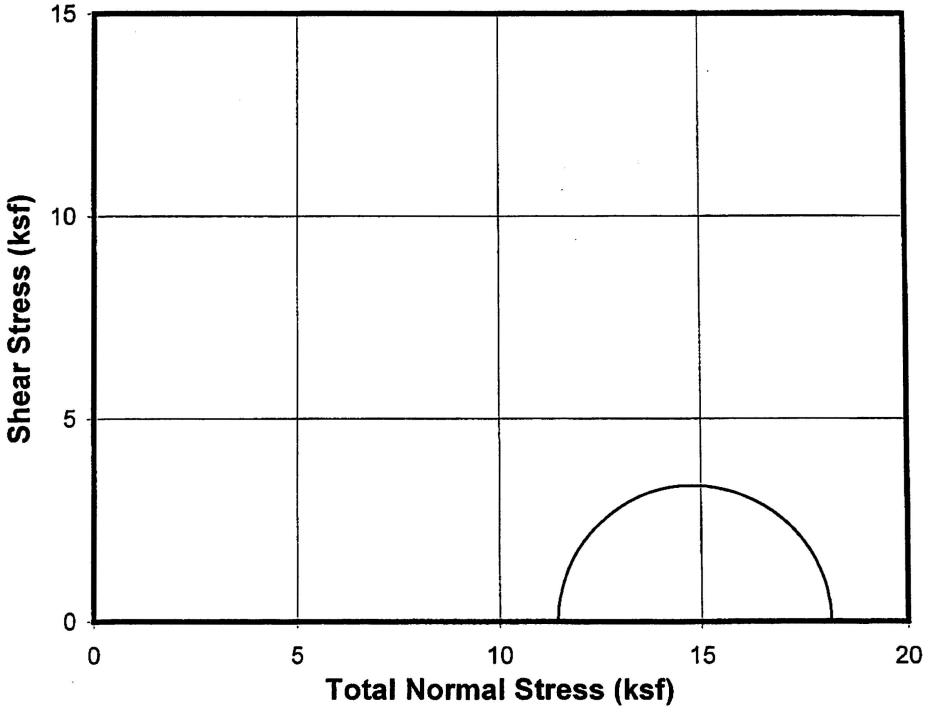




UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated
Sample: UD15c - Depth: 130.5-132.5 ft
Boring B-2321UD

Reviewed By: WFD





UNDRAINED TRIAXIAL COMPRESSION TEST
Isotropically Consolidated- Mohr's Circles
Sample: UD15c - Depth: 130.5-132.5 ft
Boring B-2321UD

Reviewed By: WED

TRIAXIAL TEST (ASTM D 4767-04): Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Type: CIU Triaxial | Cell No.: TRX-7 | File Name: 2359UD_UD5
Task No.: NA | Test Stress(es), σ'_c or $\sigma'_{v,c}$ = 5.04 , NA , NA & NA ksf
Project Name: Exelon (Victoria) | k ($\sigma'_{h,c}$ / $\sigma'_{v,c}$) = 1.00 | Induced OCR = 1.00 | K_{ua} ($\sigma_{d,ua}/2\sigma'_{v,c}$) = NA

Assig. Remarks: | Specific Gravity: 2.710 [X] Meas.; [ ] Assumed

[X] Tube [ ] Field Extruded [ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2359UD [ ] Reconstituted	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =
Sample No.: UD5 Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =
Depth (ft): 40.0-41.7 Specimen No.: c	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) =	Dia. (in.) =
[ ] Spec. Selection by X-ray; [ ] Geomarine Sample		Ref. Effort = % Comp. =	± Opt. =

Type Consolidation :	[X] Isotropic	[ ] K_o stress path	[X] Used automated system:	Drained Axial Strain Rate, $\varepsilon_{a,rate}$ (%/h) = NA	
	[ ] Anistropic	[ ] 45° stress path	Remarks:		
Loading Conditions :	[X] Static	[X] Undrained	[X] Comp.	[X] Strain [ ] Stress	[X] Constant Cell Pressure / [ ] Variable Cell Pressure
	[ ] Post Cyclic	[ ] Drained	[ ] Ext.	[ ] Stress Path	[ ] Cyclic (Hz) Rate: [ ] 0.1; [ ] 1; Other: [ ] Stress [ ] Strain

Water Content (WC);	Initial - Trimming Location: Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	Final, W_{at} (see below)
Container No	4022	4146	587	4003
Mass Moist Soil + Cont. (g)	75.06	90.34	80.69	149.61
Mass Dry Soil + Container (g)	66.96	79.80	71.62	127.21
Mass Container (g)	30.12	30.34	31.53	30.36
Water Content, $W_{o,n}$ (%)	21.99	21.31	22.62	23.13
Avg. Initial WC, $W_{o,avg}$ (%)	21.97	Final (W_{at}); [X] Slice ; [ ] Whole Spec.		

[ ] See attached data sheet(s) for additional water contents

SOIL MASSES:	Initial	Final
Moist + Tare (etc.)(g)	477.28	485.45
Tare (etc.) (g)	0.00	0.00
Mass Moist Spec., M_m (g)	477.28	485.45
Excess Dry Soil (soil not included in final mass measurement)		
Container No.		
Mass Dry Soil + Cont. (g)		
Mass Container (g)		
Mass Excess Dry Soil, $M_{d,es}$ (g)		0.00

Specimen Dimensions, (mm)

	Height: Initial (H_o)	Final (H_{at})	Dia., X indicates with membrane: Initial (D_o)		Final (D_{at})	
GB	100.000	100.000	1 T	51.10	57.80	For
1	15.55	-0.34	2 M	51.00	59.00	Wedge
2	15.51	-0.69	3 B	51.00	58.50	Failure
3	15.50	0.27	1'T		52.50	= d_{max}
4	15.56	-0.19	2'M		52.30	= d_{min}
5	15.49	0.10	3'B			= Δd
Avg.	115.52	99.83	Avg.	51.03	56.02	xxxxx

Measuring Devices:
Pi Tape: [X] Dia
Calipers: [ ] Ht.; [ ] Dia
Dial Comparator [X] Ht.; [ ] Dia
Remarks: ID# PI-002

$A_o = \pi D^2/400$ (cm^2)	20.45
V_o (cm^3)	236.30
$A_{atb,m}=\pi (D^*_{at})^2/400$ (cm^2)	24.55
$A_{atw,m}=(d_{min}-2\Delta d)d_{max}\pi/400$ (cm^2)	NA
$D^*_{at}=(D_T+2D_M+D_B)/4$ (mm)	55.91

Estimated Initial Unit Weight

Total, $\gamma_{t,o}$ (lb/ft³) = 126.09 | Dry, $\gamma_{d,o}$ (lb/ft³) = 103.38

Membrane / Filter Paper / Apparatus

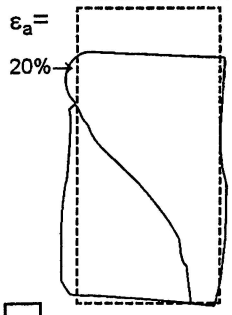
Membrane (mm):	Top	Bottom
Number: = 1 Thickness: [ ] Single; [X] Double	0.77	0.63
	0.78	0.64
Circumference ($C_{rm,o}$)	148.0	149.0
Total Thickness / Average:	0.35	Dia.($C_{rm,o}/\pi$) 47.27

Filter Paper: Top + Bottom: [ ] Yes ; [X] No
Filter Strips: [X] Yes ; [ ] No Number = 8
Type of Filter Strips [ ] Vertical: ¼ in. & Whatman #54
[X] Sprial: ¼ in. & Whatman #1

Apparatus: Mass Top Cap, M_{tc} = 53.4 g, 0.12 lbf
Mass Displ. System, M_{ds} (cap, dial, piston, etc.) = NA g, NA lbf

[ ] Photo Taken.

Failure Sketch



[ ] See more detailed sketch on attached sheet.

Failure Mode:
[ ] Bulge
[X] Wedge
[ ] Parabolic
Wedge/Bulge Ht.= NA (mm)

NA - Not Applicable
GB - Gage Block
Other Remarks: LL=65 PL=18 PI=47

Top Cap Attached: [ ] Yes; [X] No;	Piston Dia.(in.) [X] ½; [ ] ¾; [ ]		Load Cell: [ ] External [X] Internal	
Top Cap - Rotation	[ ] Fixed,<1°;	[X] Limited,<5°;	[ ] Unlimited, >5°	
With: [ ] Frictionless End Caps;	[ ] Internal LVDT Jacket	[ ] Lat. Movement Top Cap		

Final Visual Classification: Pale Brown Fat CLAY (CH)

Trimmed / Reconstituted By: AW | Set Up By: TP | Taken Down By: AW
Date: 3/21/2008 | Date: 3/21/2008 | Date: 4/1/2008
Prelim. Calc. By: TP | Final Calc. By: TP | Reviewed By: WEP

Remarks:

KAW 6/13/08

MULTISTAGE TRIAXIAL TEST: Specimen Calculations & Summary(1)

Project Number: 0411-08-1686 | Cell No.: TRX-7 | File Name: 2359UD_UD5c
Task Number: NA | Specific Gravity: 2.710 [X] Measured; [##] Assumed
Boring No.: B-2359UD | Sample No.: UD5 | Specimen No.: c | Depth (ft): 40.0-41.7
Type Test: CIU Triaxial | Specimen: [X] "Undisturbed"; [ ] Reconstituted; [ ]
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm

	Inital Water Contents (WC), (W_o) over Saturation, (S_o), in (%):						Calculated Mass of Dry Soil (g)	
	Top, $W_{o,1}$	Botttom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selct., $W_{o,s}$	Back Cal., $W_{o,bc}$	Initial Selected WC, w_o (%)	21.97
W_o	21.99	21.31	22.62	21.97	21.97	21.06	Initial , $M_{d,o}$	391.31
S_o	94.0	92.4	95.5	94.0	94.0	91.8	Final, $M_{d,at}$	394.26
	Measured final mass of moist soil, $M_{t,at}$ (g)					485.45	Selected, M_d	394.26
	Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)					485.45		

Consolidation Data	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	
Changes in Height (mm) and Volume (cm^3) Within Given Consolidation Stages/Columns	At Initial Seating Stress	During Back-Pressuring	1st Consol. Increment (1)	Column 2 or 3 to **1st Test** Stage (1)	Column 4 to **2nd Test** Stage	Column 5 to **3rd Test** Stage	Column 6 to **4th Test** Stage	
Sign Convention: (+) Deformation in compression or Flow out of spec.; (-) Deformation in extension (swell) or Flow into spec.								
Change in Height, $\Delta H_{c,n}$	-0.08	-1.10		1.34	NA	NA	NA	
Sum of changes in (+ out)				7.77	NA	NA	NA	
burette readings, $\Delta b_{r,n}$ (- in)	-0.17	-16.71	NA	16.27	NA	NA	NA	(2)
Theoretical $\Delta V_{ct,n} = (3V_o \times \Delta H_{c,n}/H_o)$	-0.51	-6.75		8.23	NA	NA	NA	
Vol. Factor, $F_v = \Delta b_{r,n} / \Delta V_{t,n}$				0.94	NA	NA	NA	
Corrected $\Delta V_{ct,n} = F_v \times \Delta V_{t,n}$			NA	0.00	NA	NA	NA	(3)
Selected $\Delta V_{c,n}$	-0.51	-6.75		7.77	NA	NA	NA	

Summary For Test Stages					
Test Stage:	1st = 1	2nd = 2	3rd = 3	4th = 4	
Cell Pressure, $\sigma_{c,n}$ (psi)	124.80	NA	NA	NA	Number of
Back Pressure, $U_{b,n}$ (psi)	89.62	NA	NA	NA	Test Stages = 1
Axial Force Reading, $P_{r,n}$ (lbf)	2.00	NA	NA	NA	t_{50} = 220 min
Eff. Consol. Stress (σ'_c or $\sigma'_{v,c}$) (4), (ksf)	5.02	NA	NA	NA	
t_c, ON or in [X] days [ ] hrs	3.00	NA	NA	NA	

At Final Test Stress/Stage - Summary of Calculation of ΔV_c (cm^3) by Different Procedures

By Selected Volumes	By Saturation = 100 %	By Change in Mass (5)	For Diff. in Meas. Vol. (V_o-V_{at}),	For Selected ΔV_c, required
ΔV_c = 0.51	ΔV_c = -0.80	ΔV_c = 8.67	& corr. for ΔH_{td} ΔV_c=	G_s for S_c = 100 %: 2.735

At Final Test Stress/Stage - Consolidation Conclusions

$\Delta H_{c,f}$ (mm) = 0.16	$\Delta V_{c,f}$ (cm^3) = 0.51	Back Cal. G_s for S=100% = 2.735	Normalized	Ht. Ch. (%) =	0.64
$\varepsilon_{ac,c}$ (%) = 0.14	$\varepsilon_{vc,f}$ (%) = 0.22		Diff. in:	Vol. Ch. (%) =	

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.710 Measured / Condition:	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Unit Weight Total (pcf)	Unit Weight Dry (pcf)	Saturation (%)	Void Ratio e	Volumetric Water Content	Porosity n	Skempton B para-meter %(6)
Initial:	115.52	236.30	20.45	21.06	126.09	104.16	91.8	0.621	0.3519	0.383	90.0
After to 1st σ'_c	115.36	235.79	20.44	23.13	128.53	104.38	101.4	0.618	0.3874	0.382	
Consol.: to 2nd σ'_c											
to 3rd σ'_c											
to 4th σ'_c											

Notes: (1) If the consol. stress in the 1st consol. increment & 1st test stage are equal, log the data in Column 4.

(2) The height changes occuring within each shearing and unloading stage (1 - 4) are recorded in these rows (after Column 3).

(3) The volume changes occuring within each shearing and unloading stage (1 - 4) are calculated/recorded in these rows (after Column 3).

(4) Stresses are corrected for membrane. (5) ~ $M_{t,o}$-($M_{tat,c}$+ρ_{water}x$\Delta V_{in,column1\&2}$)

(6) Initial value is after back pressuring

NA - Not Applicable ON - Over Night WC - Water Content Remarks: Wet Method used in the Saturation Stage

Calculated By: TP Reviewed By: HP

MULTISTAGE TRIAXIAL TEST: Specimen Calculations Summary(2)

Project Number: 0411-08-1686 | Test Type: CIU Triaxial | App. No.: TRX-7 | File Name:-2359UD_UD5
Project Name: Exelon (Victoria) | Task No.: NA | Test No.: 0 | Test Series for: 0

[X] Tube [ ] Field Extruded [ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2359UD [ ] Reconstituted	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =
Sample No.: UD5 Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =
Depth (ft): 40.0-41.7 Specimen No.: c	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) =	Dia. (in.) =
[ ] Spec. Selection by X-ray; [ ] Geomarine Sample		Ref. Effort = % Comp. =	± Opt. =

Type Consolidation	[X] Isotropic [ ] Anistropic	[ ] K_o stress path [ ] 45° stress path	[X] Used automated system Remarks:	Drained Axial Strain Rate, $\varepsilon_{a,rate}$ (%/hr.)= NA
Loading Conditions:	[X] Static [ ] Post Cyclic	[X] Undrained [ ] Drained	[X] Comp. [ ] Ext.	[X] Strain [ ] Stress Path
	[X] Constant Cell pressure [ ] Variable Cell pressure	[ ] Cyclic (Hz) Rate: [ ] 0.1;	[ ] Stress [ ] Strain [ ] 1; Other:	

Specific Gravity: G_s = 2.710 Measured / Condition:	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Unit Weight Total (pcf)	Unit Weight Dry (pcf)	Saturation (%)	Void Ratio e	Skempton B para-meter %(1)
Initial:	115.52	236.30	20.45	21.06	126.09	104.16	91.83	0.62	90.0
After Consol.: to 1st σ'_c	115.36	235.79	20.44	23.13	128.53	104.38	101.44	0.62	
to 2nd σ'_c									
to 3rd σ'_c									
to 4th σ'_c									

Unit for Stresses: (ksf)

Consolidation Stress Summary and Loading Summary

Item	Unit	1st Stage	2nd Stage	3rd Stage	4th Stage
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	0.136	NA	NA	NA
Vol. Strain during Consol., $\varepsilon_{v,c}$:	%	0.216	NA	NA	NA
Effective Vertical Stress, σ'_v	(ksf)	5.019	NA	NA	NA
Effective Horizontal Stress, σ'_h:	(ksf)	4.949	NA	NA	NA
Consol. Stress Ratio, k (σ'_h / σ'_v) :	-	0.986			
Induced OCR :	-	1.00	NA	NA	NA
Eff. Average Stress, (σ'_v + σ'_h)/2 :	(ksf)	9.968			
Eff. Mean Stress, (σ'_v + 2*σ'_h)/3 :	(ksf)	4.972			
Undr. Ambient Shear Stress, τ_{da} :	(ksf)	NA	NA	NA	NA
Undr. Ambient Shear Strain, $\varepsilon_{a,ua}$	%	NA	NA	NA	NA

Notes: See Fugro South, Inc. Notation Listing for definition of symbols and acronyms.
(1) Initial B is after saturation
NA - Not Applicable

Membrane Correction
Type: Bulge
Modulus: 150.0 psi
Diameter: 47.27 mm
Thickness: 0.35 mm

Area Correction
Type: Bulge

Stage	Area Corr. Const.:	Final Area (cm^2):
1st	1.184	24.55
2nd		
3rd		
4th		

Filter Paper Correction
Type: None Type Strips: Sprial #1
Strips: 8
Force: 0.000 lbf/strip

Final Visual Description and Remarks: Pale Brown Fat CLAY (CH)

Loading Summary

Stage	Stress Status	ε_a (%)	q (ksf)	p' (ksf)	ΔU (ksf)	σ_1' (ksf)	σ_3' (ksf)
1st	Max Shear Stress	7.85	2.428	6.496	0.885	8.923	4.068
	Max Obliquity	5.37	2.335	6.033	1.258	8.368	3.697
2nd	Max Shear Stress						
	Max Obliquity						
3rd	Max Shear Stress						
	Max Obliquity						
4th	Max Shear Stress						
	Max Obliquity						

Remarks: Strain Rate (%/min) = 1.82E-03

STAGE 1

Project: 0411-08-1686 Boring No.: B-2359UD Depth (ft.): 40.0-41.7
Test Type: CIU Triaxial Sample No.: UD5 Stage No.: 1
Specimen No.: c

Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
0.0	0.000	0.035	4.984	0.000	0.000	1.014	0.000	-	-
13.6	0.002	0.193	5.069	0.074	0.000	1.079	0.230	15008.0	7996.7
27.3	0.028	0.322	5.107	0.164	0.000	1.134	0.286	2031.1	901.0
40.9	0.057	0.439	5.137	0.252	0.000	1.187	0.311	1418.3	956.5
54.6	0.076	0.542	5.139	0.352	0.000	1.236	0.348	1338.3	888.3
68.2	0.102	0.632	5.155	0.429	0.000	1.280	0.357	1168.4	1072.4
81.8	0.113	0.708	5.153	0.505	0.000	1.318	0.374	1195.4	1023.9
95.5	0.137	0.779	5.152	0.581	0.000	1.356	0.387	1085.8	531.3
109.1	0.162	0.839	5.144	0.640	0.000	1.390	0.401	992.7	601.9
122.7	0.178	0.895	5.136	0.706	0.000	1.422	0.411	969.1	576.9
136.4	0.199	0.942	5.140	0.751	0.000	1.449	0.414	910.0	616.2
150.0	0.209	0.982	5.126	0.806	0.000	1.474	0.425	905.0	519.2
163.7	0.245	1.024	5.117	0.858	0.000	1.501	0.433	806.1	266.2
177.3	0.275	1.068	5.116	0.904	0.000	1.528	0.436	751.4	330.8
190.9	0.293	1.101	5.111	0.943	0.000	1.549	0.441	727.6	315.9
204.6	0.318	1.135	5.107	0.976	0.000	1.571	0.444	691.3	324.9
218.2	0.335	1.167	5.091	1.027	0.000	1.595	0.453	675.8	329.1
231.8	0.355	1.194	5.094	1.048	0.000	1.613	0.453	653.3	222.7
245.5	0.384	1.219	5.098	1.069	0.000	1.629	0.452	616.5	289.5
259.1	0.397	1.245	5.109	1.097	0.000	1.645	0.448	609.9	-415.0
272.8	0.393	1.268	5.094	1.126	0.000	1.663	0.455	627.3	-586.6
286.4	0.458	1.289	5.097	1.144	0.000	1.677	0.455	548.2	408.4
300.0	0.465	1.318	5.094	1.173	0.000	1.698	0.457	551.5	444.1
313.7	0.498	1.340	5.102	1.190	0.000	1.712	0.455	524.5	169.7
327.3	0.516	1.358	5.099	1.220	0.000	1.726	0.456	513.4	244.7
340.9	0.531	1.380	5.096	1.238	0.000	1.743	0.458	506.8	185.5
354.6	0.576	1.399	5.086	1.255	0.000	1.759	0.462	473.7	178.6
368.2	0.590	1.419	5.103	1.268	0.000	1.770	0.457	468.9	194.2
381.9	0.614	1.432	5.098	1.292	0.000	1.782	0.459	454.9	120.7
395.5	0.637	1.447	5.096	1.294	0.000	1.793	0.460	443.3	102.7
409.1	0.679	1.463	5.093	1.312	0.000	1.806	0.462	420.9	140.6
422.8	0.696	1.480	5.093	1.341	0.000	1.820	0.462	415.6	163.9
436.4	0.725	1.499	5.089	1.359	0.000	1.835	0.464	403.8	119.1
450.0	0.754	1.515	5.098	1.359	0.000	1.846	0.461	392.7	-193.9
463.7	0.747	1.532	5.107	1.378	0.000	1.857	0.459	400.8	-234.9
477.3	0.799	1.540	5.118	1.378	0.000	1.861	0.456	377.0	69.5
491.0	0.823	1.553	5.101	1.392	0.000	1.876	0.461	369.0	130.9
504.6	0.839	1.566	5.115	1.403	0.000	1.883	0.457	364.8	100.6

STAGE 1

Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
518.2	0.872	1.574	5.116	1.405	0.000	1.888	0.457	353.1	76.9
531.9	0.893	1.585	5.118	1.423	0.000	1.897	0.457	347.1	142.0
545.5	0.915	1.604	5.131	1.422	0.000	1.910	0.453	343.2	126.5
559.1	0.943	1.615	5.126	1.441	0.000	1.920	0.455	335.2	80.1
613.7	1.038	1.655	5.131	1.466	0.000	1.952	0.455	312.2	81.4
668.2	1.142	1.696	5.149	1.497	0.000	1.982	0.450	290.9	78.2
722.8	1.236	1.732	5.164	1.518	0.000	2.010	0.447	274.6	70.4
777.3	1.327	1.761	5.174	1.537	0.000	2.032	0.445	260.1	67.4
831.9	1.427	1.797	5.194	1.556	0.000	2.058	0.440	246.9	58.8
886.4	1.529	1.820	5.202	1.571	0.000	2.077	0.439	233.5	54.1
941.0	1.631	1.852	5.214	1.582	0.000	2.102	0.437	222.8	57.6
995.5	1.718	1.875	5.237	1.589	0.000	2.116	0.431	214.2	51.3
1050.1	1.813	1.899	5.263	1.598	0.000	2.129	0.425	205.6	42.7
1104.6	1.909	1.916	5.279	1.589	0.000	2.139	0.422	197.0	40.9
1159.2	2.007	1.938	5.290	1.597	0.000	2.157	0.420	189.7	37.6
1213.7	2.104	1.952	5.320	1.586	0.000	2.159	0.412	182.3	37.9
1268.3	2.191	1.973	5.353	1.573	0.000	2.168	0.405	176.9	44.9
1322.8	2.289	1.994	5.357	1.589	0.000	2.186	0.405	171.2	39.6
1377.3	2.378	2.010	5.379	1.577	0.000	2.193	0.400	166.1	34.1
1431.9	2.494	2.029	5.413	1.560	0.000	2.199	0.392	159.9	30.3
1486.4	2.592	2.043	5.429	1.561	0.000	2.206	0.389	154.9	32.3
1541.0	2.695	2.061	5.454	1.548	0.000	2.215	0.384	150.4	33.2
1595.5	2.793	2.076	5.481	1.543	0.000	2.219	0.378	146.1	26.2
1650.1	2.893	2.087	5.500	1.539	0.000	2.223	0.374	141.9	25.8
1704.6	3.000	2.103	5.521	1.529	0.000	2.230	0.370	137.9	26.6
1759.2	3.089	2.113	5.538	1.519	0.000	2.234	0.367	134.6	36.0
1813.7	3.163	2.131	5.579	1.500	0.000	2.236	0.358	132.6	30.9
1868.3	3.292	2.140	5.605	1.478	0.000	2.235	0.353	127.9	24.2
1922.8	3.386	2.156	5.644	1.470	0.000	2.236	0.344	125.3	28.1
1977.4	3.482	2.166	5.661	1.450	0.000	2.240	0.341	122.4	24.0
2031.9	3.592	2.181	5.677	1.453	0.000	2.248	0.338	119.5	21.7
2086.5	3.698	2.190	5.698	1.446	0.000	2.248	0.334	116.5	17.2
2141.0	3.794	2.198	5.722	1.426	0.000	2.248	0.329	114.1	21.9
2195.6	3.909	2.213	5.754	1.414	0.000	2.250	0.323	111.5	17.6
2250.1	4.018	2.218	5.767	1.400	0.000	2.250	0.321	108.7	24.1
2304.6	4.103	2.235	5.799	1.389	0.000	2.254	0.315	107.2	28.3
2359.2	4.202	2.244	5.827	1.370	0.000	2.252	0.309	105.1	15.4
2413.7	4.312	2.251	5.843	1.356	0.000	2.253	0.306	102.8	20.4
2468.3	4.401	2.263	5.863	1.351	0.000	2.257	0.303	101.3	24.4
2522.8	4.484	2.272	5.908	1.320	0.000	2.250	0.294	99.8	20.2
2577.4	4.591	2.282	5.926	1.311	0.000	2.253	0.291	97.9	15.3
2631.9	4.697	2.288	5.962	1.286	0.000	2.246	0.283	95.9	23.5
2686.5	4.780	2.303	6.000	1.258	0.000	2.246	0.276	94.9	21.6

STAGE 1

Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
2741.0	4.892	2.307	5.997	1.262	0.000	2.250	0.277	92.9	8.1
2877.4	5.135	2.318	5.992	1.276	0.000	2.262	0.279	88.9	11.9
3013.8	5.370	2.335	6.033	1.258	0.000	2.263	0.272	85.7	15.9
3150.1	5.615	2.356	6.096	1.211	0.000	2.260	0.261	82.7	14.9
3286.5	5.884	2.374	6.182	1.134	0.000	2.246	0.244	79.5	11.9
3422.9	6.140	2.388	6.233	1.112	0.000	2.242	0.234	76.6	9.1
3559.2	6.372	2.396	6.253	1.091	0.000	2.242	0.231	74.1	5.9
3695.6	6.636	2.402	6.282	1.073	0.000	2.238	0.226	71.3	4.3
3831.9	6.885	2.407	6.297	1.063	0.000	2.237	0.223	68.9	6.5
3968.3	7.131	2.418	6.376	0.993	0.000	2.222	0.208	66.8	6.6
4104.7	7.381	2.423	6.432	0.943	0.000	2.209	0.197	64.7	2.9
4241.0	7.616	2.425	6.460	0.921	0.000	2.202	0.191	62.8	1.9
4377.4	7.853	2.428	6.496	0.885	0.000	2.194	0.184	60.9	1.0
4513.8	8.097	2.427	6.532	0.850	0.000	2.183	0.176	59.1	-2.6
4650.1	8.354	2.421	6.559	0.815	0.000	2.170	0.170	57.1	-5.4
4786.5	8.599	2.414	6.588	0.781	0.000	2.156	0.163	55.3	-5.9
4922.9	8.835	2.407	6.614	0.746	0.000	2.144	0.156	53.7	-7.1
5059.2	9.114	2.395	6.629	0.724	0.000	2.131	0.152	51.8	-7.7
5195.6	9.382	2.386	6.655	0.681	0.000	2.117	0.144	50.1	-9.0
5332.0	9.624	2.372	6.671	0.652	0.000	2.104	0.139	48.6	-10.3
5468.3	9.883	2.360	6.683	0.630	0.000	2.092	0.135	47.1	-10.0
5604.7	10.134	2.347	6.687	0.612	0.000	2.082	0.132	45.6	-10.9
5741.1	10.390	2.332	6.709	0.582	0.000	2.066	0.125	44.2	-11.2
5877.4	10.644	2.318	6.726	0.552	0.000	2.052	0.119	42.9	-9.5
6013.8	10.872	2.309	6.750	0.513	0.000	2.040	0.112	41.8	-8.9
6150.2	11.152	2.296	6.757	0.492	0.000	2.029	0.108	40.5	-9.7
6286.5	11.402	2.284	6.766	0.473	0.000	2.019	0.104	39.4	-11.0
6422.9	11.659	2.268	6.758	0.465	0.000	2.010	0.103	38.3	-12.1
6559.3	11.916	2.253	6.754	0.448	0.000	2.001	0.101	37.2	-12.3
6695.6	12.160	2.237	6.752	0.446	0.000	1.991	0.099	36.2	-11.9
6832.0	12.410	2.223	6.742	0.437	0.000	1.984	0.098	35.3	-11.5
6968.4	12.668	2.208	6.762	0.409	0.000	1.970	0.091	34.3	-11.5
7104.7	12.908	2.194	6.779	0.373	0.000	1.957	0.084	33.5	-10.5
7241.1	13.138	2.183	6.752	0.387	0.000	1.956	0.089	32.7	-10.3
7377.5	13.383	2.170	6.760	0.360	0.000	1.945	0.084	31.9	-10.8
7513.8	13.657	2.155	6.755	0.355	0.000	1.937	0.082	31.1	-9.4
7650.2	13.909	2.145	6.769	0.327	0.000	1.928	0.077	30.3	-7.8
7786.5	14.153	2.136	6.807	0.288	0.000	1.915	0.066	29.7	-11.1
7922.9	14.402	2.118	6.800	0.275	0.000	1.905	0.064	28.9	-12.8
8059.3	14.657	2.104	6.783	0.276	0.000	1.899	0.065	28.2	-12.3
8183.9	14.908	2.087	6.755	0.291	0.000	1.894	0.069	27.5	-13.5