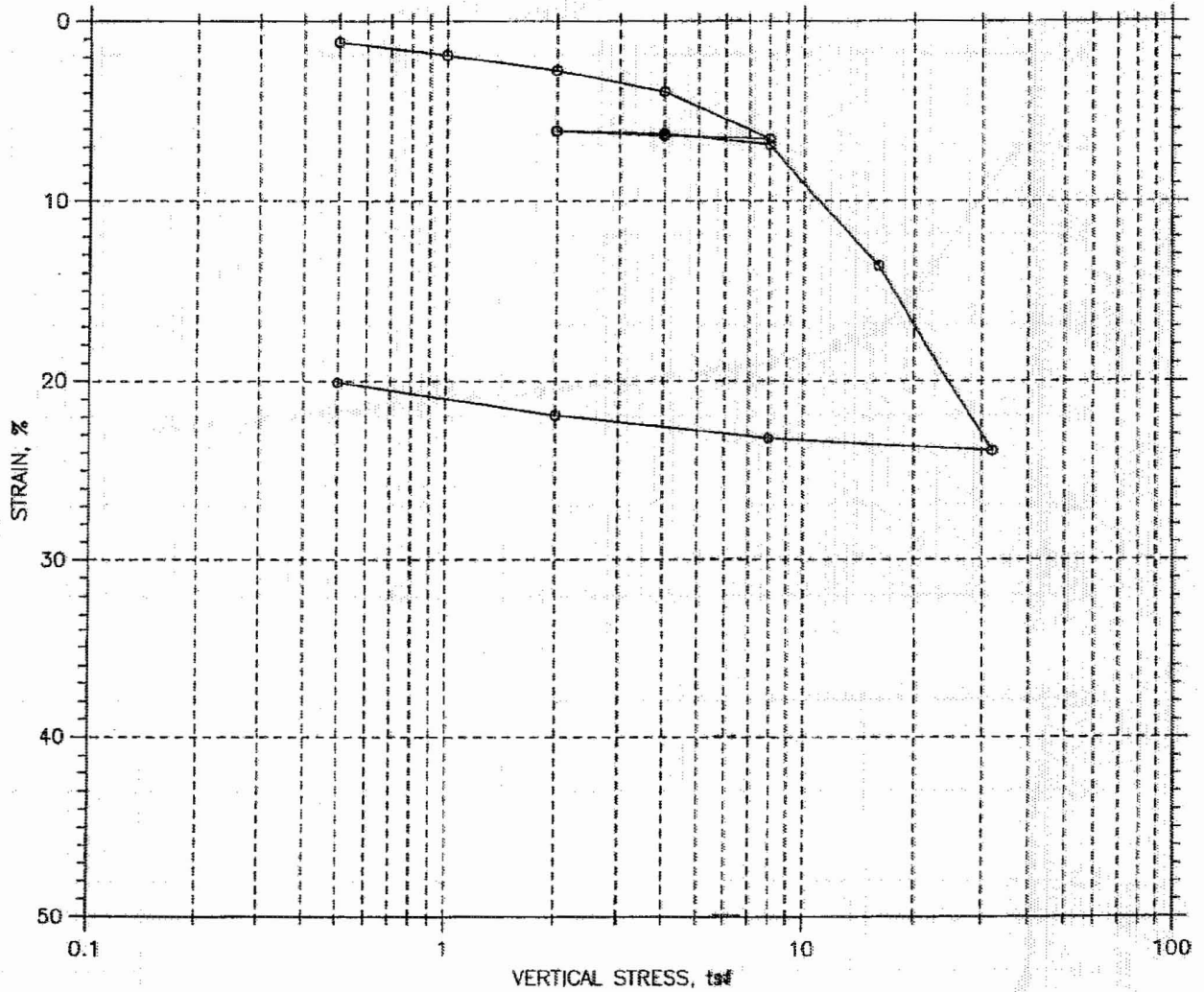


## CONSOLIDATION TEST DATA SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: ---				44.40	37.22
Preconsolidation Pressure: 10 tsf				67.94	84.99
Compression Index: ---				79.76	100.00
Diameter: 2.5 in		Height: 1 in		1.54	1.03
LL: 72	PL: 45	PI: 27	GS: 2.76		

<b>GeoTesting express</b> <small>a subsidiary of Geocomp Corporation</small>	Project: Calvert Cliffs Nuclear	Location: Calvert County, MD	Project No.: GTX-6880
	Boring No.: B-32B	Tested By: md	Checked By: njh
	Sample No.: S-28	Test Date: 09/09/06	Depth: 123.5-125.1
	Test No.: C-6	Sample Type: tube	Elevation: ---
	Description: Moist, olive gray silt with sand (MH), 83% passing #200 sieve, inundated @ 0.5 tsf		
	Remarks: System G - Compression Ratio: 0.38, Recompression Ratio: 0.02		

CONSOLIDATION TEST DATA

Project: Calvert Cliffs Nuclear  
 Boring No.: B-328  
 Sample No.: S-28  
 Test No.: C-6

Location: Calvert County, MD  
 Tested By: md  
 Test Date: 09/09/06  
 Sample Type: tube

Project No.: GTX-6880  
 Checked By: njh  
 Depth: 123.5-125.0  
 Elevation: ---

Soil Description: Moist, olive gray silt with sand (MH), 83% passing #200 sieve, inundated @ 0.5 tsf  
 Remarks: System G - Compression Ratio: 0.38, Recompression Ratio: 0.02

Measured Specific Gravity: 2.76  
 Initial Void Ratio: 1.54  
 Final Void Ratio: 1.03

Liquid Limit: 72  
 Plastic Limit: 45  
 Plasticity Index: 27

Initial Height: 1.00 in  
 Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	1225	RING		1111
Wt. Container + Wet Soil, gm	172.09	342.88	336.6	127.46
Wt. Container + Dry Soil, gm	121.87	304.02	304.02	95.07
Wt. Container, gm	8.37	216.48	216.48	8.05
Wt. Dry Soil, gm	113.5	87.537	87.537	87.02
Water Content, %	44.25	46.40	37.22	37.22
Void Ratio	---	1.54	1.03	---
Degree of Saturation, %	---	79.76	100.00	---
Dry Unit Weight, pcf	---	67.936	84.99	---

CONSOLIDATION TEST DATA

Project: Calvert Cliffs Nuclear  
 Boring No.: B-328  
 Sample No.: S-28  
 Test No.: C-6

Location: Calvert County, MD  
 Tested By: md  
 Test Date: 09/09/06  
 Sample Type: tube

Project No.: GTX-6880  
 Checked By: njh  
 Depth: 123.5-125.1  
 Elevation: ---

Soil Description: Moist, olive gray silt with sand (MH), 83% passing #200 sieve, inundated @ 0.5 tsf  
 Remarks: System G - Compression Ratio: 0.38, Recompression Ratio: 0.02

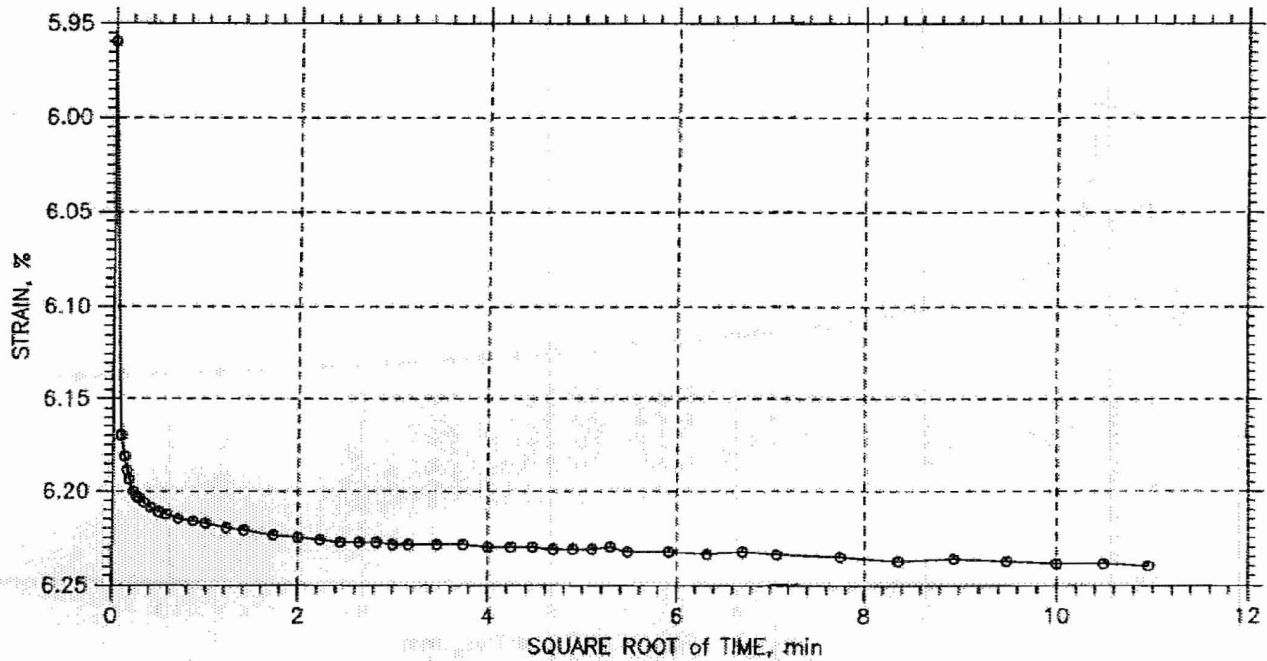
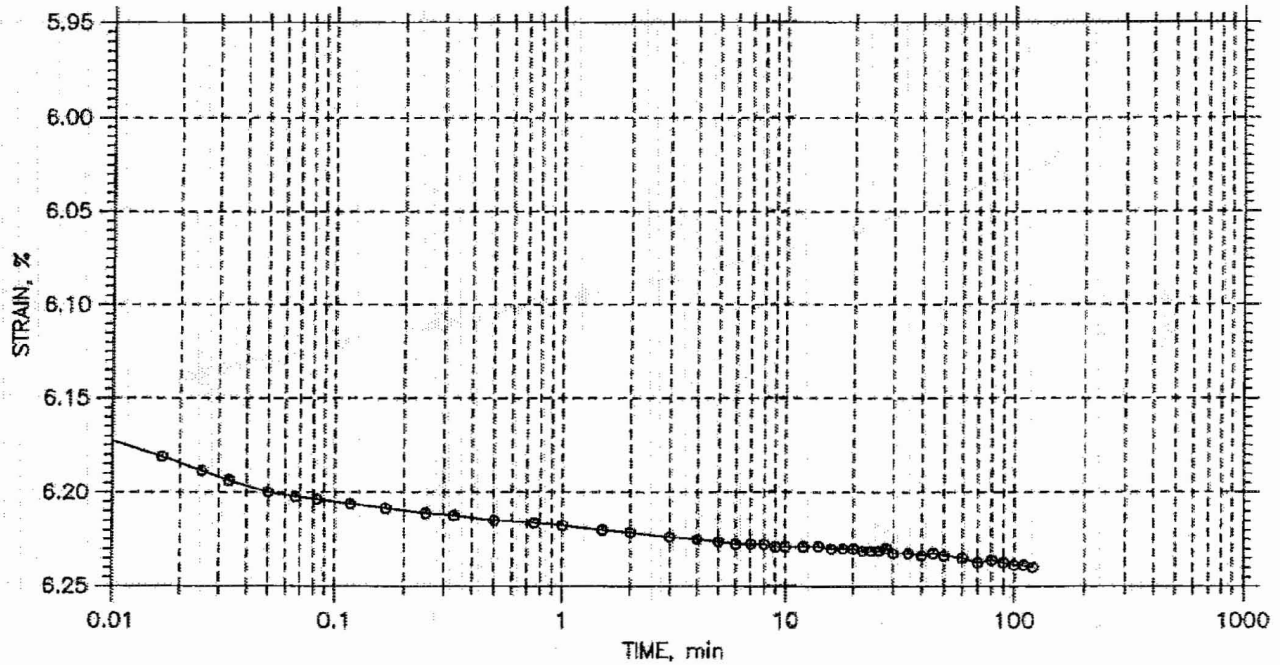
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Sq.Rt. min	Fitting		Coefficient of Consolidation		
						Log min	Sq.Rt. in <sup>2</sup> /sec	Log in <sup>2</sup> /sec	Ave. in <sup>2</sup> /sec	
1	0.5	0.01171	1.507	1.17	0.0	0.0	2.77e-002	0.00e+000	2.77e-002	
2	1	0.01889	1.488	1.89	0.0	0.0	2.06e-002	3.21e-002	2.51e-002	
3	2	0.02737	1.467	2.74	0.0	0.0	5.02e-002	4.00e-002	4.45e-002	
4	4	0.03904	1.437	3.90	0.0	0.0	2.18e-002	5.35e-002	3.10e-002	
5	8	0.06528	1.371	6.53	0.1	0.0	7.44e-003	4.97e-002	1.29e-002	
6	4	0.06356	1.375	6.36	0.0	0.0	1.67e-001	0.00e+000	1.67e-001	
7	2	0.061	1.382	6.10	0.0	0.0	7.35e-002	0.00e+000	7.35e-002	
8	4	0.0624	1.378	6.24	0.0	0.0	1.47e-001	0.00e+000	1.47e-001	
9	8	0.06856	1.362	6.86	0.7	0.0	9.70e-004	0.00e+000	9.70e-004	
10	16	0.136	1.191	13.60	0.3	0.0	2.27e-003	1.92e-002	4.06e-003	
11	32	0.2389	0.930	23.89	0.6	0.3	8.66e-004	1.71e-003	1.15e-003	
12	8	0.2319	0.948	23.19	0.0	0.0	6.63e-002	0.00e+000	6.63e-002	
13	2	0.2189	0.981	21.89	0.7	0.0	7.08e-004	0.00e+000	7.08e-004	
14	0.5	0.2007	1.027	20.07	2.9	3.4	1.78e-004	1.52e-004	1.64e-004	

# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 8 of 14

Stress: 4. tsf



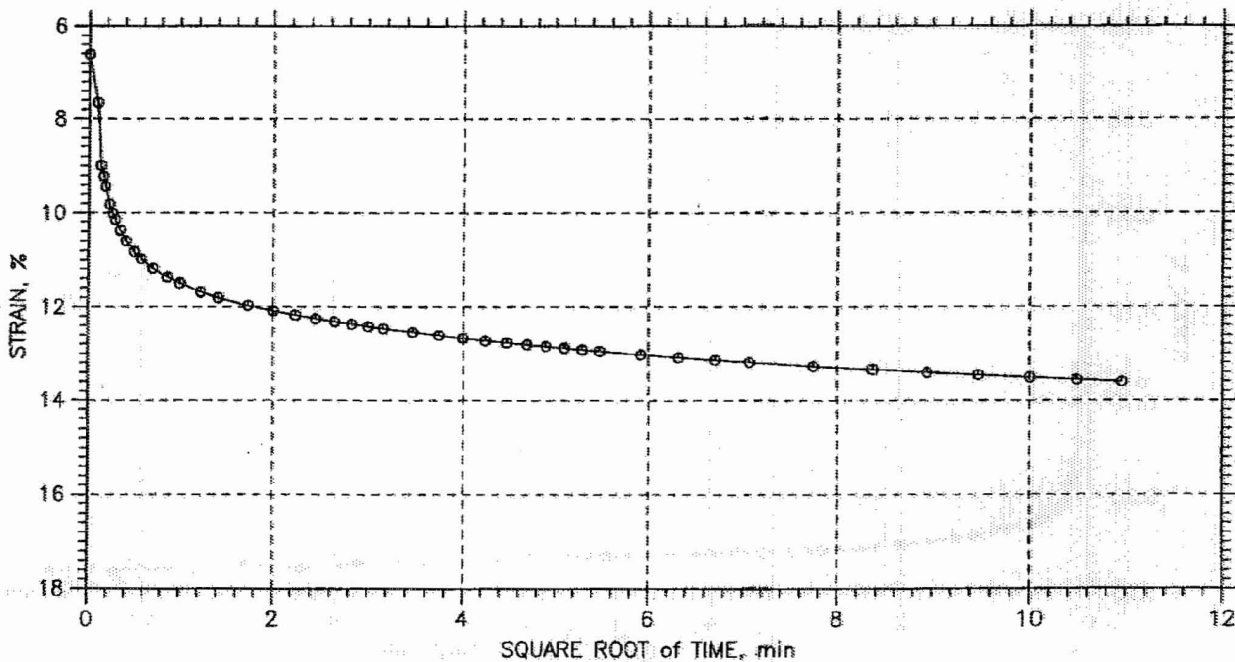
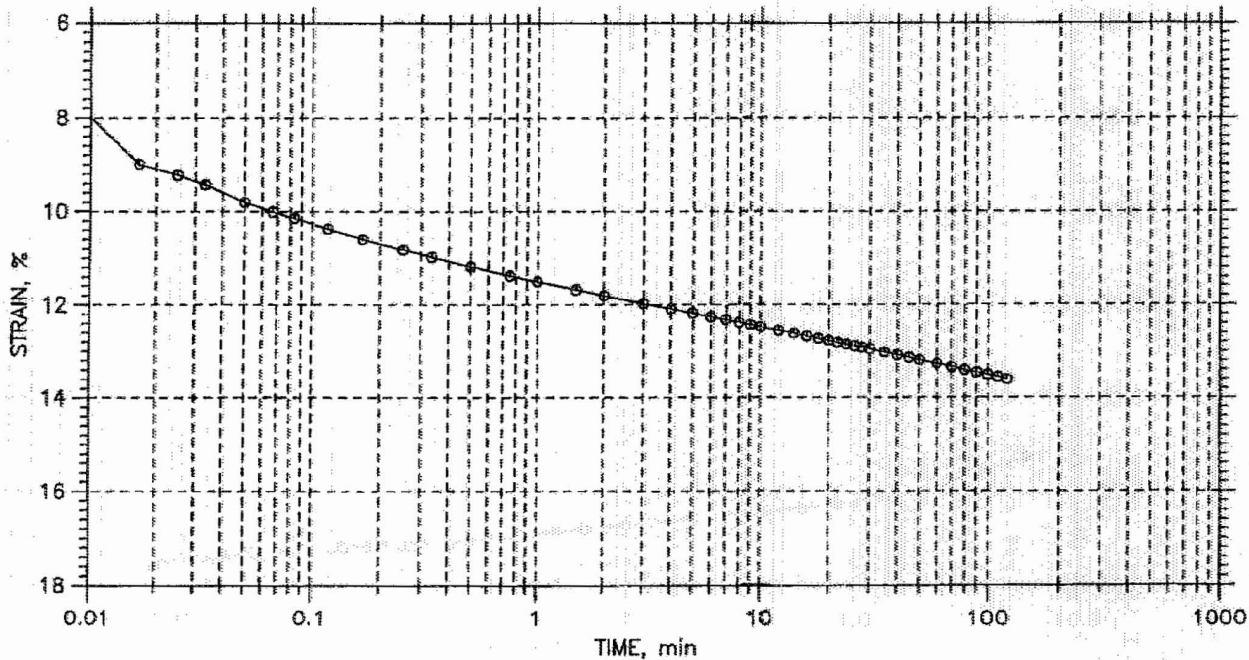
<b>GeoTesting</b> <b>express</b> <small>a subsidiary of Geocomp Corporation</small>	Project: Calvert Cliffs Nuclear	Location: Calvert County, MD	Project No.: GTX-6880
	Boring No.: B-328	Tested By: md	Checked By: njh
	Sample No.: S-28	Test Date: 09/09/06	Depth: 123.5-125.t
	Test No.: C-6	Sample Type: tube	Elevation: ---
	Description: Moist, olive gray silt with sand (MH), 83% passing #200 sieve, inundated @ 0.5 tsf		
	Remarks: System G - Compression Ratio: 0.38, Recompression Ratio: 0.02		

# CONSOLIDATION TEST DATA

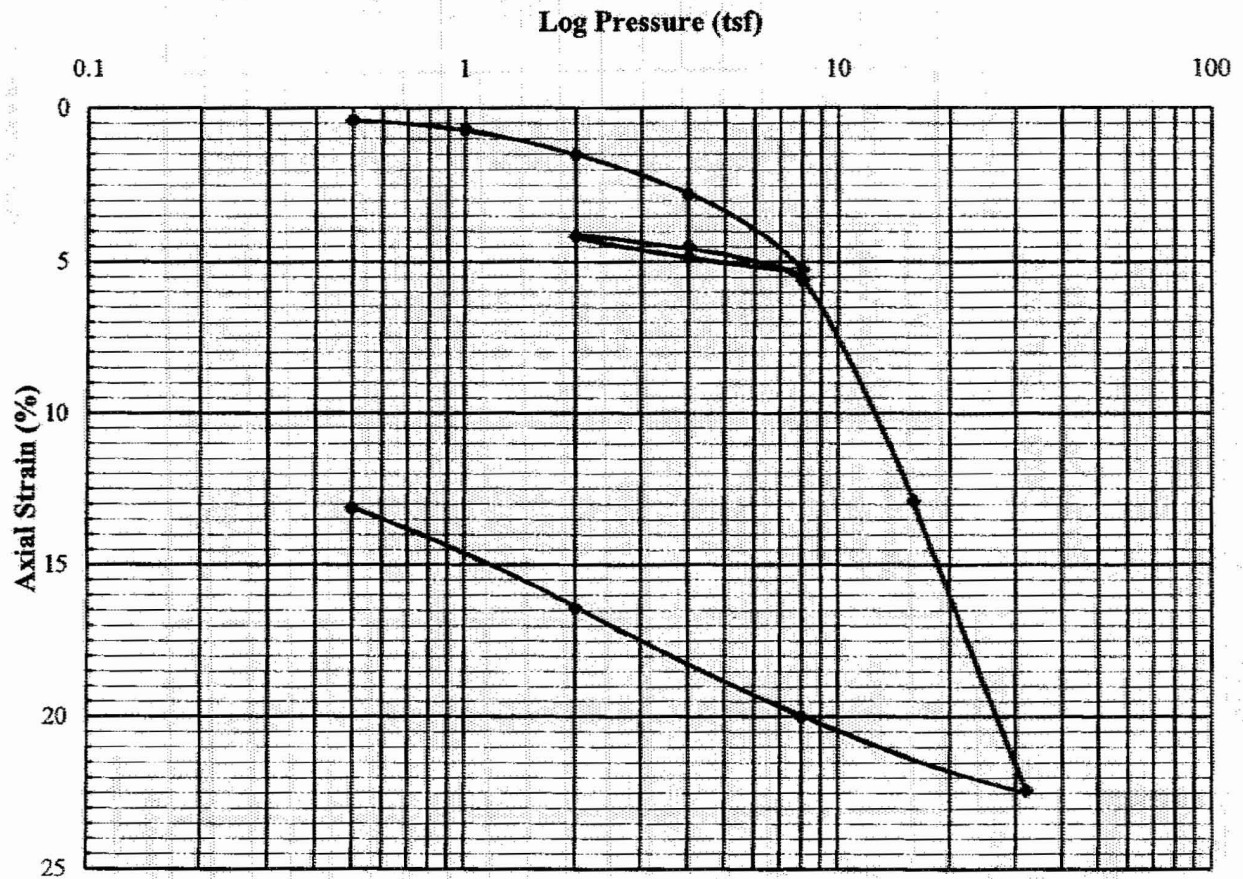
## TIME CURVES

Constant Load Step: 10 of 14


Stress: 16. tsf



<b>GeoTesting</b> <b>express</b> <small>a subsidiary of Geocomp Corporation</small>	Project: Calvert Cliffs Nuclear	Location: Calvert County, MD	Project No.: GTX-6880
	Boring No.: B-328	Tested By: md	Checked By: njh
	Sample No.: S-28	Test Date: 09/09/06	Depth: 123.5-125.1
	Test No.: C-6	Sample Type: tube	Elevation: ---
	Description: Moist, olive gray silt with sand (MH), 83% passing #200 sieve, inundated @ 0.5 tsf		
Remarks: System G - Compression Ratio: 0.38, Recompression Ratio: 0.02			



REVISED FORM FOR  
NCR NO. 25237-NCR-028  
2/12/2007

Probable Preconsolidation Pressure (Pp), tsf: 9.3		Recompression Ratio (C <sub>er</sub> ): 0.021	
Type of Specimen: Tube Sample		Compression Ratio (C <sub>cc</sub> ): 0.316	
Description: FAT CLAY with sand (CH) - gray		Water Content, %	Initial: 39.5 Final: 31.4
LL: 52	PI: 33	Ge: 2.82	P <sub>s</sub> ' (tsf): 1.15
% < No. 200: 85.3	Test Method: ASTM D2435 Method A		Void Ratio: 1.15 0.87
Test Condition: Inundated @ 2 tsf		Saturation, %	97 100
Remarks: Coefficient of Consolidation, C <sub>v</sub> , equals 196 and 17 ft <sup>2</sup> /yr at average pressures of 3 and 12 tsf (square root of time method).		Dry Unit Weight, pcf	81.7 94.0
Average Water Content of Trimmings, %: 37.4		Project: Calvert Cliffs Nuclear Power Plant	
		Location: Calvert County, MD	
		Boring: B-333	Schnabel No.: 06120048
		Depth: 28.5-30.5 ft	Elevation: 61 to 59 ft
		Date: 11/21/2006	Reviewed by: CJS
<b>Consolidation Test Report</b>			

# Consolidation Test Data Sheet

Consolidometer ID: 3

11/21/06

REVISED FORM FOR  
NCR NO. 25237-NCR-028  
2/12/07

Schnabel Contract: 06120048

Project: Calvert Cliffs Nuclear Power Plant

Test Method: ASTM D2435 Method A

Test Condition: Imundated @ 2 tsf

Initial Height of Specimen ( $H_o$ ), in.: 0.7497

Boring No.: B-333

Height of Solids ( $H_s$ ), in.: 0.3481

Depth: 28.5-30.5ft.

Seating Press. (tsf): 0.05

Initial Dial Gauge Reading ( $D_o$ ), in.: -0.0010

Reviewed by: CJS

Pressure, P (tsf)	Time Readings Required	Date Load Applied	Time Load Applied	Load Applied By	A	B	C	D	Vertical Strain <sup>5</sup> , $\epsilon_i$ (%)	Void Ratio <sup>6</sup> , $e_i$
					Final <sup>1</sup> Dial Reading, $D_{fi}$ $\times 10^{-4}$ in.	Apparatus Correction <sup>2</sup> , $D_{ci}$ $\times 10^{-4}$ in.	Cumulative Change in Height <sup>3</sup> , $\Delta H_i$ in.	Height of Voids <sup>4</sup> , $H_{vi}$ in.		
0.5		10/14/2006	9:25	CJS	29	8	0.0031	0.3985	0.41	1.145
1		10/16/2006	9:00	DWC	56	13	0.0053	0.3963	0.71	1.138
2		10/17/2006	9:00	DWC	120	17	0.0113	0.3903	1.51	1.121
4		10/18/2006	9:00	DWC	224	25	0.0209	0.3807	2.79	1.094
8		10/19/2006	9:00	DWC	424	39	0.0395	0.3621	5.27	1.040
4		10/20/2006	9:00	DWC	379	25	0.0364	0.3652	4.86	1.049
2		10/21/2006	9:00	DWC	319	17	0.0312	0.3704	4.16	1.064
4		10/23/2006	9:00	DWC	352	25	0.0337	0.3679	4.50	1.057
8		10/24/2006	9:00	DWC	450	39	0.0421	0.3595	5.62	1.033
16		10/25/2006	9:00	DWC	1005	48	0.0967	0.3049	12.90	0.876
32		10/26/2006	9:00	DWC	1727	56	0.1681	0.2335	22.42	0.671
8		10/27/2006	9:00	DWC	1528	39	0.1499	0.2517	19.99	0.723
2		10/30/2006	1:00	DWC	1239	17	0.1232	0.2784	16.43	0.800
0.5		10/31/2006	1:00	DWC	983	8	0.0985	0.3031	13.14	0.871

- Notes:
- 1 "Final" based on test method; 24 hrs for Method A, end of primary for Method B.
  - 2 Correction value, for the current pressure, from the consolidometer's calibration curve.
  - 3  $\Delta H = D_{fi} - D_o - D_{ci} = \text{Col. A} - D_o - \text{Col. B}$
  - 4  $H_{vi} = (H_o - H_s) - \Delta H$
  - 5  $\epsilon_i = (\Delta H / H_o) \times 100 = (\text{Col. C} / H_o) \times 100$
  - 6  $e_i = H_{vi} / H_s = \text{Col. D} / H_s$

Consol 8/2006 Rev. 1



# Load Time Readings

11/21/06

Project: Calvert Cliffs Nuclear Power Plant

Schnabel Contract: 06120048

Boring No.: B-333

Depth: 28.5-30.5ft.

Consol. ID: 3

Reviewed by: CJS

Elapsed Time (min.)	Dial Guage Readings (inches)					
	4 tsf Reload	32 tsf Load	X tsf Load	X tsf Load	X tsf Load	X tsf Load
	10/23/2006	10/26/2006	Date	Date	Date	Date
0.1	0.0174	0.0441				
0.25	0.0175	0.0457				
0.5	0.0176	0.0473				
1	0.0177	0.0496				
2	0.0178	0.0525				
4	0.0178	0.0561				
8	0.0178	0.0608				
15	0.0179	0.0657				
30	0.0179	0.0715				
60	0.0179	0.0770				
120	0.0180	0.0817				
240	0.0180	0.0856				
480	0.0181	0.0890				
720	0.0181	0.0907				
960	0.0181	0.0918				
1200	0.0181	0.0926				
1440	0.0181	0.0933				
1680						
1920						
2160						
2400						
2640						
2880						





# Consolidation Time Curves

11/21/06

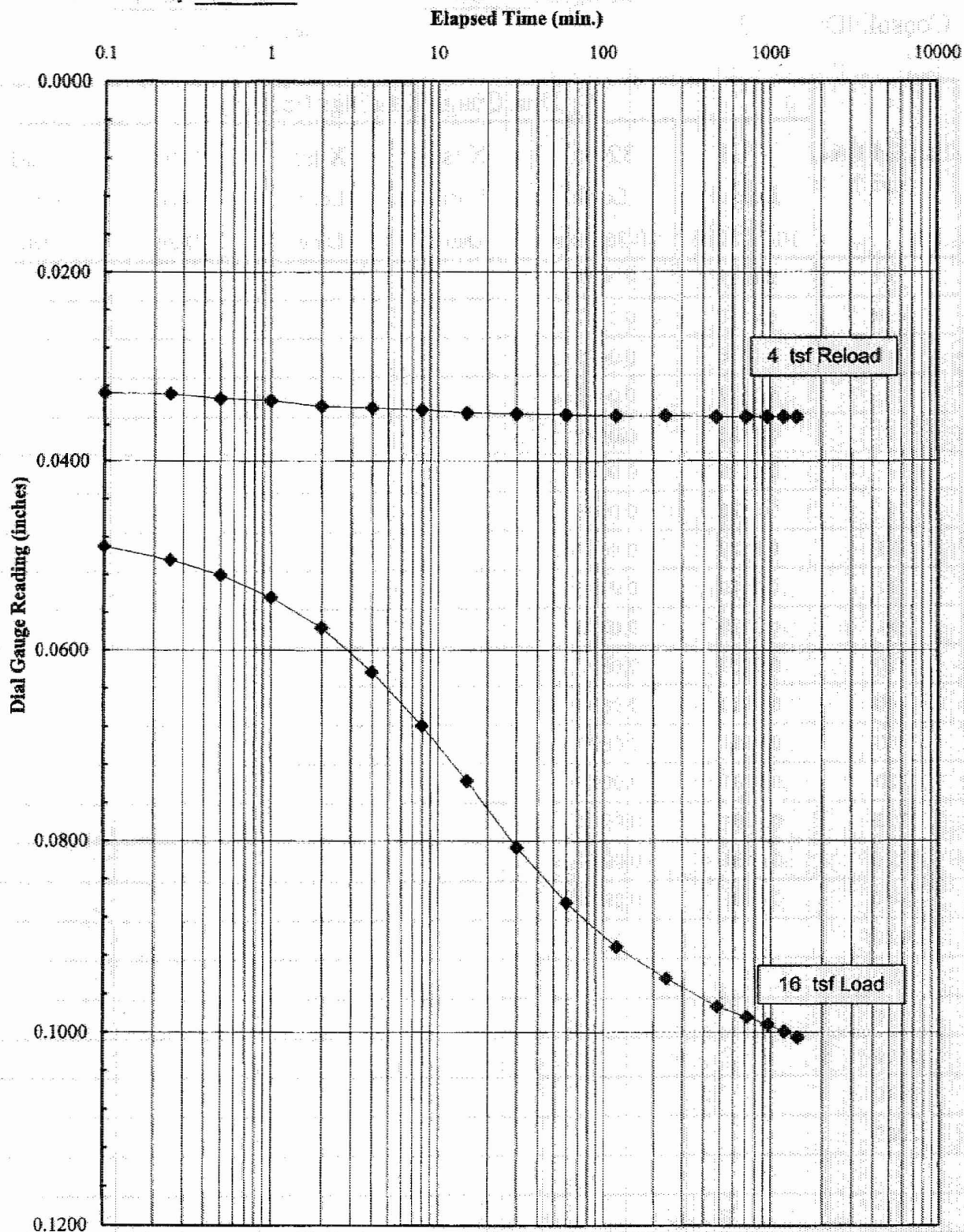
Project: Calvert Cliffs Nuclear Power Plant

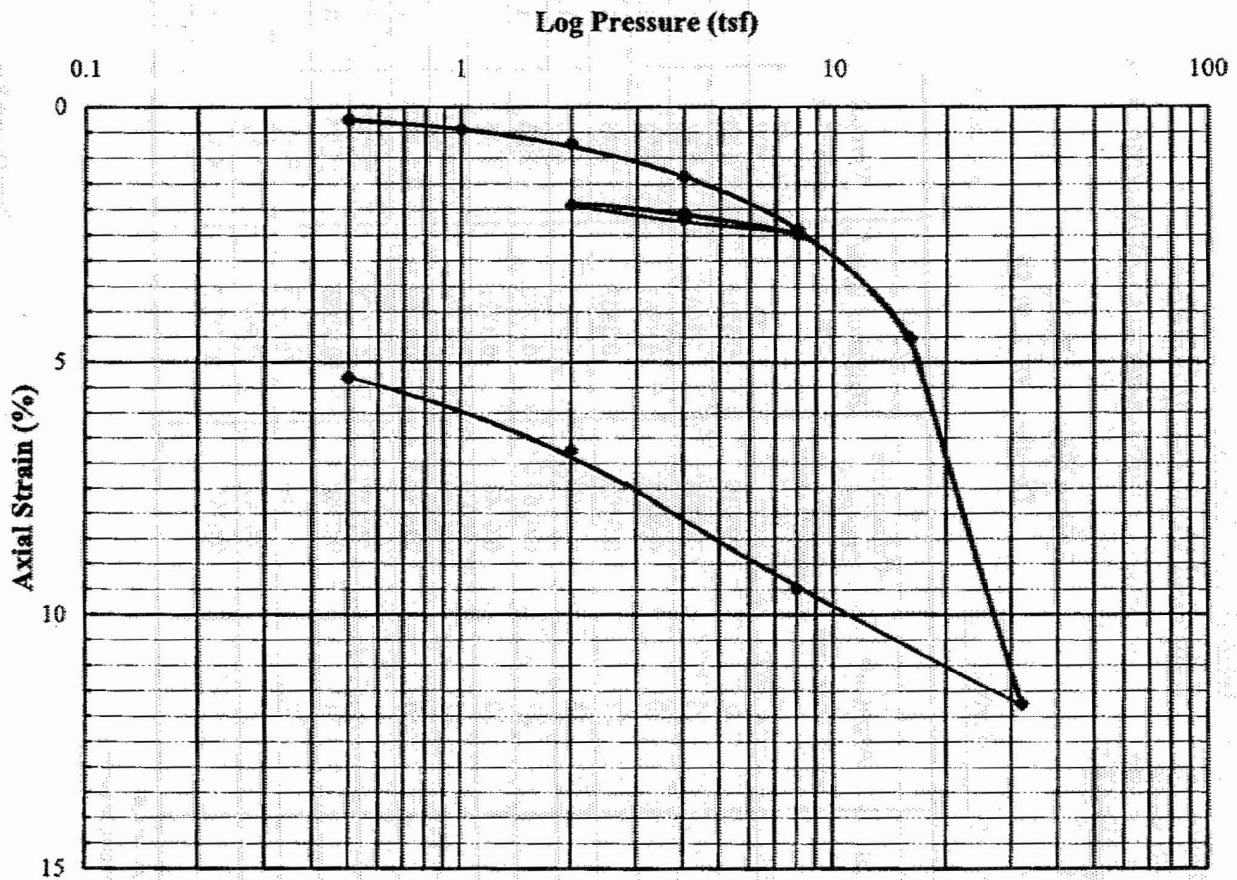
Schnabel Contract: 06120048

Boring No.: B-333


Depth: 28.5-30.5ft.

Reviewed by: CJS





REVISED FORM FOR  
NCR NO. 25237-NCR-028  
2/12/07

<b>Probable Preconsolidation Pressure (Pp), tsf:</b> 15.2		<b>Recompression Ratio (Ccr):</b> 0.009	
<b>Type of Specimen:</b> Tube Sample		<b>Compression Ratio (Ccc):</b> 0.240	
<b>Description:</b> FAT CLAY (CH) - gray		<b>Water Content, %</b>	<b>Initial</b> 37.2 <b>Final</b> 34.9
<b>LL:</b> 61	<b>PI:</b> 38	<b>Gr:</b> 2.85	<b>P<sub>c</sub>' (tsf):</b> 1.40
<b>% &lt; No. 200:</b> 98.8	<b>Test Method:</b> ASTM D2435 Method A		
<b>Test Condition:</b> Inundated @ 2.0 tsf		<b>Saturation, %</b>	96
		<b>Dry Unit Weight, pcf</b>	84.6
<b>Remarks:</b> Coefficient of Consolidation, C <sub>v</sub> , equals 279 and 34 ft <sup>2</sup> /yr at average pressures of 3 and 16 tsf (square root of time method).		<b>Project:</b> Calvert Cliffs Nuclear Power Plant	
<b>Average Water Content of Trimmings, %:</b> 32.8		<b>Location:</b> Calvert County, MD	
		<b>Boring:</b> B-333	<b>Schnabel No.:</b> 06120048
		<b>Depth:</b> 38.5-40.5 ft.	<b>Elevation:</b> 51 to 49 ft
		<b>Date:</b> 11/21/2006	<b>Reviewed by:</b> CJS
		<b>Consolidation Test Report</b>	

# Consolidation Test Data Sheet

Consolidometer ID: 3

11/21/06

REVISED FORM FOR  
NCR NO. 25237-NCR-028  
2/12/2007

Schnabel Contract: 06120048

Project: Calvert Cliffs Nuclear Power Plant

Test Method: ASTM D2435 Method A

Test Condition: Imundated @ 2.0tsf

Initial Height of Specimen ( $H_0$ ), in.: 0.7504

Boring No.: B-333

Height of Solids ( $H_s$ ), in.: 0.3569

Depth: 38.5-40.5ft.

Seating Press. (tsf): 0.05

Initial Dial Gauge Reading ( $D_0$ ), in.: -0.0002

Reviewed by: CJS

Pressure, P (tsf)	Time Readings Required	Date Load Applied	Time Load Applied	Load Applied By	A	B	C	D	Vertical Strain <sup>5</sup> , $\epsilon_v$ (%)	Void Ratio <sup>6</sup> , $e_v$
					Final <sup>1</sup> Dial Reading, $D_f$ $\times 10^{-4}$ in.	Apparatus Correction <sup>2</sup> , $D_{cl}$ $\times 10^{-4}$ in.	Cumulative Change in Height <sup>3</sup> , $\Delta H_i$ in.	Height of Voids <sup>4</sup> , $H_{v_i}$ in.		
0.5		10/25/2006	9:10	DWC	23	6	0.0019	0.3916	0.25	1.097
1		10/26/2006	9:10	DWC	44	13	0.0033	0.3902	0.44	1.093
2		10/27/2006	9:10	DWC	72	20	0.0054	0.3881	0.72	1.087
4		10/31/2006	9:10	DWC	127	27	0.0102	0.3833	1.36	1.074
8		11/1/2006	9:10	DWC	214	36	0.0180	0.3755	2.40	1.052
4		11/2/2006	9:10	DWC	190	27	0.0165	0.3770	2.20	1.056
2		11/3/2006	9:10	DWC	162	20	0.0144	0.3791	1.92	1.062
4		11/4/2006	9:10	CJS	181	27	0.0156	0.3779	2.08	1.059
8		11/6/2006	9:10	DWC	221	36	0.0187	0.3748	2.49	1.050
16		11/7/2006	9:10	DWC	382	44	0.0340	0.3595	4.53	1.007
32		11/8/2006	9:10	DWC	933	53	0.0882	0.3053	11.75	0.855
8		11/9/2006	9:10	DWC	746	36	0.0712	0.3223	9.49	0.903
2		11/10/2006	9:10	DWC	525	20	0.0507	0.3428	6.76	0.961
0.5		11/11/2006	9:10	DWC	402	6	0.0398	0.3537	5.30	0.991

- Notes:
- 1 "Final" based on test method; 24 hrs for Method A, end of primary for Method B.
  - 2 Correction value, for the current pressure, from the consolidometer's calibration curve.
  - 3  $\Delta H = D_f - D_0 - D_{cl} = \text{Col. A} - D_0 - \text{Col. B}$
  - 4  $H_{v_i} = (H_0 - H_s) - \Delta H$
  - 5  $\epsilon_v = (\Delta H / H_0) \times 100 = (\text{Col. C} / H_0) \times 100$
  - 6  $e_v = H_{v_i} / H_s = \text{Col. D} / H_s$



# Load Time Readings

11/21/06

Project: Calvert Cliffs Nuclear Power Plant

Schnabel Contract: 06120048

Boring No.: B-333

Depth: 38.5-40.5ft.

Consol. ID: 3

Reviewed by: CJS

Elapsed Time (min.)	Dial Guage Readings (inches)					
	4 tsf Reload	32 tsf Load	X tsf Load	X tsf Load	X tsf Load	X tsf Load
	11/4/2006	11/8/2006	Date	Date	Date	Date
0.1	0.0174	0.0441				
0.25	0.0175	0.0457				
0.5	0.0176	0.0473				
1	0.0177	0.0496				
2	0.0178	0.0525				
4	0.0178	0.0561				
8	0.0178	0.0608				
15	0.0179	0.0657				
30	0.0179	0.0715				
60	0.0179	0.0770				
120	0.0180	0.0817				
240	0.0180	0.0856				
480	0.0181	0.0890				
720	0.0181	0.0907				
960	0.0181	0.0918				
1200	0.0181	0.0926				
1440	0.0181	0.0933				
1680						
1920						
2160						
2400						
2640						
2880						



# Consolidation Time Curves

11/21/06

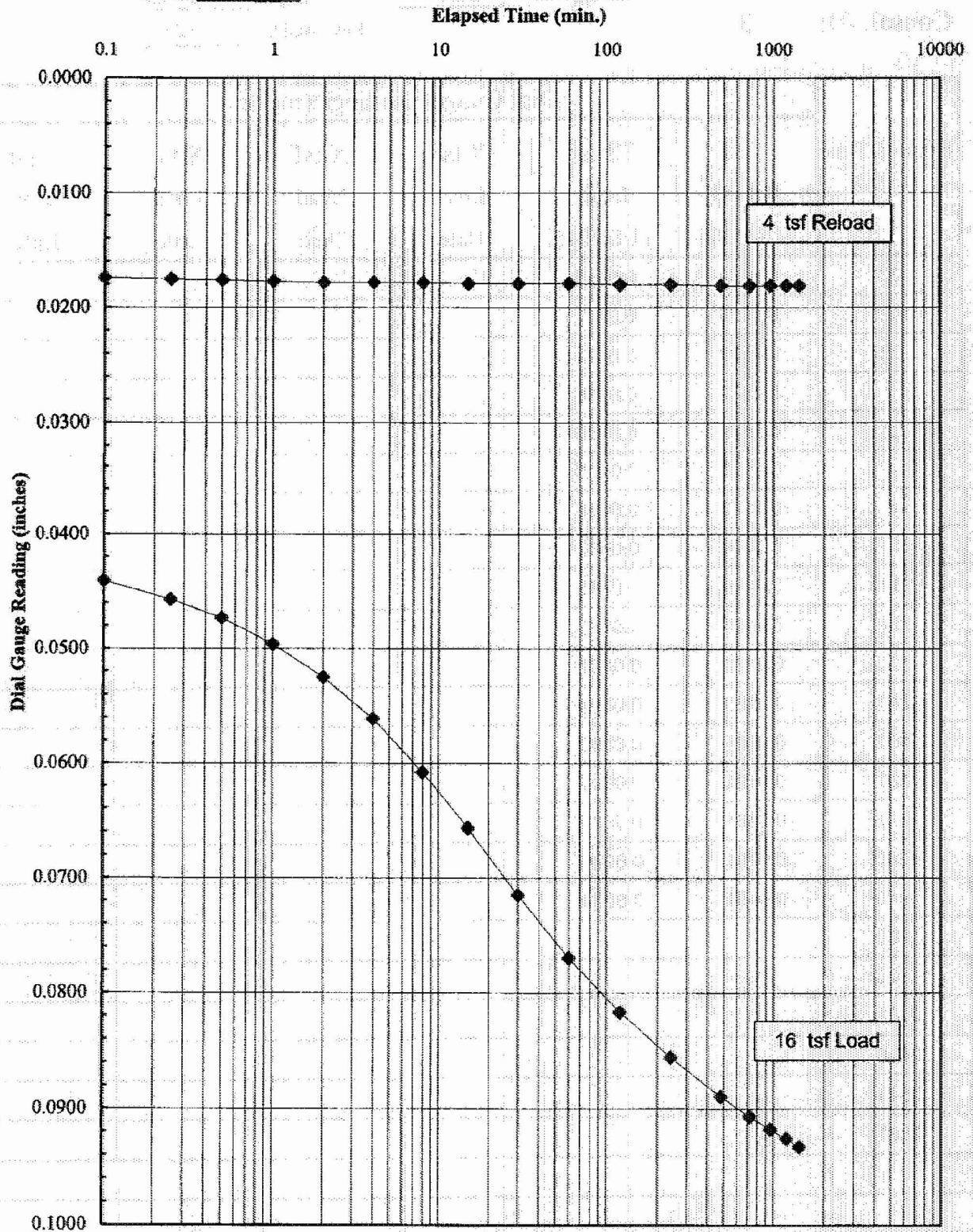
Project: Calvert Cliffs Nuclear Power Plant

Schnabel Contract: 06120048

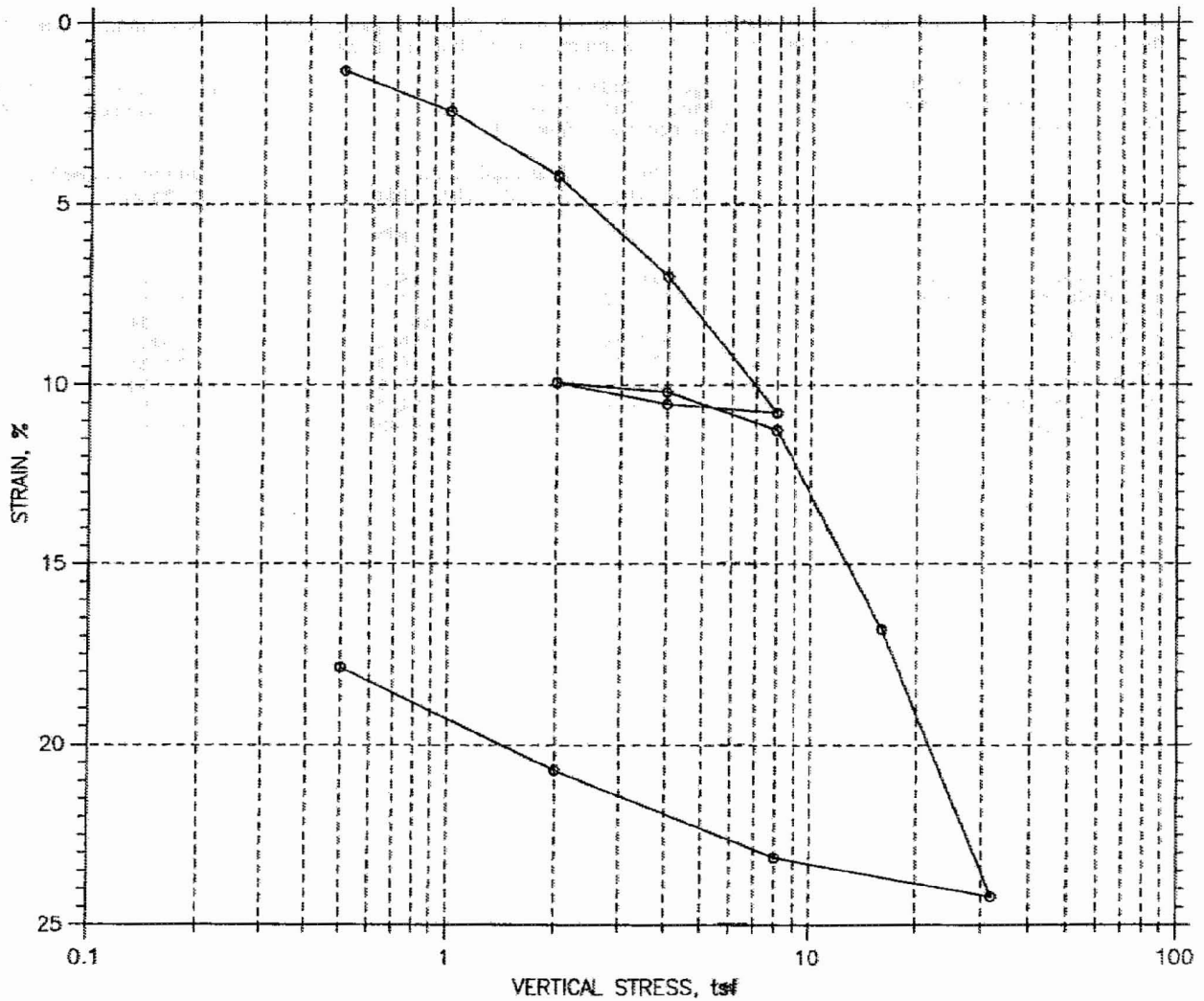
Boring No.: B-333

Depth: 38.5-40.5ft.

Reviewed by: CJS



## CONSOLIDATION TEST DATA SUMMARY REPORT



				Before Test	After Test	
Overburden Pressure: ---				Water Content, %	38.34	27.36
Preconsolidation Pressure: 5.3 tsf				Dry Unit Weight, pcf	79.63	96.94
Compression Index: ---				Saturation, %	92.70	99.99
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.12	0.74
LL: 51	PL: 16	PI: 35	GS: 2.70			

<b>GeoTesting express</b> <small>a subsidiary of Geocomp Corporation</small>	Project: Calvert Cliffs Nuclear PP	Location: Calvert County	Project No.: GTX-6880
	Boring No.: B-334	Tested By: md	Checked By: jdt
	Sample No.: S-8	Test Date: 09/11/2006	Depth: 23-25
	Test No.: C-9	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray clay with sand (CH), 79% passing #200 sieve, inundated @ 0.5 tsf		
	Remarks: System T - Compression Ratio: 0.22 , Recompression Ratio: 0.02		

CONSOLIDATION TEST DATA

Project: Calvert Cliffs Nuclear PP  
 Boring No.: B-334  
 Sample No.: S-8  
 Test No.: C-9

Location: Calvert County  
 Tested By: md  
 Test Date: 09/11/2006  
 Sample Type: tube

Project No.: GTX-6880  
 Checked By: jdt  
 Depth: 23-25  
 Elevation: ---

Soil Description: Moist, dark greenish gray clay with sand (CH), 79% passing #200 sieve, inundated @ 0.5 tsf  
 Remarks: System T - Compression Ratio: 0.22, Recompression Ratio: 0.02

Measured Specific Gravity: 2.70  
 Initial Void Ratio: 1.12  
 Final Void Ratio: 0.74

Liquid Limit: 51  
 Plastic Limit: 16  
 Plasticity Index: 35

Initial Height: 1.00 in  
 Specimen Diameter: 2.50 in

Container ID	Before Consolidation		After Consolidation	
	Trimnings	Specimen+Ring	Specimen+Ring	Trimnings
	Six	RING		1729
Wt. Container + Wet Soil, gm	216.61	251.1	239.83	140.93
Wt. Container + Dry Soil, gm	164.26	211.76	211.76	112.48
Wt. Container, gm	7.95	109.16	109.16	8.49
Wt. Dry Soil, gm	156.31	102.6	102.6	103.99
Water Content, %	33.49	38.34	27.36	27.36
Void Ratio	---	1.12	0.74	---
Degree of Saturation, %	---	92.70	99.99	---
Dry Unit Weight, pcf	---	79.626	96.942	---

CONSOLIDATION TEST DATA

Project: Calvert Cliffs Nuclear PP  
 Boring No.: B-334  
 Sample No.: S-8  
 Test No.: C-9

Location: Calvert County  
 Tested By: md  
 Test Date: 09/11/2006  
 Sample Type: tube

Project No.: GTX-6880  
 Checked By: jdt  
 Depth: 23-25  
 Elevation: ---

Soil Description: Moist, dark greenish gray clay with sand (CH), 79% passing #200 sieve, inundated @ 0.5 tsf  
 Remarks: System T - Compression Ratio: 0.22, Recompression Ratio: 0.02

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq. Rt. min	Log min	Sq. Rt. in <sup>2</sup> /sec	Log in <sup>2</sup> /sec	Ave. in <sup>2</sup> /sec
1	0.5	0.01318	1.089	1.32	0.1	0.1	8.69e-003	1.03e-002	9.41e-003
2	1	0.02453	1.065	2.45	0.1	0.1	5.95e-003	8.32e-003	6.94e-003
3	2	0.04216	1.028	4.22	0.3	0.1	2.64e-003	9.60e-003	4.14e-003
4	4	0.06976	0.969	6.98	0.6	0.0	1.20e-003	0.00e+000	1.20e-003
5	8	0.1078	0.889	10.78	1.8	1.9	3.89e-004	3.54e-004	3.71e-004
6	4	0.1054	0.894	10.54	0.8	0.0	8.17e-004	0.00e+000	8.17e-004
7	2	0.09933	0.907	9.93	2.1	3.3	3.17e-004	2.02e-004	2.47e-004
8	4	0.102	0.901	10.20	0.6	0.0	1.13e-003	0.00e+000	1.13e-003
9	8	0.1126	0.878	11.26	1.9	1.9	3.40e-004	3.49e-004	3.44e-004
10	16	0.1681	0.761	16.81	6.4	10.5	9.43e-005	5.79e-005	7.18e-005
11	32	0.242	0.604	24.20	13.9	14.2	3.75e-005	3.67e-005	3.71e-005
12	8	0.2312	0.627	23.12	3.1	3.5	1.55e-004	1.36e-004	1.45e-004
13	2	0.207	0.679	20.70	12.8	0.0	3.93e-005	0.00e+000	3.93e-005
14	0.5	0.1786	0.739	17.86	56.0	0.0	9.57e-006	0.00e+000	9.57e-006

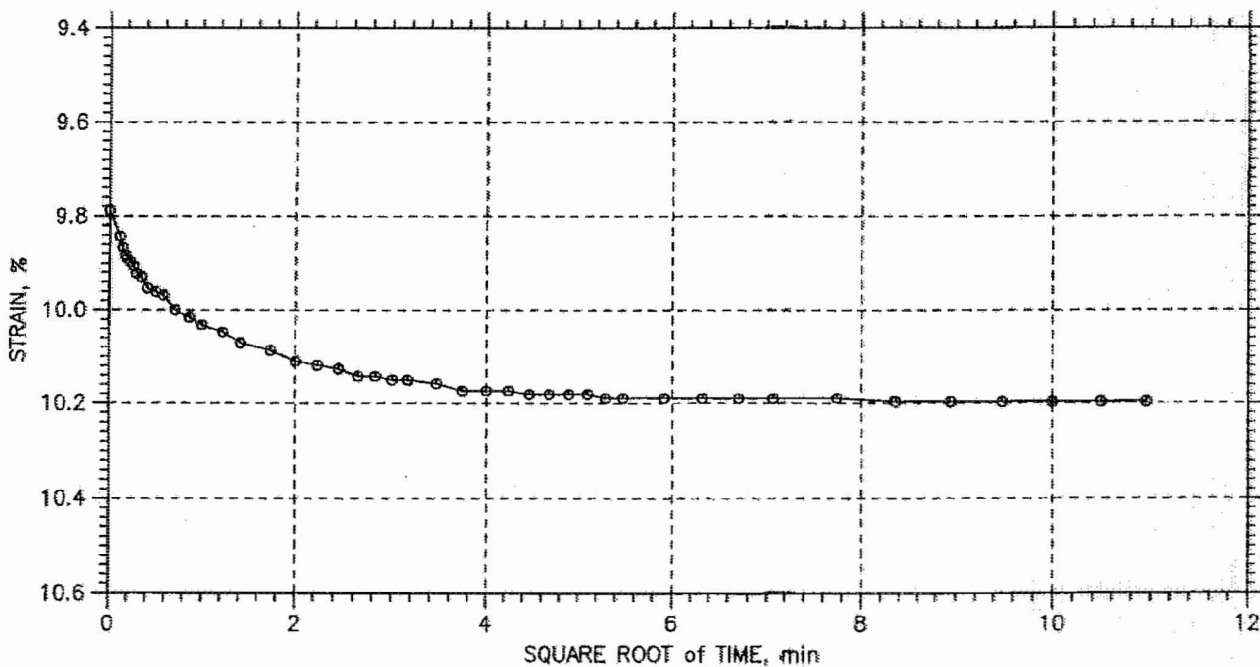
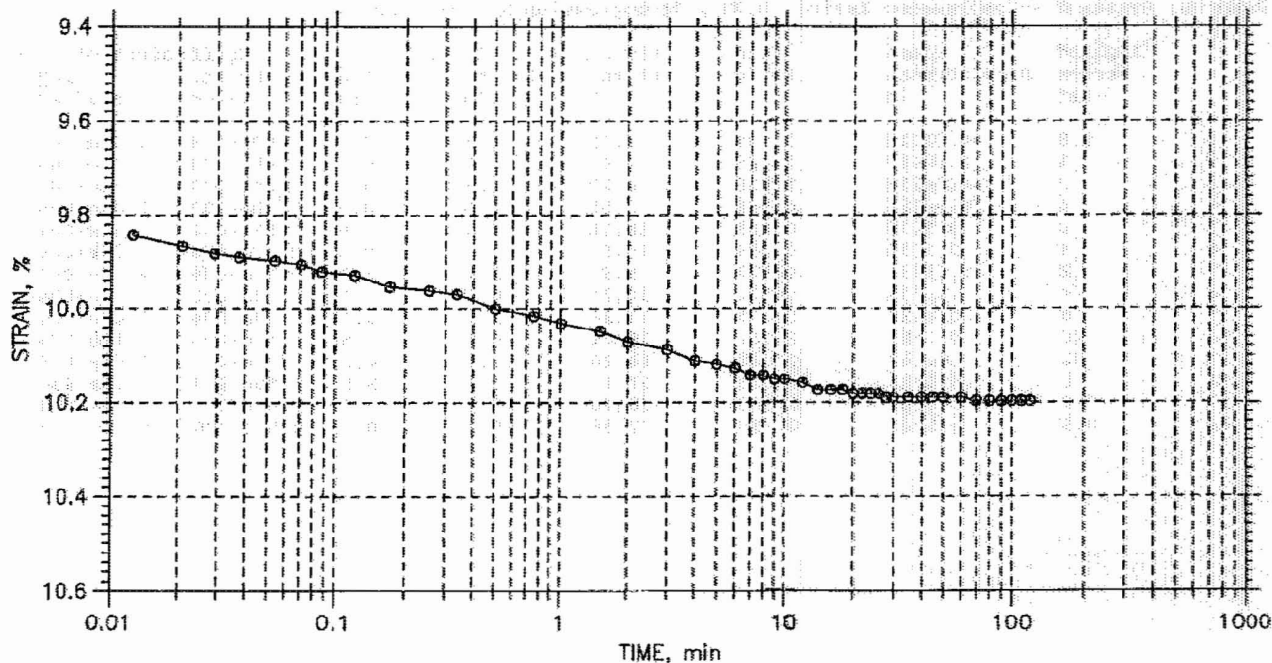


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 8 of 14

Stress: 4. tsf



**GeoTesting  
express**

a subsidiary of Geocomp Corporation

Project: Calvert Cliffs Nuclear PP	Location: Calvert County	Project No.: GTX-6880
Boring No.: B-334	Tested By: md	Checked By: jdt
Sample No.: S-8	Test Date: 09/11/2006	Depth: 23-25
Test No.: C-9	Sample Type: tube	Elevation: ---
Description: Moist, dark greenish gray clay with sand (CH), 79% passing #200 sieve, inundated @ 0.5 tsf		
Remarks: System T - Compression Ratio: 0.22, Recompression Ratio: 0.02		