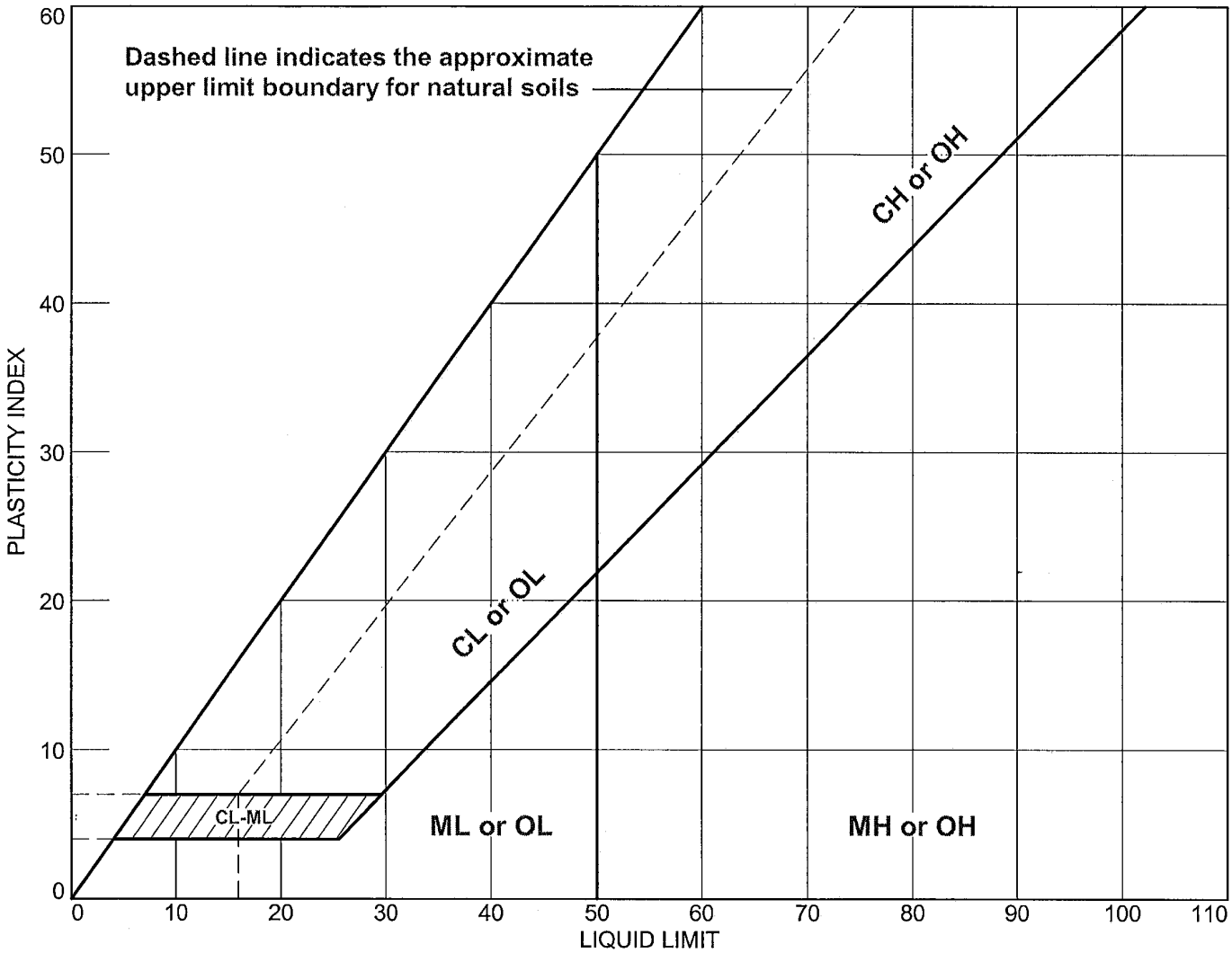
# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| SOIL DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SYMBOL | SOURCE | SAMPLE NO. | DEPTH | NATURAL WATER CONTENT (%) | PLASTIC LIMIT (%) | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | USCS |
| ● | Boring B-3234UD | UD7 | 105-107.5' | ND | NP | 14 | NP | SP-SM |

| | |
|---|---|
| **MACTEC Engineering and Consulting, Inc.**<br><br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS<br>**Project No.:** 6468071777 **Figure** NA |

**Tested By:** CS **Checked By:** BS DSC 8-4-09

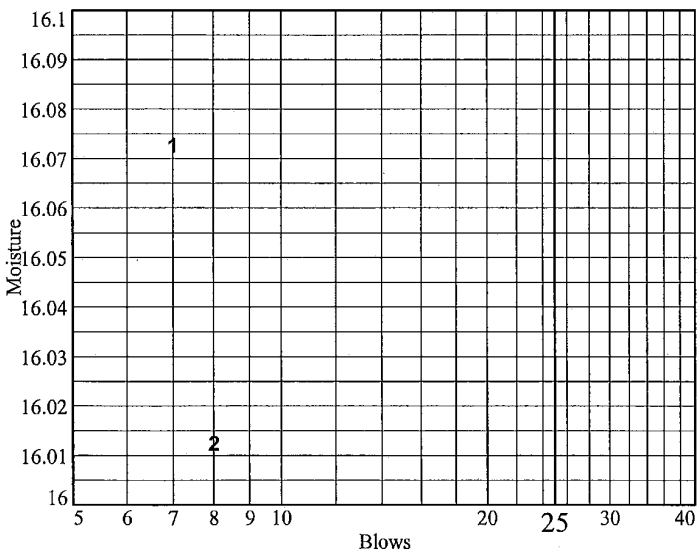
## LIQUID AND PLASTIC LIMIT TEST DATA

7/20/2009

**Client:** Bechtel
**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Project Number:** 6468071777
**Location:** Boring B-3234UD
**Depth:** 105-107.5' **Sample Number:** UD7
**Material Description:** Very Pale Brown Poorly graded SAND with Silt
**USCS:** SP-SM **AASHTO:** A-3
**Tested by:** CS **Checked by:** BS

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 26.39 | 33.99 | | | | |
| Dry+Tare | 24.27 | 31.46 | | | | |
| Tare | 11.08 | 15.66 | | | | |
| # Blows | 7 | 8 | | | | |
| Moisture | 16.1 | 16.0 | | | | |



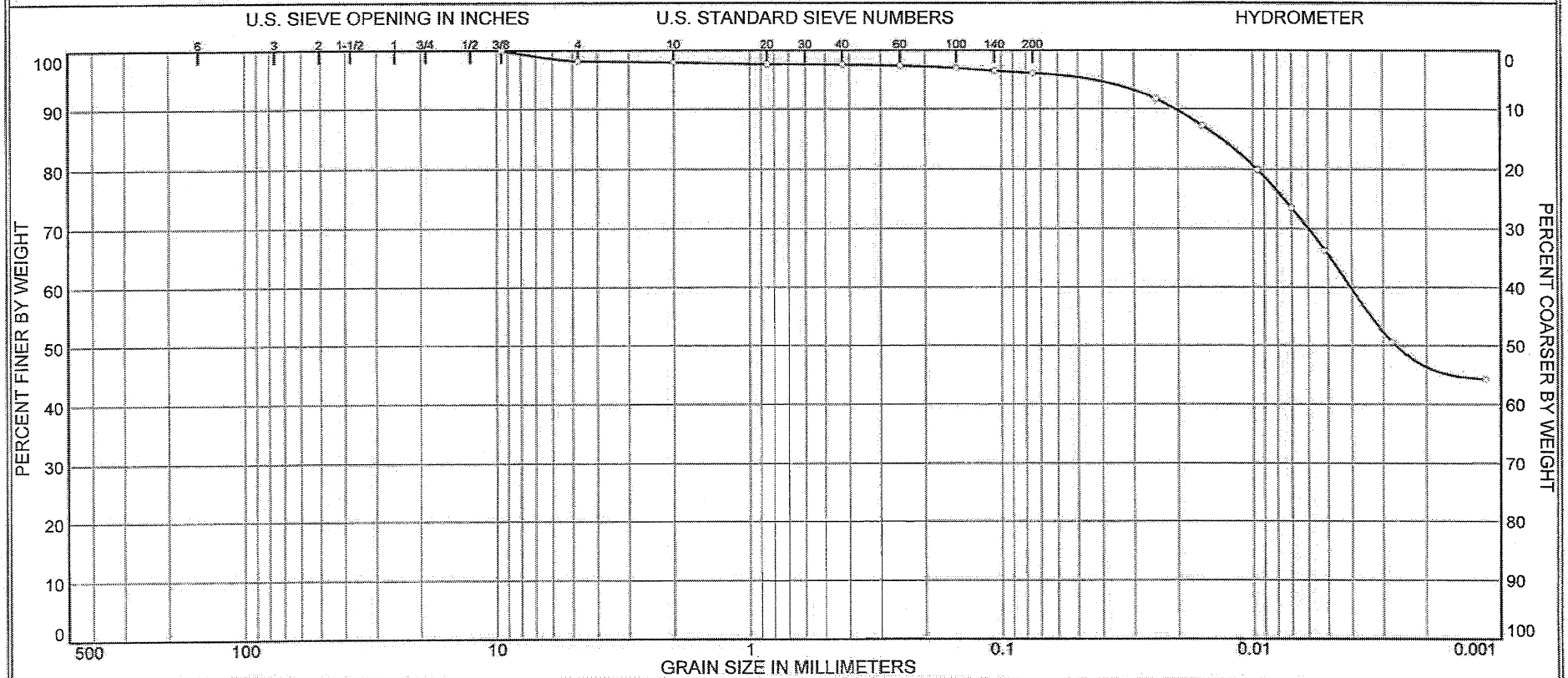

**Liquid Limit=** 14
**Plastic Limit=** NP
**Plasticity Index=** NP
**Natural Moisture=** ND

### Plastic Limit Data

| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | | | | | |
| Dry+Tare | | | | | |
| Tare | | | | | |
| Moisture | | | | | |

MACTEC Engineering and Consulting, Inc.

# Particle Size Distribution Report (ASTM D422-63 (2007))




| % COBBLES | % GRAVEL | | % SAND | | | % FINES | |
|---|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | SILT | CLAY |
| 0.0 | 0.0 | 1.8 | 0.2 | 0.4 | 1.5 | 30.4 | 65.7 |

| SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|
| B-3234UD | UD-8 | 125.0-126.6 ft | 2/4/09 | CH | Light Gray mottled Brownish Yellow Fat CLAY | 26.5 | 56 | 18 |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 Lab No. 9564

**MACTEC ENGINEERING AND CONSULTING, INC.**

Tested By: EH Reviewed By: JW

Specific Gravity = 2.71 (ASTM D854-06)

JW 5/5/09

DSC 5-5-09

## GRAIN SIZE DISTRIBUTION TEST DATA

**Client:** Bechtel
**Project:** Exelon Texas COL Project Supplemental Investigation
**Project Number:** 6468-07-1777

### Sample Data

**Source:** B-3234UD
**Sample No.:** UD-8
**Elev. or Depth:** 125.0-126.6 ft **Sample Length(in./cm.):** 9564
**Location:** B-3234UD
**Description:** Light Gray mottled Brownish Yellow Fat CLAY
**Date:** 2/4/09 **Natural Moisture:** 26.5
**Liquid Limit:** 56 **Plastic Limit:** 18 **USCS Class.:** CH
**Testing Remarks:** Tested By: EH Reviewed By: JW

Specific Gravity = 2.71 (ASTM D854-06)

### Mechanical Analysis Data

| | Initial |
|---|---|
| Dry sample and tare= | 54.27 |
| Tare = | 0.00 |
| Dry sample weight = | 54.27 |

Tare for cumulative weight retained= .00

| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| .375 inch | 0.00 | 100.0 |
| # 4 | 1.00 | 98.2 |
| # 10 | 1.08 | 98.0 |
| # 20 | 1.24 | 97.7 |
| # 40 | 1.30 | 97.6 |
| # 60 | 1.40 | 97.4 |
| # 100 | 1.63 | 97.0 |
| # 140 | 1.92 | 96.5 |
| # 200 | 2.13 | 96.1 |

### Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 96.1
Weight of hydrometer sample: 52.14
Calculated biased weight= 54.26
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only=
Specific gravity of solids= 2.71
Specific gravity correction factor= 0.987
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.6 | 55.0 | 50.4 | 0.0128 | 55.0 | 7.3 | 0.0245 | 91.7 |
| 5.00 | 23.6 | 52.5 | 47.9 | 0.0128 | 52.5 | 7.7 | 0.0159 | 87.2 |
| 15.00 | 23.6 | 48.5 | 43.9 | 0.0128 | 48.5 | 8.3 | 0.0096 | 79.9 |

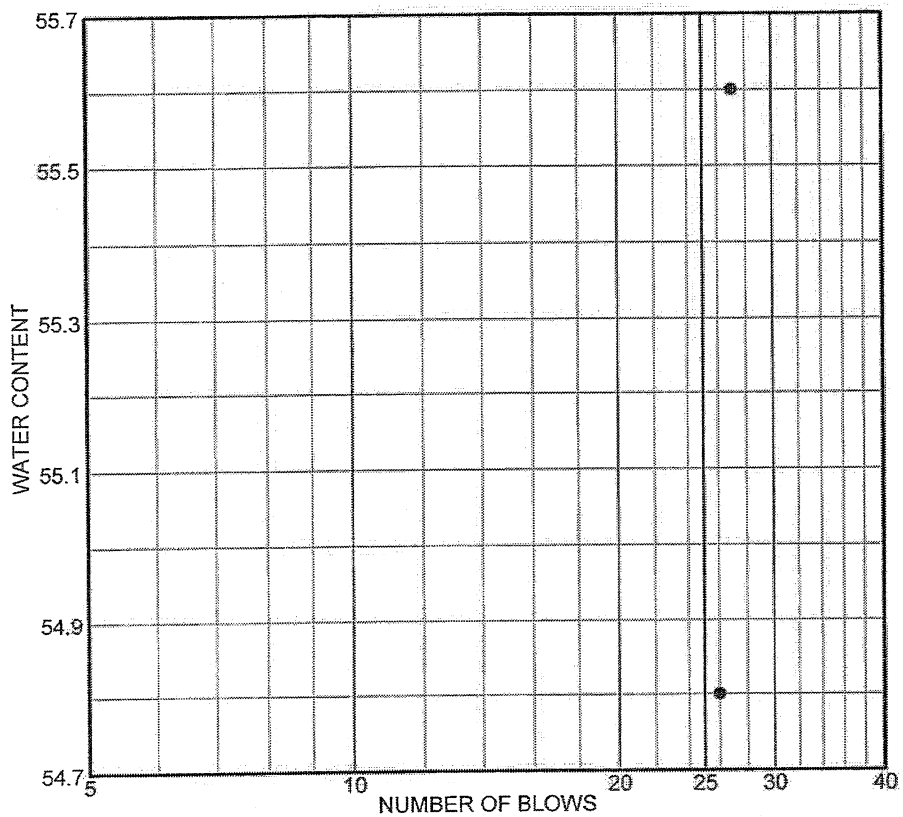
| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 30.00 | 23.6 | 45.0 | 40.4 | 0.0128 | 45.0 | 8.9 | 0.0070 | 73.5 |
| 60.00 | 23.6 | 41.0 | 36.4 | 0.0128 | 41.0 | 9.6 | 0.0051 | 66.3 |
| 240.00 | 23.1 | 32.5 | 27.8 | 0.0129 | 32.5 | 11.0 | 0.0028 | 50.6 |
| 1440.00 | 23.3 | 29.0 | 24.3 | 0.0129 | 29.0 | 11.5 | 0.0012 | 44.3 |

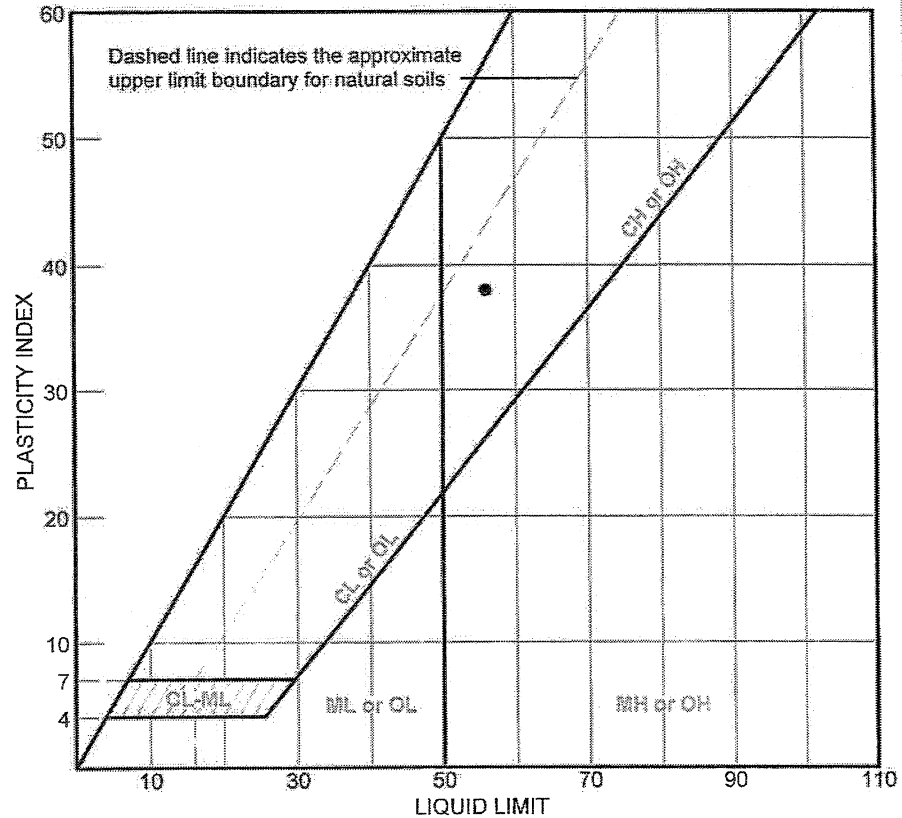
## Fractional Components

**Gravel/Sand based on** #4
**Sand/Fines based on** #200
**% COBBLES =** **% GRAVEL =** 1.8 **(% coarse =** **% fine =** 1.8)
**% SAND =** 2.1 **(% coarse =** 0.2 **% medium =** 0.4 **% fine =** 1.5)
**% SILT =** 30.4 **% CLAY =** 65.7

$D_{85}$= 0.01 $D_{60}$= 0.00 $D_{50}$= 0.00

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| | SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PI |
|---|---|---|---|---|---|---|---|---|---|
| ● | B-3234UD | UD-8 | 125.0-126.6 ft | 2/4/09 | CH | Light Gray mottled Brownish Yellow Fat CLAY | 26.5 | 56 | 38 |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 Lab No. 9564

**MACTEC ENGINEERING AND CONSULTING, INC.**

● Tested By: EH Reviewed By: JW

JW 5/5/09

DSC
5-5-09

# MACTEC ENGINEERING AND CONSULTING, INC.

**REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS**
**Performed in General Accordance with ASTM D 854-06 (Method B)**

PROJECT NAME:EXELON TEXAS COL PROJECT SUPPLEMENTAL INVESTIGATION
PROJECT NUMBER: 6468-07-1777
DATE: 4/8/09

SAMPLE IDENTIFICATION: B-3234UD,UD-8 @ 125.0-126.6 Ft.

| | | |
|---|---|---|
| (A) Mass of oven-dried soil, grams: | | 36.60 |
| (B) Mass of pycnometer filled with water at test temperature (T), grams: | | 363.69 |
| (C) Mass of pycnometer, water and soil, grams: | | 386.80 |
| (T) Temperature of pycnometer, water and soil, °C when mass (C) determined: | | 24.2 |
| (G) Specific Gravity at observed temperature: | A / [ B - ( C - A )] | 2.713 |
| (F) | ***Correction factor:*** | 0.99904 |
| (G x F) | **SPECIFIC GRAVITY @ 20°C:** | 2.711 |

**MATERIAL TESTED:** [X] **- # 4** [ ] **- # 10**

**PREPARATION METHOD:** [X] **DRY** [ ] **WET (dispersed)**

**REMARKS: Estimated % Passing # 4 : 98 %**

**Fat CLAY (CH)**

**EQUIPMENT USED**
**SCALES : 418**
**OVEN : 144**
**THERMOMETER :2759**
**PYCNOMETER : 2184**

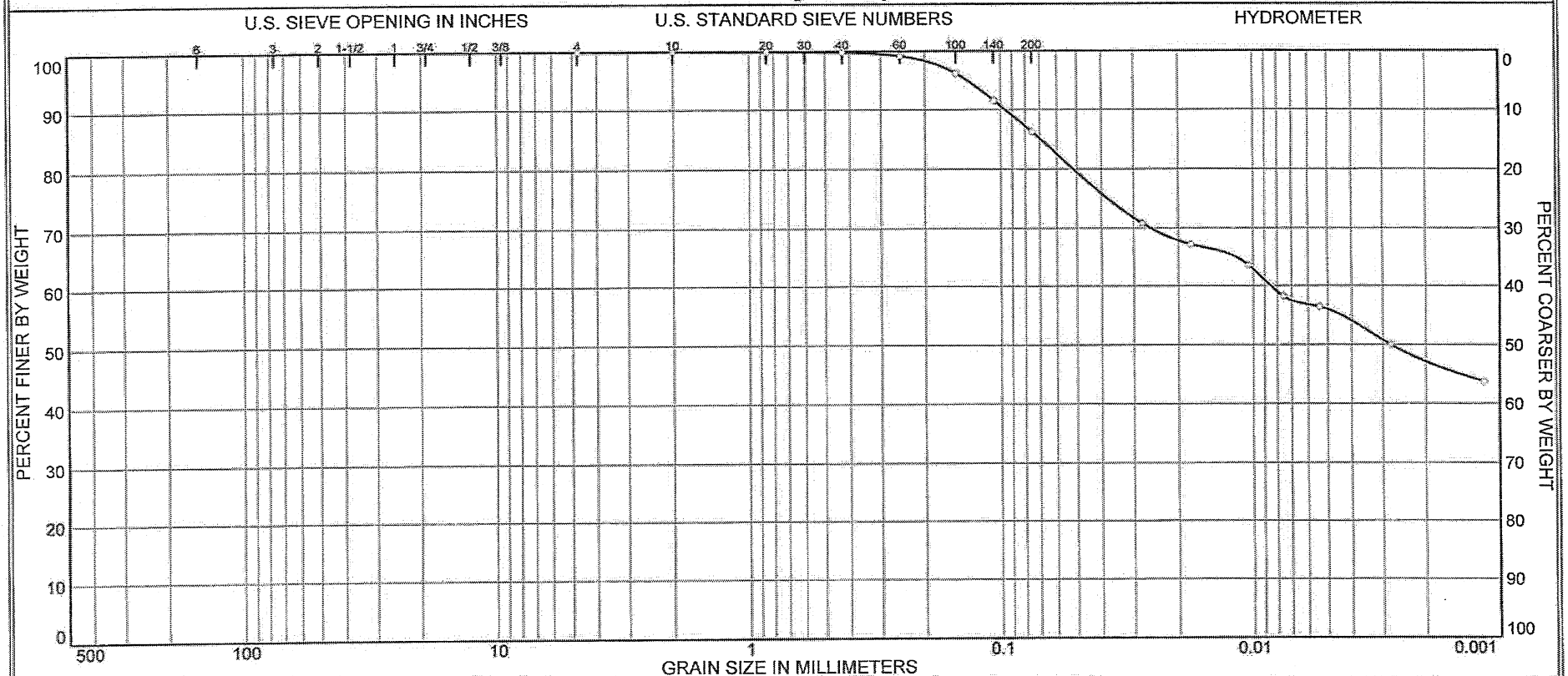
**TESTED BY:** EH

**\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls**

**REVIEWED BY:** J. Wang

JW 5/5/09
DSC 5-5-09

# Particle Size Distribution Report (ASTM D422-63 (2007))




| % COBBLES | % GRAVEL | | % SAND | | | % FINES | |
|---|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | SILT | CLAY |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 13.6 | 30.2 | 56.0 |

| SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|
| B-3234UD | UD-9 | 150.0-151.6 ft | 2/4/09 | CH | Light Gray mottled Brownish Yellow Fat CLAY | 21.3 | 50 | 18 |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 Lab No. 9565

**MACTEC ENGINEERING AND CONSULTING, INC.**

Tested By: EH Reviewed By: JW

Specific Gravity = 2.69 (ASTM D854-06)

JW 5/5/09

DSC
5-5-09

## GRAIN SIZE DISTRIBUTION TEST DATA

**Client:** Bechtel
**Project:** Exelon Texas COL Project Supplemental Investigation
**Project Number:** 6468-07-1777

### Sample Data

**Source:** B-3234UD
**Sample No.:** UD-9
**Elev. or Depth:** 150.0-151.6 ft **Sample Length(in./cm.):** 9565
**Location:** B-3234UD
**Description:** Light Gray mottled Brownish Yellow Fat CLAY
**Date:** 2/4/09 **Natural Moisture:** 21.3
**Liquid Limit:** 50 **Plastic Limit:** 18 **USCS Class.:** CH
**Testing Remarks:** Tested By: EH Reviewed By: JW

Specific Gravity = 2.69 (ASTM D854-06)

### Mechanical Analysis Data

| | Initial |
|---|---|
| Dry sample and tare= | 55.08 |
| Tare = | 0.00 |
| Dry sample weight = | 55.08 |

Tare for cumulative weight retained= .00

| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| # 4 | 0.00 | 100.0 |
| # 10 | 0.00 | 100.0 |
| # 20 | 0.07 | 99.9 |
| # 40 | 0.11 | 99.8 |
| # 60 | 0.45 | 99.2 |
| # 100 | 2.10 | 96.2 |
| # 140 | 4.69 | 91.5 |
| # 200 | 7.58 | 86.2 |

### Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 86.2
Weight of hydrometer sample: 47.5
Calculated biased weight= 55.10
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only=
Specific gravity of solids= 2.69
Specific gravity correction factor= 0.991
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.3 | 44.0 | 39.3 | 0.0130 | 44.0 | 9.1 | 0.0276 | 70.8 |
| 5.00 | 23.3 | 42.0 | 37.3 | 0.0130 | 42.0 | 9.4 | 0.0178 | 67.2 |
| 15.00 | 23.3 | 40.0 | 35.3 | 0.0130 | 40.0 | 9.7 | 0.0104 | 63.6 |
| 30.00 | 23.3 | 37.0 | 32.3 | 0.0130 | 37.0 | 10.2 | 0.0076 | 58.2 |

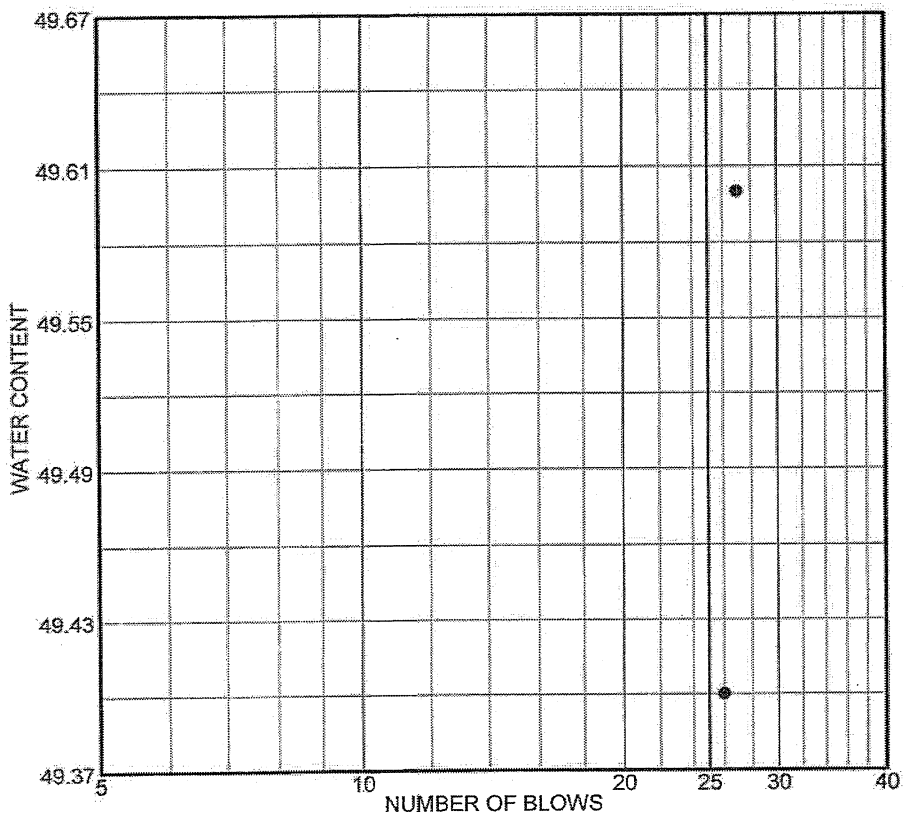
| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 60.00 | 23.3 | 36.0 | 31.3 | 0.0130 | 36.0 | 10.4 | 0.0054 | 56.4 |
| 240.00 | 23.1 | 32.5 | 27.8 | 0.0130 | 32.5 | 11.0 | 0.0028 | 50.0 |
| 1440.00 | 23.3 | 29.0 | 24.3 | 0.0130 | 29.0 | 11.5 | 0.0012 | 43.8 |

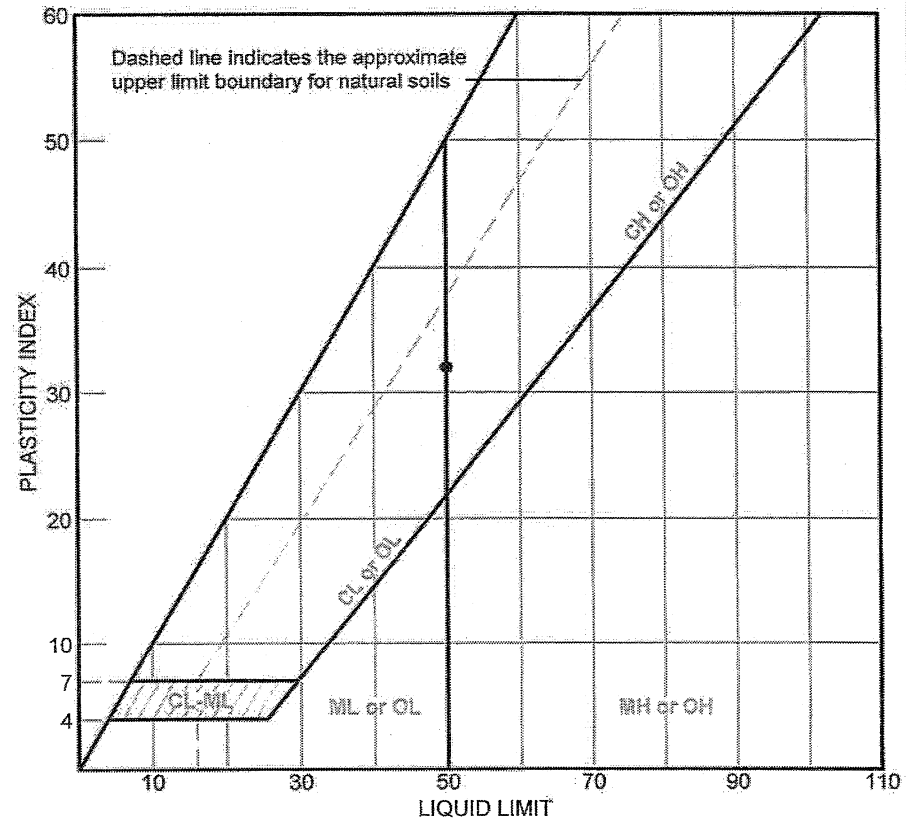
## Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 13.8 (% coarse = 0.0 % medium = 0.2 % fine = 13.6)
% SILT = 30.2 % CLAY = 56.0

$D_{85}$= 0.07 $D_{60}$= 0.01 $D_{50}$= 0.00

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| | SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PI |
|---|---|---|---|---|---|---|---|---|---|
| ● | B-3234UD | UD-9 | 150.0-151.6 ft | 2/4/09 | CH | Light Gray mottled Brownish Yellow Fat CLAY | 21.3 | 50 | 32 |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 | Lab No. 9565

**MACTEC ENGINEERING AND CONSULTING, INC.**

● Tested By: EH Reviewed By: JW

JW 5/5/09

DJC
5-5-09

# MACTEC ENGINEERING AND CONSULTING, INC.

**REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS**
**Performed in General Accordance with ASTM D 854-06 (Method B)**

PROJECT NAME:EXELON TEXAS COL PROJECT SUPPLEMENTAL INVESTIGATION
PROJECT NUMBER: 6468-07-1777
DATE: 4/8/09

SAMPLE IDENTIFICATION: B-3234UD,UD-9 @ 150.0-151.6 Ft.

| | | |
|---|---|---|
| (A) Mass of oven-dried soil, grams: | | 36.05 |
| (B) Mass of pycnometer filled with water at test temperature (T), grams: | | 340.08 |
| (C) Mass of pycnometer, water and soil, grams: | | 362.76 |
| (T) Temperature of pycnometer, water and soil, °C when mass (C) determined: | | 24.2 |
| (G) Specific Gravity at observed temperature: | A / [ B - ( C - A )] | 2.696 |
| (F) | ***Correction factor:*** | 0.99904 |
| (G x F) | **SPECIFIC GRAVITY @ 20°C:** | 2.694 |

**MATERIAL TESTED:** [x] **- # 4** [ ] **- # 10**

**PREPARATION METHOD:** [X] **DRY** [ ] **WET (dispersed)**

**REMARKS: Estimated % Passing # 4 : 100 %**
**Fat CLAY (CH)**

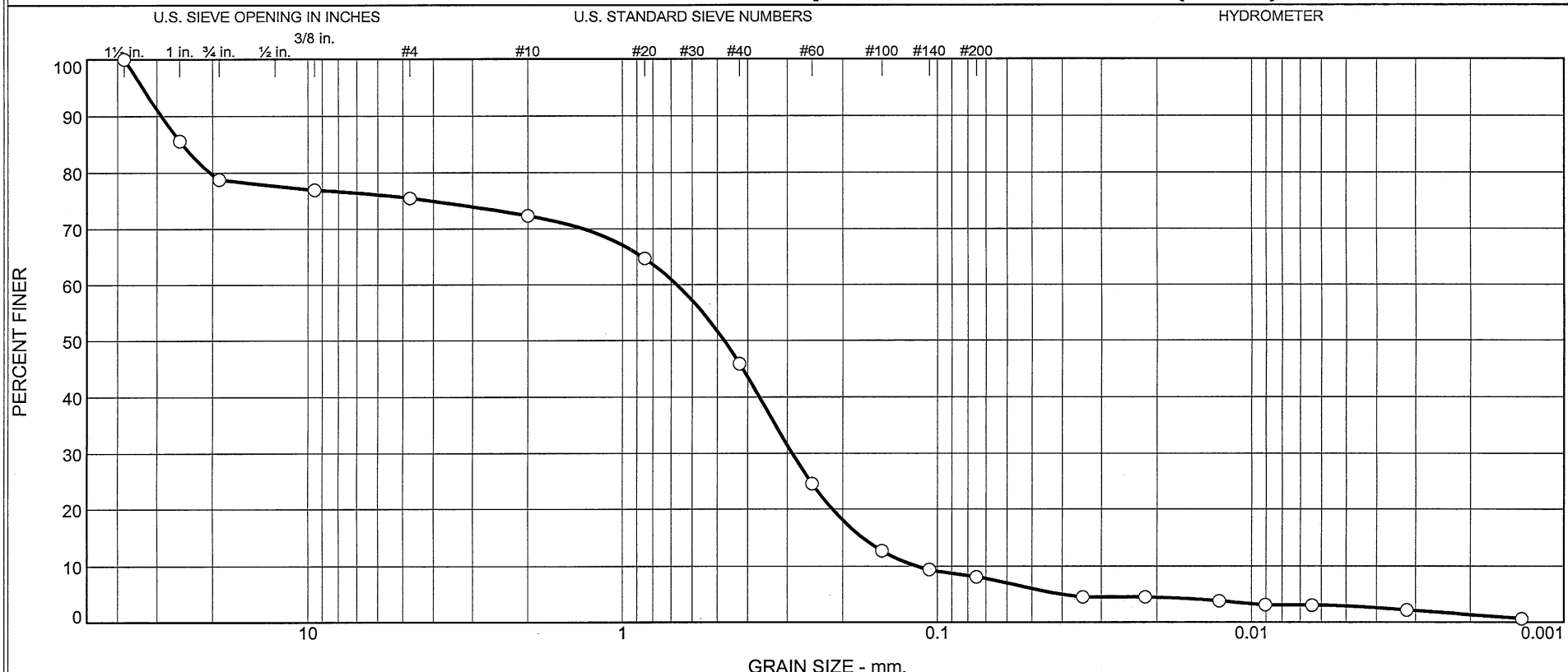
**EQUIPMENT USED**
**SCALES : 418**
**OVEN : 144**
**THERMOMETER :2759**
**PYCNOMETER : 2056**

**TESTED BY: EH**
**\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls**

**REVIEWED BY:** J. Wang

JW 5/5/09
DSC
5-5-09

# Particle Size Distribution Report ASTM D 422-63 (2007)




| | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 21.2 | 3.3 | 3.2 | 26.4 | 37.8 | 5.2 | 2.9 |
| | | | | | | | |
| | | | | | | | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-3234UD | UD 11 | 168.8-171.3' | 2/5/09 | SP-SM | Very Pale Brown Poorly graded SAND with silt and gravel | ND | 18 | NP |
| | | | | | | | | | |
| | | | | | | | | | |

Client Bechtel

Project Exelon Texas COL Project - Supplemental Investigation, including UHS

Project No. 6468071777 Figure NA

**MACTEC Engineering and Consulting, Inc.**

**Raleigh, North Carolina**

○ ND = Not Determined
NP = Non Plastic
Specific Gravity is assumed

**Tested By:** CS **Checked By:** BS DSC 5-4-09

## GRAIN SIZE DISTRIBUTION TEST DATA

5/4/2009

**Client:** Bechtel
**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Project Number:** 6468071777
**Location:** Boring B-3234UD
**Depth:** 168.8-171.3' **Sample Number:** UD 11
**Material Description:** Very Pale Brown Poorly graded SAND with silt and gravel
**Date:** 2/5/09 **Natural Moisture:** ND
**Liquid Limit:** 18 **Plastic Limit:** NP **USCS Class.:** SP-SM
**Testing Remarks:** ND = Not Determined
NP = Non Plastic
Specific Gravity is assumed
**Tested by:** CS **Checked by:** BS

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 617.41 | 0.00 | 0.00 | 1.5" | 0.00 | 100.0 |
| | | | 1" | 88.78 | 85.6 |
| | | | 3/4" | 131.12 | 78.8 |
| | | | 3/8" | 142.45 | 76.9 |
| | | | #4 | 151.41 | 75.5 |
| | | | #10 | 170.90 | 72.3 |
| 105.45 | 0.00 | 0.00 | #20 | 11.15 | 64.7 |
| | | | #40 | 38.56 | 45.9 |
| | | | #60 | 69.66 | 24.5 |
| | | | #100 | 86.91 | 12.7 |
| | | | #140 | 91.77 | 9.4 |
| | | | #200 | 93.65 | 8.1 |

### Hydrometer Test Data

**Hydrometer test uses material passing** #10
**Percent passing #10 based upon complete sample =** 72.3
**Weight of hydrometer sample =**105.44
**Hygroscopic moisture correction:**
**Moist weight and tare =** 29.66
**Dry weight and tare =** 29.61
**Tare weight =** 15.57
**Hygroscopic moisture =** 0.4%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 12.5 | 29.6 |
| **Comp. corr.:** | -8.0 | -4.0 |

**Meniscus correction only =** 0.0
**Specific gravity of solids =** 2.700
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 **x Rm**

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.7 | 12.0 | 6.6 | 0.0129 | 12.0 | 14.3 | 0.0344 | 4.5 |
| 5.00 | 23.7 | 12.0 | 6.6 | 0.0129 | 12.0 | 14.3 | 0.0218 | 4.5 |
| 15.00 | 23.6 | 11.0 | 5.6 | 0.0129 | 11.0 | 14.5 | 0.0126 | 3.8 |
| 30.00 | 23.3 | 10.0 | 4.5 | 0.0129 | 10.0 | 14.7 | 0.0090 | 3.1 |
| 60.00 | 22.9 | 10.0 | 4.4 | 0.0130 | 10.0 | 14.7 | 0.0064 | 3.0 |
| 250.00 | 21.9 | 9.0 | 3.2 | 0.0131 | 9.0 | 14.8 | 0.0032 | 2.2 |
| 1440.00 | 20.8 | 7.0 | 0.9 | 0.0133 | 7.0 | 15.1 | 0.0014 | 0.6 |

**MACTEC Engineering and Consulting, Inc.**

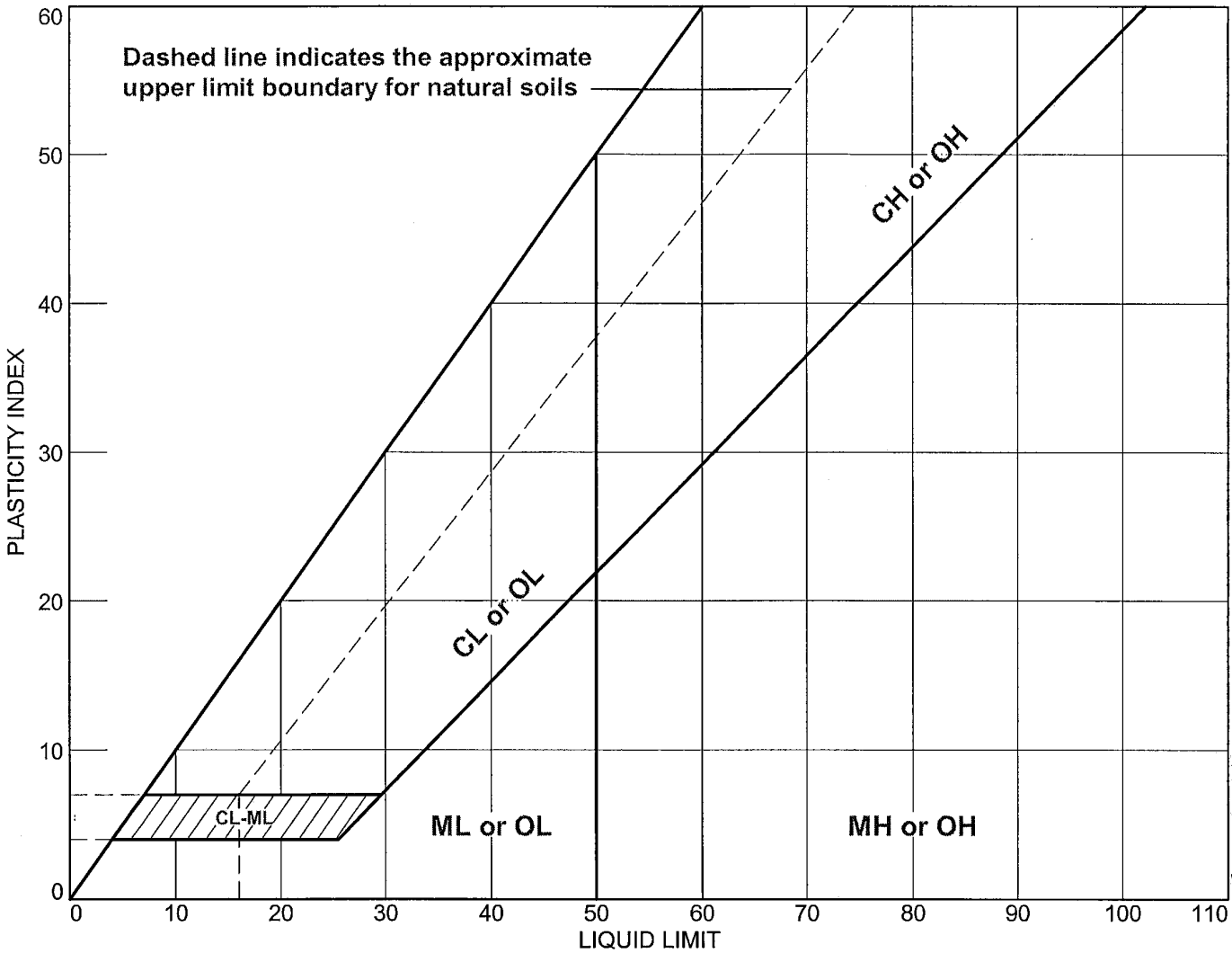
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 21.2 | 3.3 | 24.5 | 3.2 | 26.4 | 37.8 | 67.4 | 5.2 | 2.9 | 8.1 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.1165 | 0.1728 | 0.2155 | 0.2892 | 0.4760 | 0.6736 | 20.4049 | 24.8816 | 29.0426 | 33.3664 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 3.26 | 5.78 | 1.07 |

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| SOIL DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SYMBOL | SOURCE | SAMPLE NO. | DEPTH | NATURAL WATER CONTENT (%) | PLASTIC LIMIT (%) | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | USCS |
| ● | Boring B-3234UD | UD 11 | 168.8-171.3' | ND | NP | 18 | NP | SP-SM |

| | |
|---|---|
| **MACTEC Engineering and Consulting, Inc.**<br><br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS<br>**Project No.:** 6468071777 **Figure** NA |

**Tested By:** CS **Checked By:** BS DSC 5-4-09

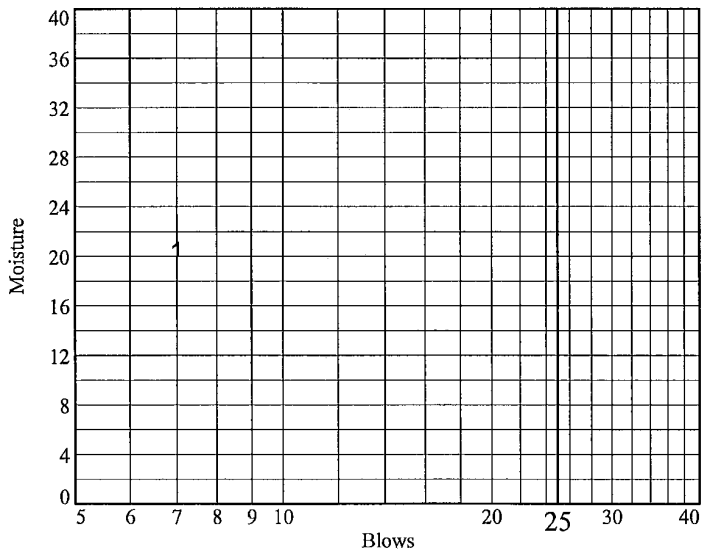
## LIQUID AND PLASTIC LIMIT TEST DATA

5/4/2009

**Client:** Bechtel
**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Project Number:** 6468071777
**Location:** Boring B-3234UD
**Depth:** 168.8-171.3' **Sample Number:** UD 11
**Material Description:** Very Pale Brown Poorly graded SAND with silt and gravel
**USCS:** SP-SM **AASHTO:** A-1-b
**Tested by:** CS **Checked by:** BS

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 32.18 | | | | | |
| Dry+Tare | 29.36 | | | | | |
| Tare | 15.67 | | | | | |
| # Blows | 7 | | | | | |
| Moisture | 20.6 | | | | | |



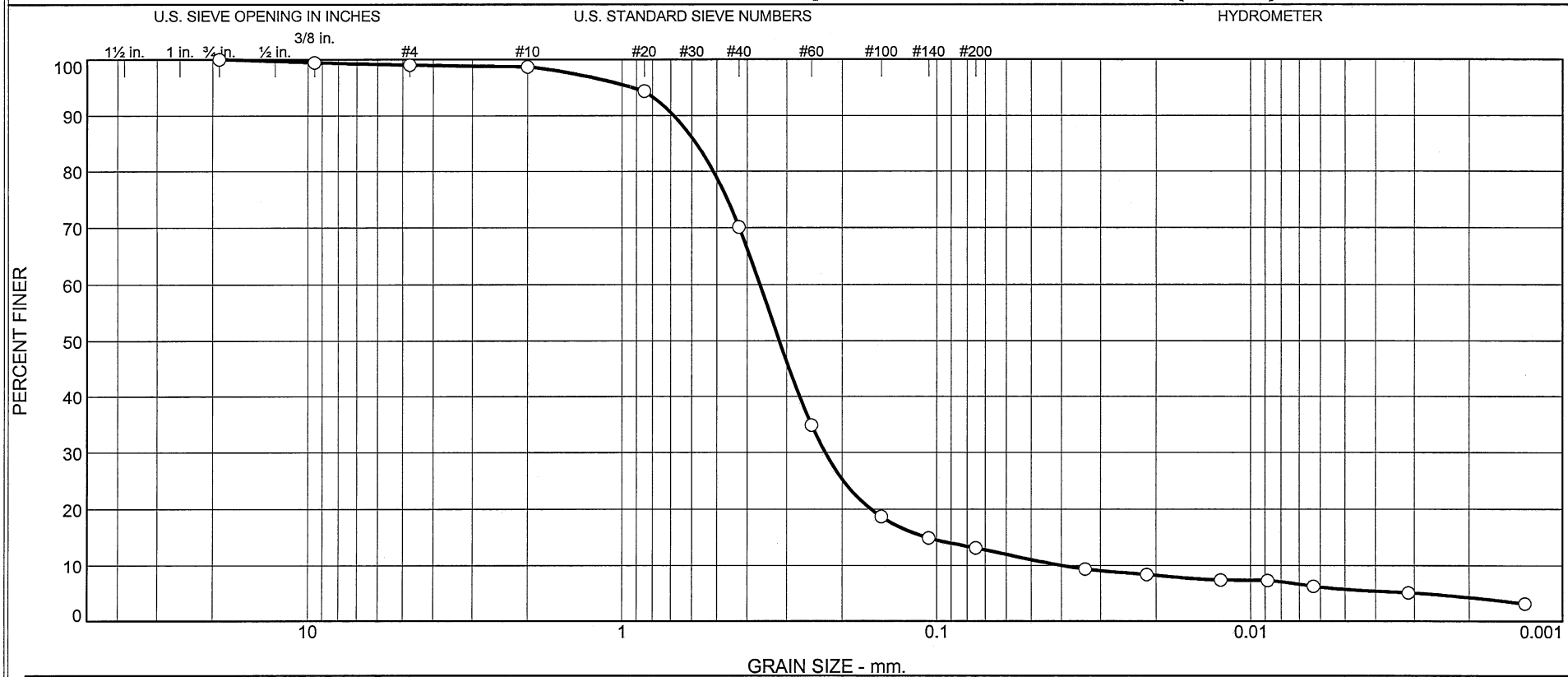

**Liquid Limit=** 18
**Plastic Limit=** NP
**Plasticity Index=** NP
**Natural Moisture=** ND

### Plastic Limit Data

| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | | | | | |
| Dry+Tare | | | | | |
| Tare | | | | | |
| Moisture | | | | | |

MACTEC Engineering and Consulting, Inc.

# Particle Size Distribution Report ASTM D 422-63 (2007)




| | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 1.0 | 0.3 | 28.6 | 56.9 | 7.5 | 5.7 |
| | | | | | | | |
| | | | | | | | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-3234UD | UD 14 | 216.8-219.3' | 2/6/09 | SM | Very Pale Brown Silty SAND | ND | 18 | NP |
| | | | | | | | | | |
| | | | | | | | | | |

Client Bechtel

Project Exelon Texas COL Project - Supplemental Investigation, including UHS

Project No. 6468071777 Figure NA

**MACTEC Engineering and Consulting, Inc.**

**Raleigh, North Carolina**

○ ND = Not Determined
NP= Non Plastic
Specific Gravity is assumed

**Tested By:** CS **Checked By:** BS DSC 5-4-09

## GRAIN SIZE DISTRIBUTION TEST DATA

5/4/2009

**Client:** Bechtel
**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Project Number:** 6468071777
**Location:** Boring B-3234UD
**Depth:** 216.8-219.3' **Sample Number:** UD 14
**Material Description:** Very Pale Brown Silty SAND
**Date:** 2/6/09 **Natural Moisture:** ND
**Liquid Limit:** 18 **Plastic Limit:** NP **USCS Class.:** SM
**Testing Remarks:** ND = Not Determined
NP= Non Plastic
Specific Gravity is assumed
**Tested by:** CS **Checked by:** BS

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 657.86 | 0.00 | 0.00 | 3/4 | 0.00 | 100.0 |
| | | | 3/8" | 3.78 | 99.4 |
| | | | #4 | 6.63 | 99.0 |
| | | | #10 | 8.69 | 98.7 |
| 101.32 | 0.00 | 0.00 | #20 | 4.40 | 94.4 |
| | | | #40 | 29.35 | 70.1 |
| | | | #60 | 65.55 | 34.8 |
| | | | #100 | 82.12 | 18.7 |
| | | | #140 | 85.97 | 14.9 |
| | | | #200 | 87.81 | 13.2 |

### Hydrometer Test Data

**Hydrometer test uses material passing** #10
**Percent passing #10 based upon complete sample =** 98.7
**Weight of hydrometer sample =**101.32
**Hygroscopic moisture correction:**
**Moist weight and tare =** 23.33
**Dry weight and tare =** 23.26
**Tare weight =** 11.18
**Hygroscopic moisture =** 0.6%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 12.3 | 29.6 |
| **Comp. corr.:** | -8.0 | -4.0 |

**Meniscus correction only =** 1.0
**Specific gravity of solids =** 2.700
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 **x Rm**

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.7 | 15.0 | 9.6 | 0.0129 | 16.0 | 13.7 | 0.0336 | 9.3 |
| 5.00 | 23.7 | 14.0 | 8.6 | 0.0129 | 15.0 | 13.8 | 0.0214 | 8.4 |
| 15.00 | 23.6 | 13.0 | 7.6 | 0.0129 | 14.0 | 14.0 | 0.0124 | 7.4 |
| 30.00 | 23.3 | 13.0 | 7.5 | 0.0129 | 14.0 | 14.0 | 0.0088 | 7.3 |
| 60.00 | 22.9 | 12.0 | 6.5 | 0.0130 | 13.0 | 14.2 | 0.0063 | 6.2 |
| 250.00 | 22.1 | 11.0 | 5.3 | 0.0131 | 12.0 | 14.3 | 0.0031 | 5.1 |
| 1440.00 | 22.0 | 9.0 | 3.2 | 0.0131 | 10.0 | 14.7 | 0.0013 | 3.1 |

**MACTEC Engineering and Consulting, Inc.**

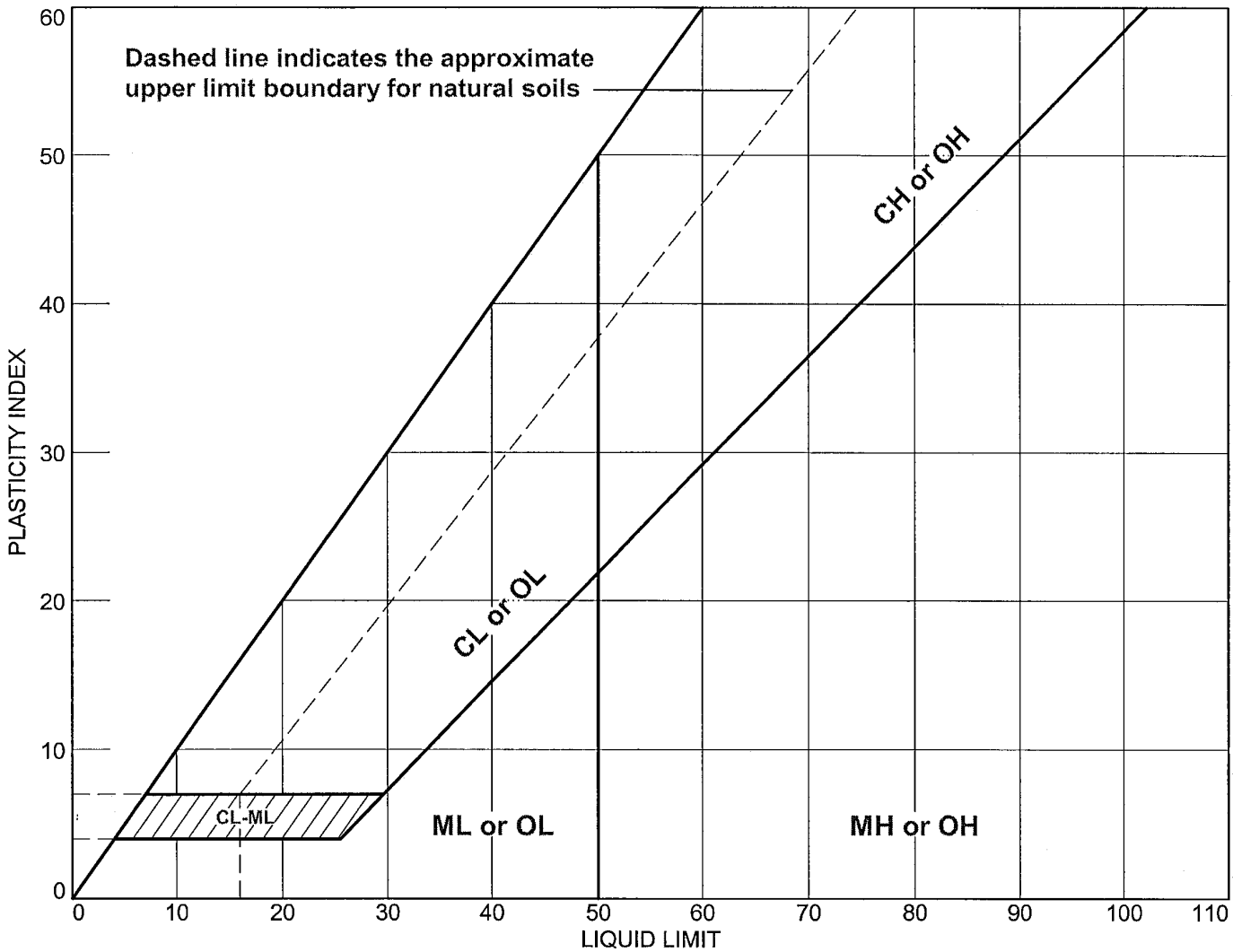
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 1.0 | 1.0 | 0.3 | 28.6 | 56.9 | 85.8 | 7.5 | 5.7 | 13.2 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0401 | 0.1068 | 0.1617 | 0.2264 | 0.3167 | 0.3647 | 0.5135 | 0.5818 | 0.6854 | 0.9259 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.55 | 9.10 | 3.50 |

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| SOIL DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SYMBOL | SOURCE | SAMPLE NO. | DEPTH | NATURAL WATER CONTENT (%) | PLASTIC LIMIT (%) | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | USCS |
| ● | Boring B-3234UD | UD 14 | 216.8-219.3' | ND | NP | 18 | NP | SM |

| | |
|---|---|
| **MACTEC Engineering and Consulting, Inc.**<br><br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS<br>**Project No.:** 6468071777 **Figure** NA |

**Tested By:** CS **Checked By:** BS DSC 5-4-09

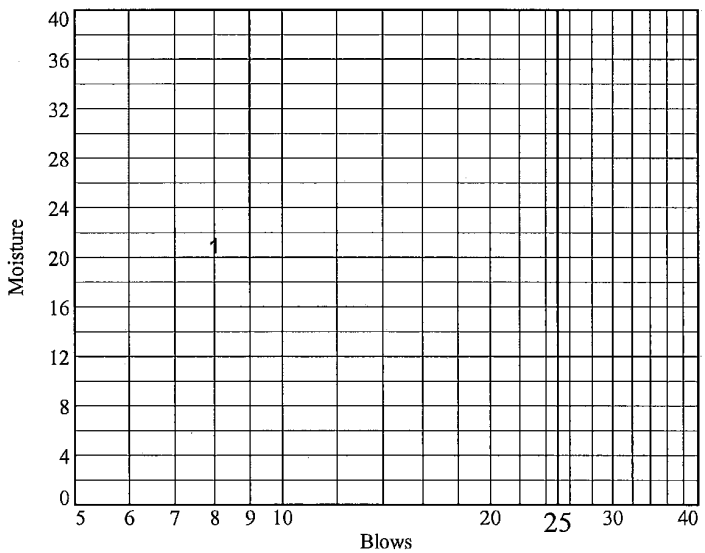
## LIQUID AND PLASTIC LIMIT TEST DATA

5/4/2009

**Client:** Bechtel
**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Project Number:** 6468071777
**Location:** Boring B-3234UD
**Depth:** 216.8-219.3' **Sample Number:** UD 14
**Material Description:** Very Pale Brown Silty SAND
**USCS:** SM **AASHTO:** A-2-4(0)
**Tested by:** CS **Checked by:** BS

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 32.54 | | | | | |
| Dry+Tare | 29.58 | | | | | |
| Tare | 15.47 | | | | | |
| # Blows | 8 | | | | | |
| Moisture | 21.0 | | | | | |



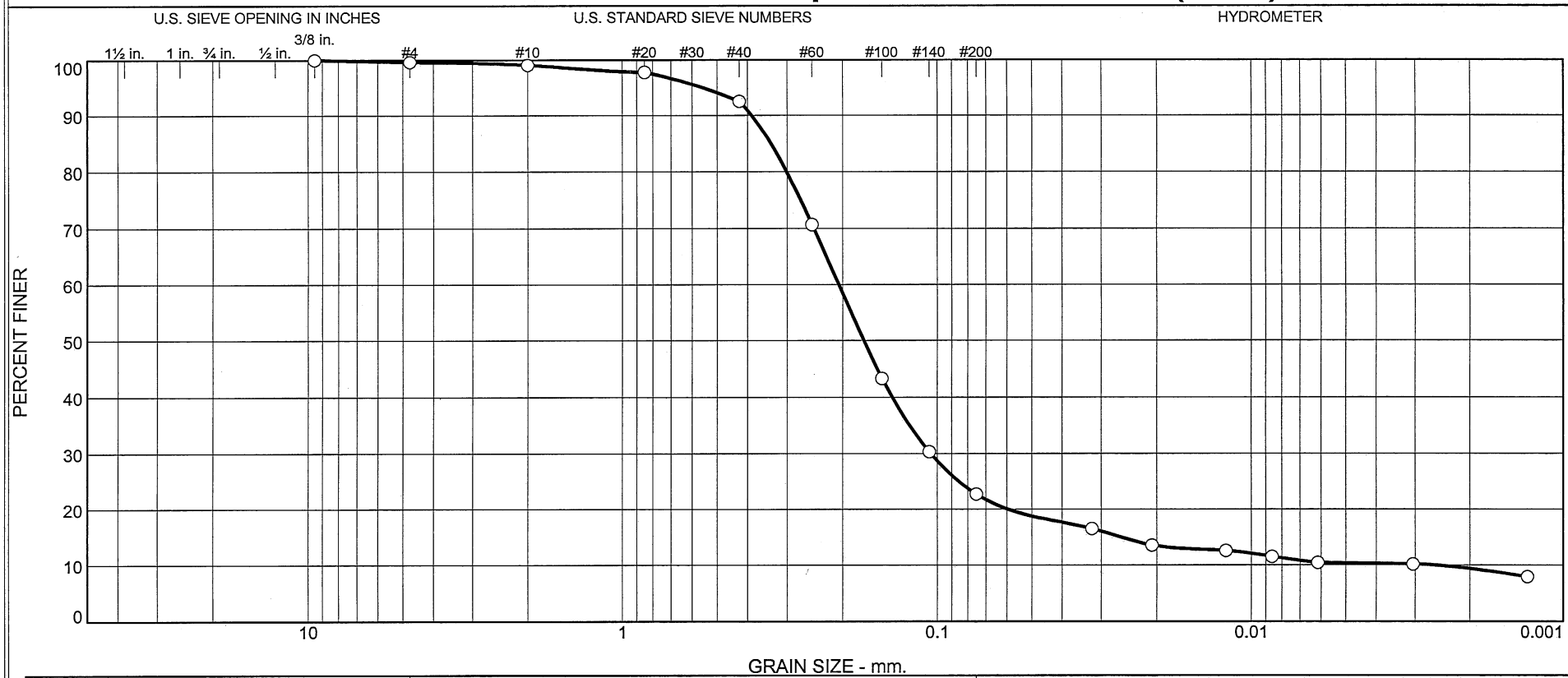

**Liquid Limit=** 18
**Plastic Limit=** NP
**Plasticity Index=** NP
**Natural Moisture=** ND

### Plastic Limit Data

| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | | | | | |
| Dry+Tare | | | | | |
| Tare | | | | | |
| Moisture | | | | | |

MACTEC Engineering and Consulting, Inc.

# Particle Size Distribution Report ASTM D 422-63 (2007)




| | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.4 | 0.5 | 6.6 | 69.8 | 12.4 | 10.3 |
| | | | | | | | |
| | | | | | | | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-3234UD | UD 15 | 260.0-262.5' | 2/7/09 | SM | Light Gray Silty SAND | ND | 17 | 14 |
| | | | | | | | | | |
| | | | | | | | | | |

Client Bechtel

Project Exelon Texas COL Project - Supplemental Investigation, including UHS

Project No. 6468071777 Figure NA

**MACTEC Engineering and Consulting, Inc.**

**Raleigh, North Carolina**

○ ND = Not Determined
Specific Gravity is assumed

**Tested By:** CS **Checked By:** BS DSC 5-4-09

## GRAIN SIZE DISTRIBUTION TEST DATA

5/4/2009

**Client:** Bechtel
**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Project Number:** 6468071777
**Location:** Boring B-3234UD
**Depth:** 260.0-262.5' **Sample Number:** UD 15
**Material Description:** Light Gray Silty SAND
**Date:** 2/7/09 **Natural Moisture:** ND
**Liquid Limit:** 17 **Plastic Limit:** 14 **USCS Class.:** SM
**Testing Remarks:** ND = Not Determined
Specific Gravity is assumed
**Tested by:** CS **Checked by:** BS

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 554.02 | 0.00 | 0.00 | 3/8" | 0.00 | 100.0 |
| | | | #4 | 2.10 | 99.6 |
| | | | #10 | 5.23 | 99.1 |
| 101.32 | 0.00 | 0.00 | #20 | 1.29 | 97.8 |
| | | | #40 | 6.68 | 92.5 |
| | | | #60 | 29.04 | 70.7 |
| | | | #100 | 56.98 | 43.3 |
| | | | #140 | 70.31 | 30.3 |
| | | | #200 | 78.07 | 22.7 |

### Hydrometer Test Data

**Hydrometer test uses material passing** #10
**Percent passing #10 based upon complete sample =** 99.1
**Weight of hydrometer sample =**101.32
**Hygroscopic moisture correction:**
**Moist weight and tare =** 28.75
**Dry weight and tare =** 28.40
**Tare weight =** 15.64
**Hygroscopic moisture =** 2.7%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 12.5 | 29.6 |
| **Comp. corr.:** | -8.0 | -4.0 |

**Meniscus correction only =** 1.0
**Specific gravity of solids =** 2.700
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 **x Rm**

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.8 | 22.0 | 16.6 | 0.0128 | 23.0 | 12.5 | 0.0321 | 16.5 |
| 5.00 | 23.8 | 19.0 | 13.6 | 0.0128 | 20.0 | 13.0 | 0.0207 | 13.6 |
| 15.00 | 23.8 | 18.0 | 12.6 | 0.0128 | 19.0 | 13.2 | 0.0120 | 12.6 |
| 30.00 | 23.5 | 17.0 | 11.6 | 0.0129 | 18.0 | 13.3 | 0.0086 | 11.5 |
| 60.00 | 23.1 | 16.0 | 10.5 | 0.0129 | 17.0 | 13.5 | 0.0061 | 10.4 |
| 250.00 | 22.0 | 16.0 | 10.2 | 0.0131 | 17.0 | 13.5 | 0.0030 | 10.2 |
| 1440.00 | 20.8 | 14.0 | 7.9 | 0.0133 | 15.0 | 13.8 | 0.0013 | 7.9 |

**MACTEC Engineering and Consulting, Inc.**

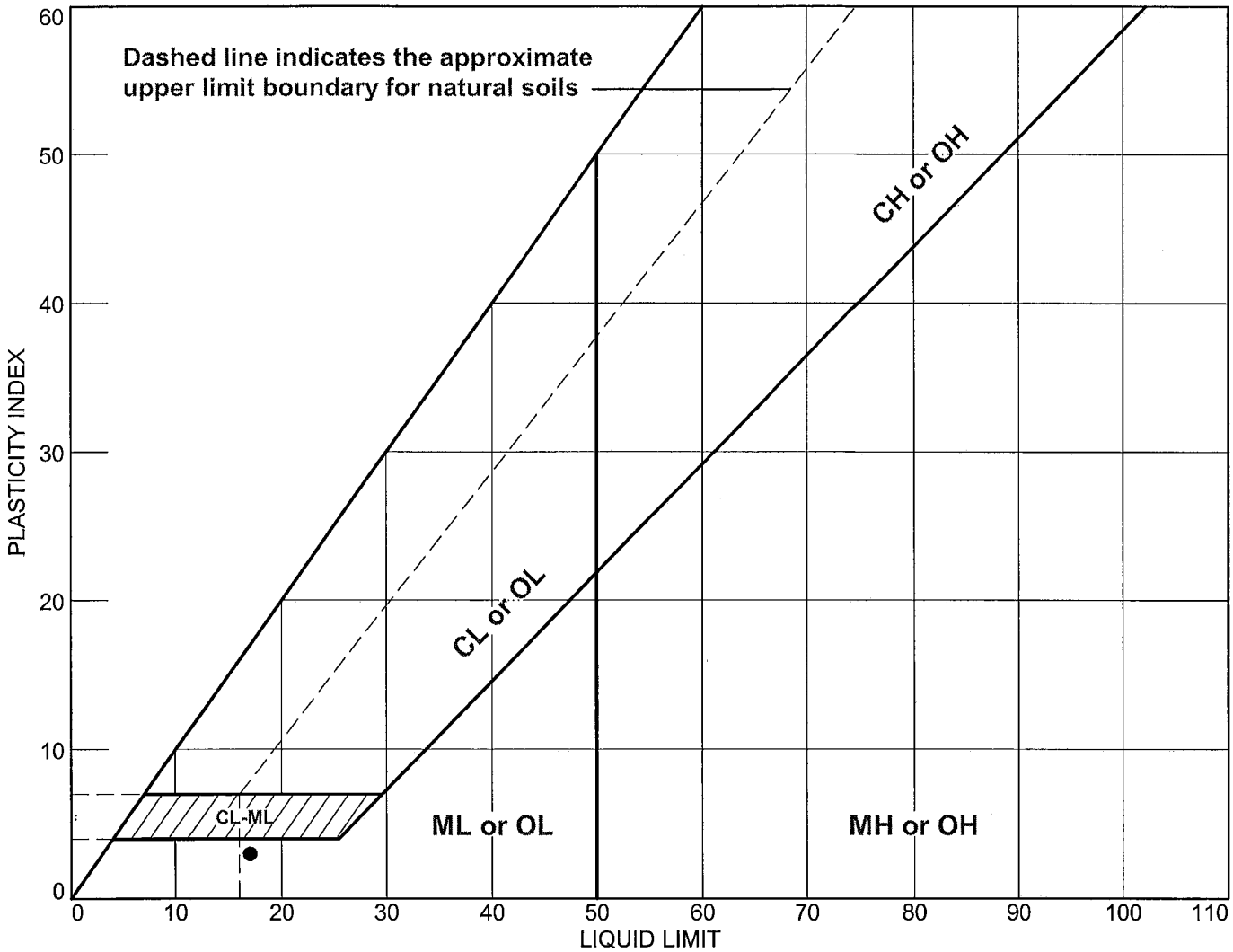
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.4 | 0.4 | 0.5 | 6.6 | 69.8 | 76.9 | 12.4 | 10.3 | 22.7 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0027 | 0.0259 | 0.0594 | 0.1048 | 0.1715 | 0.2059 | 0.3013 | 0.3382 | 0.3886 | 0.5547 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.84 | 77.16 | 20.00 |

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| SOIL DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SYMBOL | SOURCE | SAMPLE NO. | DEPTH | NATURAL WATER CONTENT (%) | PLASTIC LIMIT (%) | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | USCS |
| ● | Boring B-3234UD | UD 15 | 260.0-262.5' | ND | 14 | 17 | 3 | SM |

| | |
|---|---|
| **MACTEC Engineering and Consulting, Inc.**<br><br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS<br>**Project No.:** 6468071777 **Figure** NA |

**Tested By:** CS **Checked By:** BS DSC 5-4-09

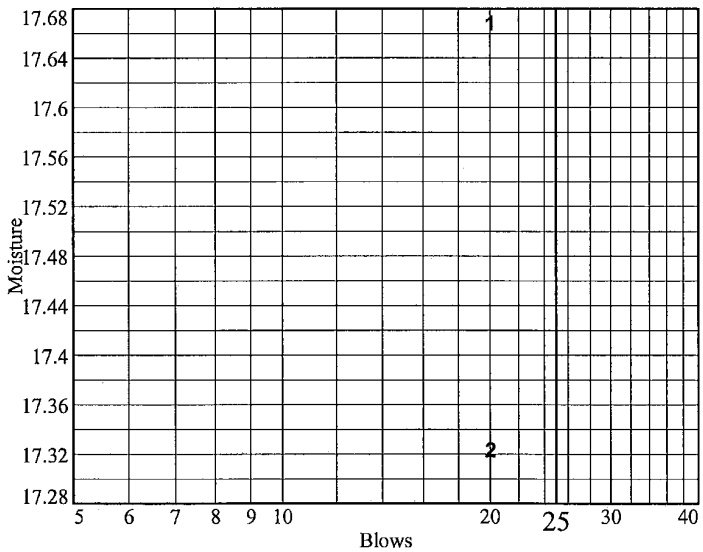
## LIQUID AND PLASTIC LIMIT TEST DATA

5/4/2009

**Client:** Bechtel
**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Project Number:** 6468071777
**Location:** Boring B-3234UD
**Depth:** 260.0-262.5' **Sample Number:** UD 15
**Material Description:** Light Gray Silty SAND
**USCS:** SM **AASHTO:** A-2-4(0)
**Tested by:** CS **Checked by:** BS

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 28.24 | 26.27 | | | | |
| Dry+Tare | 26.33 | 24.03 | | | | |
| Tare | 15.52 | 11.10 | | | | |
| # Blows | 20 | 20 | | | | |
| Moisture | 17.7 | 17.3 | | | | |



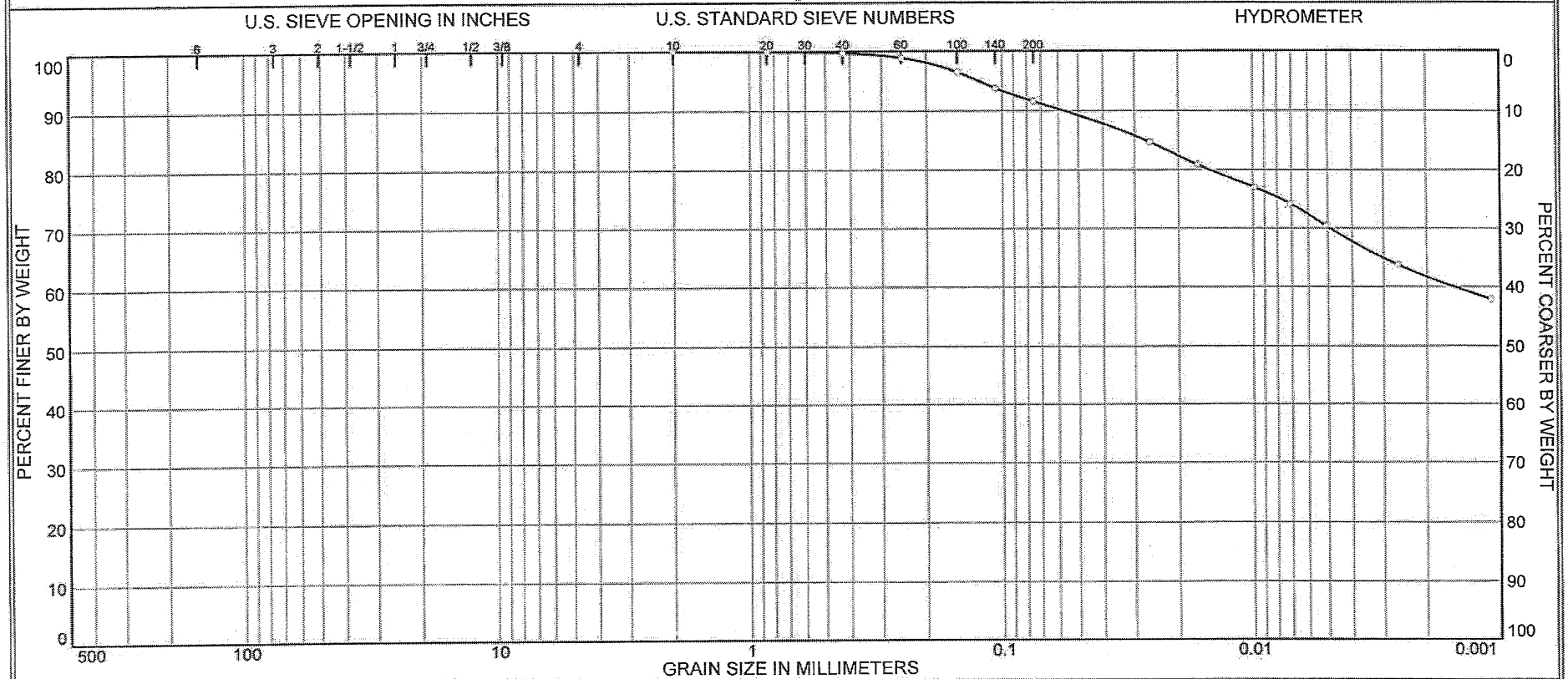

**Liquid Limit=** 17
**Plastic Limit=** 14
**Plasticity Index=** 3
**Natural Moisture=** ND

### Plastic Limit Data

| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | 26.55 | 25.71 | | | |
| Dry+Tare | 25.15 | 24.42 | | | |
| Tare | 15.54 | 15.48 | | | |
| Moisture | 14.6 | 14.4 | | | |

MACTEC Engineering and Consulting, Inc.

# Particle Size Distribution Report (ASTM D422-63 (2007))




| % COBBLES | % GRAVEL | | % SAND | | | % FINES | |
|---|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | SILT | CLAY |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 8.1 | 21.4 | 70.2 |

| SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|
| B-3234UD | UD-16 | 305.0-307.3 ft | 2/7/09 | CH | Very Pale Brown mottled Brownish Yellow Fat CLAY | 21.6 | 67 | 23 |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 Lab No. 9566

**MACTEC ENGINEERING AND CONSULTING, INC.**

Tested By: EH Reviewed By: JW

Specific Gravity = 2.74 (ASTM D854-06)

JW 5/5/09

DSC
5-5-09

## GRAIN SIZE DISTRIBUTION TEST DATA

**Client:** Bechtel
**Project:** Exelon Texas COL Project Supplemental Investigation
**Project Number:** 6468-07-1777

### Sample Data

**Source:** B-3234UD
**Sample No.:** UD-16
**Elev. or Depth:** 305.0-307.3 ft **Sample Length(in./cm.):** 9566
**Location:** B-3234UD
**Description:** Very Pale Brown mottled Brownish Yellow Fat CLAY
**Date:** 2/7/09 **Natural Moisture:** 21.6
**Liquid Limit:** 67 **Plastic Limit:** 23 **USCS Class.:** CH
**Testing Remarks:** Tested By: EH Reviewed By: JW

Specific Gravity = 2.74 (ASTM D854-06)

### Mechanical Analysis Data

| | Initial |
|---|---|
| Dry sample and tare= | 51.30 |
| Tare = | 0.00 |
| Dry sample weight = | 51.30 |

Tare for cumulative weight retained= .00

| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| # 10 | 0.00 | 100.0 |
| # 20 | 0.04 | 99.9 |
| # 40 | 0.16 | 99.7 |
| # 60 | 0.56 | 98.9 |
| # 100 | 1.80 | 96.5 |
| # 140 | 3.20 | 93.8 |
| # 200 | 4.29 | 91.6 |

### Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 91.6
Weight of hydrometer sample: 47.01
Calculated biased weight= 51.32
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only=
Specific gravity of solids= 2.74
Specific gravity correction factor= 0.980
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.3 | 49.0 | 44.3 | 0.0128 | 49.0 | 8.3 | 0.0259 | 84.7 |
| 5.00 | 23.3 | 47.0 | 42.3 | 0.0128 | 47.0 | 8.6 | 0.0167 | 80.9 |
| 15.00 | 23.3 | 45.0 | 40.3 | 0.0128 | 45.0 | 8.9 | 0.0098 | 77.0 |
| 30.00 | 23.3 | 43.5 | 38.8 | 0.0128 | 43.5 | 9.2 | 0.0071 | 74.2 |
| 60.00 | 23.3 | 41.5 | 36.8 | 0.0128 | 41.5 | 9.5 | 0.0051 | 70.4 |

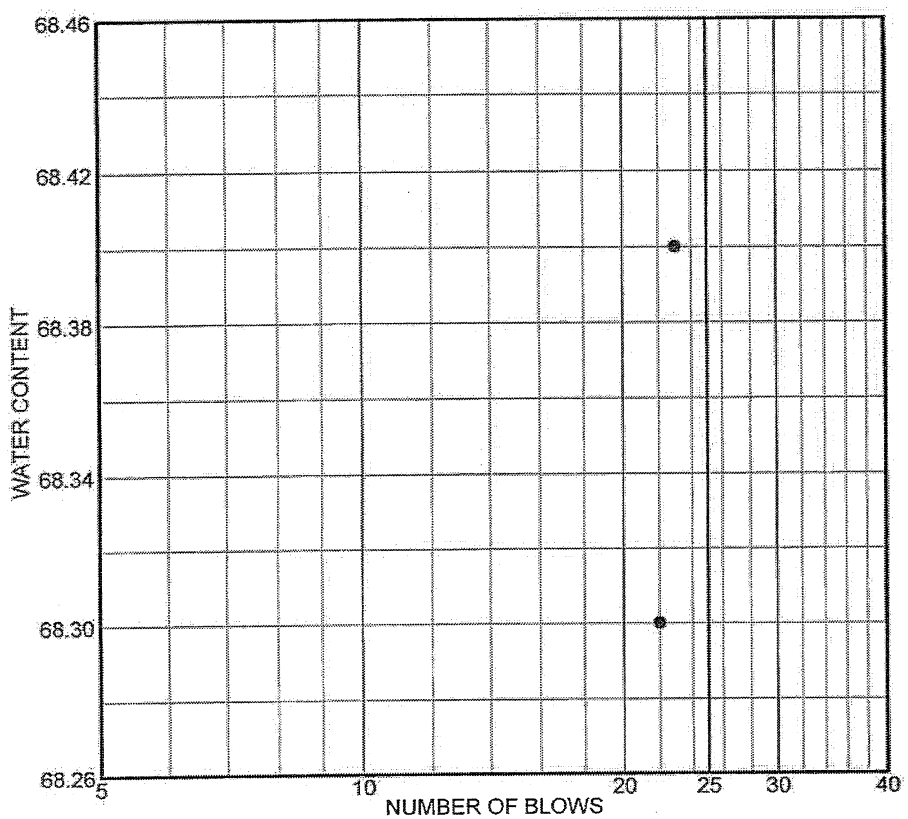
| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 240.00 | 23.3 | 38.0 | 33.3 | 0.0128 | 38.0 | 10.1 | 0.0026 | 63.7 |
| 1440.00 | 23.3 | 35.0 | 30.3 | 0.0128 | 35.0 | 10.6 | 0.0011 | 57.9 |

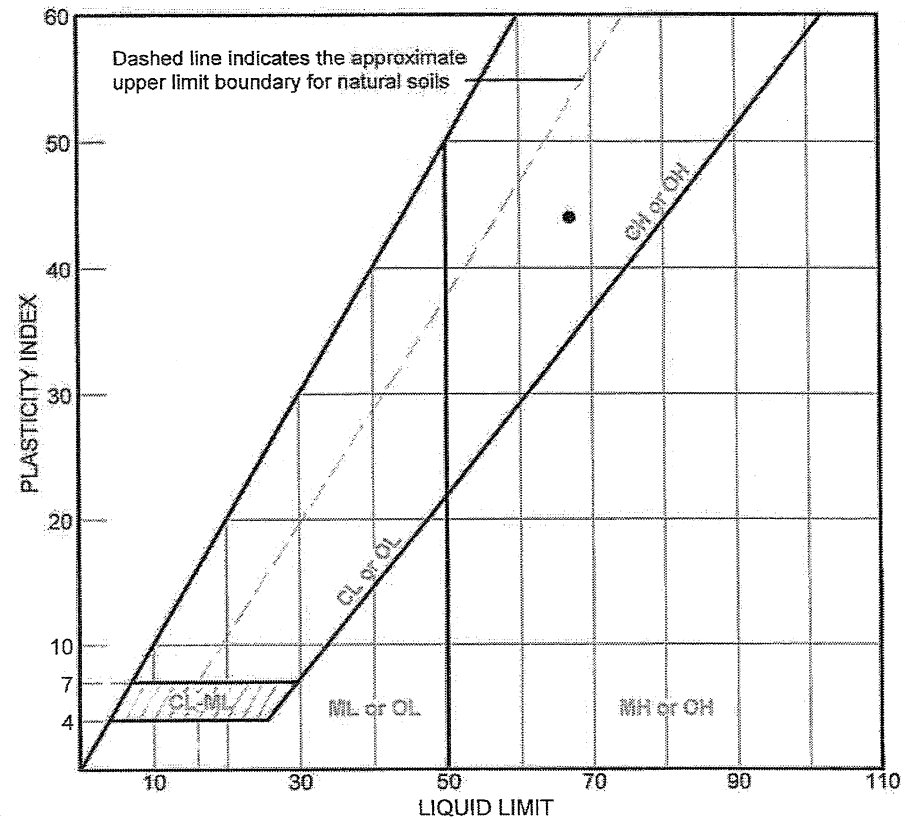
**Fractional Components**

**Gravel/Sand based on** #4
**Sand/Fines based on** #200
**% COBBLES =** **% GRAVEL =**
**% SAND** = 8.4 (**% coarse =** **% medium** = 0.3 **% fine** = 8.1)
**% SILT** = 21.4 **% CLAY** = 70.2

$D_{85}$= 0.03 $D_{60}$= 0.00

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| | SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PI |
|---|---|---|---|---|---|---|---|---|---|
| ● | B-3234UD | UD-16 | 305.0-307.3 ft | 2/7/09 | CH | Very Pale Brown mottled Brownish Yellow Fat CLAY | 21.6 | 67 | 44 |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 | Lab No. 9566

**MACTEC ENGINEERING AND CONSULTING, INC.**

● Tested By: EH Reviewed By: JW

JW 5/5/09

DSC
5-5-09

# MACTEC ENGINEERING AND CONSULTING, INC.

**REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS**
**Performed in General Accordance with ASTM D 854-06 (Method B)**

PROJECT NAME:EXELON TEXAS COL PROJECT SUPPLEMENTAL INVESTIGATION
PROJECT NUMBER: 6468-07-1777
DATE: 4/21/09

SAMPLE IDENTIFICATION: B-3234UD,UD-16 @ 305.0-307.3 Ft.

| | | |
|---|---|---|
| (A) Mass of oven-dried soil, grams: | | 36.23 |
| (B) Mass of pycnometer filled with water at test temperature (T), grams: | | 346.73 |
| (C) Mass of pycnometer, water and soil, grams: | | 369.74 |
| (T) Temperature of pycnometer, water and soil, °C when mass (C) determined: | | 24.4 |
| (G) Specific Gravity at observed temperature: | A / [ B - ( C - A )] | 2.741 |
| (F) | ***Correction factor:*** | 0.99899 |
| (G x F) | **SPECIFIC GRAVITY @ 20°C:** | 2.738 |

**MATERIAL TESTED:** [x] **- # 4** [ ] **- # 10**

**PREPARATION METHOD:** [X] **DRY** [ ] **WET (dispersed)**

**REMARKS: Estimated % Passing # 4 : 100 %**

**Fat CLAY (CH)**

**EQUIPMENT USED**
**SCALES : 418**
**OVEN : 144**
**THERMOMETER :2759**
**PYCNOMETER : 1954**

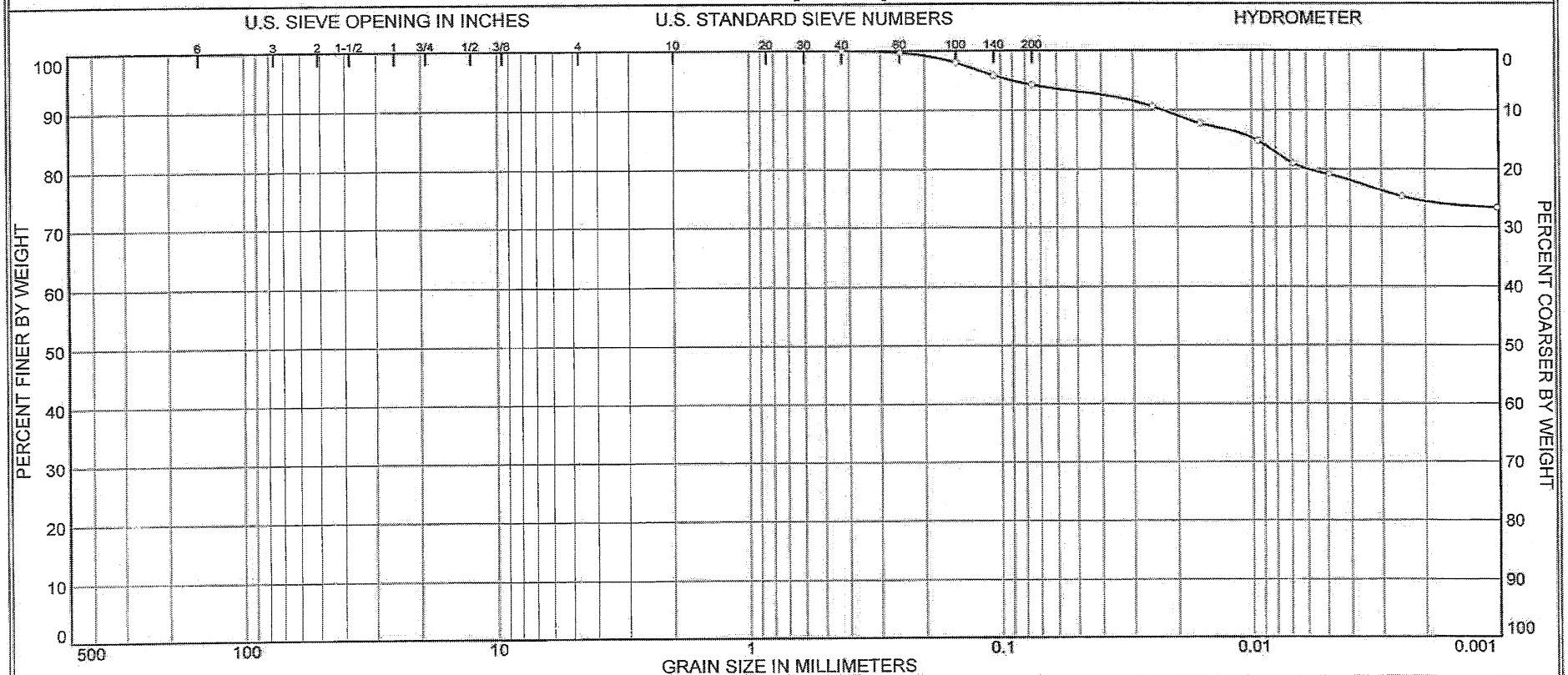
**TESTED BY: EH**

**\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls**

**REVIEWED BY:** J. Wang

JW 5/5/09
DSC
5-5-09

# Particle Size Distribution Report (ASTM D422-63 (2007))




| % COBBLES | % GRAVEL | | % SAND | | | % FINES | |
|---|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | SILT | CLAY |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.8 | 15.0 | 79.2 |

| SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|
| B-3234UD | UD-19 | 393.0-394.8 ft | 2/9/09 | CH | Pale Yellow Fat CLAY | 32.4 | 68 | 30 |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 Lab No. 9567

**MACTEC ENGINEERING AND CONSULTING, INC.**

Tested By: EH Reviewed By: JW

Specific Gravity = 2.75 (ASTM D854-06)

JW 5/5/09

DSC 5-5-09

## GRAIN SIZE DISTRIBUTION TEST DATA

**Client:** Bechtel
**Project:** Exelon Texas COL Project Supplemental Investigation
**Project Number:** 6468-07-1777

### Sample Data

**Source:** B-3234UD
**Sample No.:** UD-19
**Elev. or Depth:** 393.0-394.8 ft **Sample Length(in./cm.):** 9567
**Location:** B-3234UD
**Description:** Pale Yellow Fat CLAY
**Date:** 2/9/09 **Natural Moisture:** 32.4
**Liquid Limit:** 68 **Plastic Limit:** 30 **USCS Class.:** CH
**Testing Remarks:** Tested By: EH Reviewed By: JW

Specific Gravity = 2.75 (ASTM D854-06)

### Mechanical Analysis Data

| | Initial |
|---|---|
| Dry sample and tare= | 51.15 |
| Tare = | 0.00 |
| Dry sample weight = | 51.15 |

Tare for cumulative weight retained= .00

| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| # 40 | 0.00 | 100.0 |
| # 60 | 0.15 | 99.7 |
| # 100 | 1.03 | 98.0 |
| # 140 | 2.14 | 95.8 |
| # 200 | 2.99 | 94.2 |

### Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 94.2
Weight of hydrometer sample: 48.16
Calculated biased weight= 51.13
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only=
Specific gravity of solids= 2.75
Specific gravity correction factor= 0.978
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

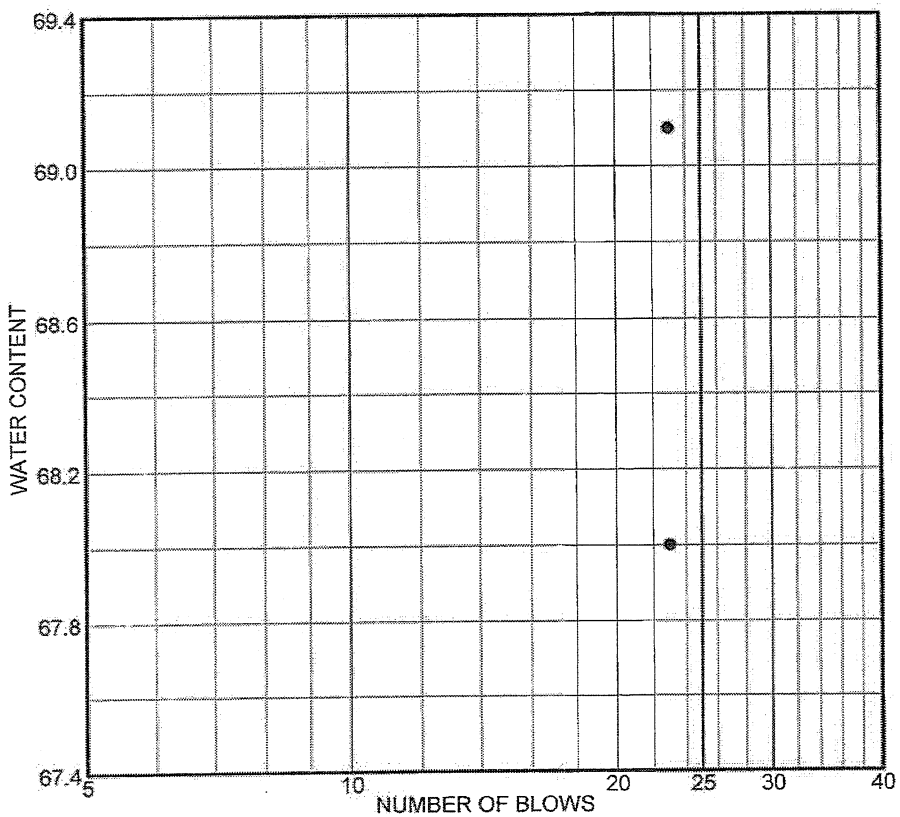
| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.3 | 52.0 | 47.3 | 0.0127 | 52.0 | 7.8 | 0.0251 | 90.6 |
| 5.00 | 23.3 | 50.5 | 45.8 | 0.0127 | 50.5 | 8.0 | 0.0161 | 87.7 |
| 15.00 | 23.3 | 49.0 | 44.3 | 0.0127 | 49.0 | 8.3 | 0.0094 | 84.8 |
| 30.00 | 23.3 | 47.0 | 42.3 | 0.0127 | 47.0 | 8.6 | 0.0068 | 81.0 |
| 60.00 | 23.3 | 46.0 | 41.3 | 0.0127 | 46.0 | 8.8 | 0.0049 | 79.1 |
| 240.00 | 23.3 | 44.0 | 39.3 | 0.0127 | 44.0 | 9.1 | 0.0025 | 75.3 |
| 1440.00 | 23.3 | 43.0 | 38.3 | 0.0127 | 43.0 | 9.2 | 0.0010 | 73.3 |

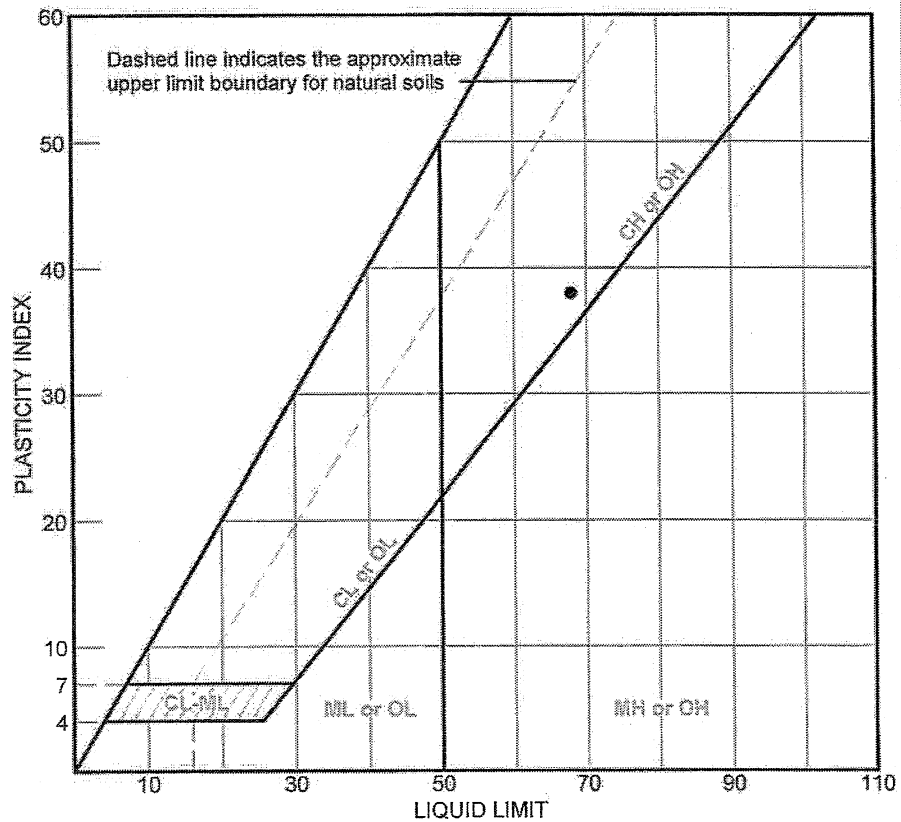
## Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 5.8 (% coarse = % medium = % fine = 5.8)
% SILT = 15.0 % CLAY = 79.2

$D_{85}$= 0.01

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)




| | SOURCE | SAMPLE # | DEPTH/ELEV. | DATE SAMPLED | USCS | MATERIAL DESCRIPTION | NM % | LL | PI |
|---|---|---|---|---|---|---|---|---|---|
| ● | B-3234UD | UD-19 | 393.0-394.8 ft | 2/9/09 | CH | Pale Yellow Fat CLAY | 32.4 | 68 | 38 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Client Bechtel

Project Exelon Texas COL Project Supplemental Investigation

Project No. 6468-07-1777 | Lab No. 9567

**MACTEC ENGINEERING AND CONSULTING, INC.**

● Tested By: EH Reviewed By: JW

JW 5/5/09

DSC
5-5-09

# MACTEC ENGINEERING AND CONSULTING, INC.

**REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS**
**Performed in General Accordance with ASTM D 854-06 (Method B)**

PROJECT NAME:EXELON TEXAS COL PROJECT SUPPLEMENTAL INVESTIGATION
PROJECT NUMBER: 6468-07-1777
DATE: 4/21/09

SAMPLE IDENTIFICATION: B-3234UD,UD-19 @ 393.0-394.8 Ft.

| | | |
|---|---|---|
| (A) Mass of oven-dried soil, grams: | | 36.47 |
| (B) Mass of pycnometer filled with water at test temperature (T), grams: | | 340.08 |
| (C) Mass of pycnometer, water and soil, grams: | | 363.29 |
| (T) Temperature of pycnometer, water and soil, °C when mass (C) determined: | | 24.2 |
| (G) Specific Gravity at observed temperature: | A / [ B - ( C - A )] | 2.750 |
| (F) | ***Correction factor:*** | 0.99904 |
| (G x F) | **SPECIFIC GRAVITY @ 20°C:** | 2.748 |

**MATERIAL TESTED:** [x] **- # 4** [ ] **- # 10**

**PREPARATION METHOD:** [X] **DRY** [ ] **WET (dispersed)**

**REMARKS: Estimated % Passing # 4 : 100 %**
**Fat CLAY (CH)**

**EQUIPMENT USED**
**SCALES : 418**
**OVEN : 144**
**THERMOMETER :2759**
**PYCNOMETER : 2056**

**TESTED BY: EH**
**\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls**

**REVIEWED BY:** J. Wang

JW 5/5/09
DSC
5-5-09

# Organic Content – Split Spoon Samples

MACTEC

# ORGANIC CONTENT TEST REPORT

**(ASTM D2974-07a)**

**Project No.** 6468071777
**Tested By** CS
**Test Date** 2/21/2009

**Project Name** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Reviewed By** DSC
**Review Date** 5-5-09

| Boring No. | B-3123 | B-3123 | B-3123 | B-3223 | B-3223 | B-3223 |
|---|---|---|---|---|---|---|
| Sample No. | SS-10 | SS-16 | SS-23 | SS-10 | SS-16 | SS-23 |
| Sample Depth, Ft. | 32.5 - 34 | 62.5 - 64 | 97.5 - 98 | 33.5 - 35 | 63.5 - 65 | 98.8 - 100 |
| A) Tare No. | rage | wrk | 2P-15 | sas | sony | F1 |
| B) Tare Weight, grams | 6.91 | 6.82 | 7.14 | 6.40 | 7.16 | 9.20 |
| C) Wet Soil + Tare, grams | 140.45 | 164.65 | 138.76 | 205.06 | 133.76 | 247.37 |
| D) Dry Soil + Tare, grams | 111.74 | 132.58 | 121.32 | 178.49 | 112.90 | 216.96 |
| E) Weight of Dry Soil, grams [D - B] | 104.83 | 125.76 | 114.18 | 172.09 | 105.74 | 207.76 |
| F) Weight of Moisture, grams [C - D] | 28.71 | 32.07 | 17.44 | 26.57 | 20.86 | 30.41 |
| G) Moisture Content, % [F * 100 / E] | 27.4 | 25.5 | 15.3 | 15.4 | 19.7 | 14.6 |
| (based on oven-dried weight) | | | | | | |
| | | | | | | |
| H) Tare No. | N | G | N | N | Q | 9 |
| I) Weight of Tare, grams | 53.54 | 56.69 | 53.54 | 53.54 | 53.35 | 51.69 |
| J) Weight of Over-Dried Soil + Tare, grams | 161.32 | 174.79 | 156.73 | 136.09 | 120.92 | 153.51 |
| K) Weight of Oven- Dried Soil, grams [J - I] | 107.78 | 118.10 | 103.19 | 82.55 | 67.57 | 101.82 |
| L) Weight of Ignited Soil + Tare, grams | 156.73 | 173.08 | 144.64 | 135.82 | 119.75 | 152.94 |
| M) Ash, grams [L - I] | 103.19 | 116.39 | 91.10 | 82.28 | 66.40 | 101.25 |
| N) Ash Content, % [M *100 / K] | 95.7 | 98.6 | 88.3 | 99.7 | 98.3 | 99.4 |
| O) Organic Matter, % [100 - N] | **4.3** | **1.4** | **11.7** | **0.3** | **1.7** | **0.6** |

Remarks: Furnace temperature set @ 440° C.

Equipment used:

oven: 5.1.16 muffle furnac 5.1.17
scales: 3.1.19

MACTEC

# ORGANIC CONTENT TEST REPORT
## (ASTM D2974-07)

**Project No.** 6468071777
**Tested By** CS
**Test Date** 2/6/2009

**Project Name** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Reviewed By** LBJ DSC
**Review Date** 3/16/2009 5-5-09

| Boring No. | B-3129 | B-3129 | B-3129 | B-3229 | B-3229 | B-3229 |
|---|---|---|---|---|---|---|
| Sample No. | SS-10 | SS-16 | SS-23 | SS-8 | SS-23 | SS-16 |
| Sample Depth, Ft. | 33.5-35 | 63.5-65 | 98.5-100.0 | 23.5-25.0 | 98.5-100.0 | 63.5-65.0 |
| A) Tare No. | 511 | ERS | MEGA | STD | 98 | XY |
| B) Tare Weight, grams | 9.41 | 6.72 | 6.88 | 6.84 | 6.92 | 6.90 |
| C) Wet Soil + Tare, grams | 149.06 | 216.23 | 177.35 | 141.44 | 237.09 | 204.44 |
| D) Dry Soil + Tare, grams | 122.58 | 184.15 | 121.39 | 119.56 | 206.58 | 169.61 |
| E) Weight of Dry Soil, grams [D - B] | 113.17 | 177.43 | 114.51 | 112.72 | 199.66 | 162.71 |
| F) Weight of Moisture, grams [C - D] | 26.48 | 32.08 | 55.96 | 21.88 | 30.51 | 34.83 |
| G) Moisture Content, % [F * 100 / E] | 23.4 | 18.1 | 48.9 | 19.4 | 15.3 | 21.4 |
| (based on oven-dried weight) | | | | | | |
| | | | | | | |
| H) Tare No. | N | G | G | N | G | N |
| I) Weight of Tare, grams | 53.45 | 56.67 | 56.67 | 53.45 | 56.47 | 53.45 |
| J) Weight of Over-Dried Soil + Tare, grai | 177.91 | 185.35 | 116.14 | 169.39 | 201.46 | 162.19 |
| K) Weight of Oven- Dried Soil, grams [J - | 124.46 | 128.68 | 59.47 | 115.94 | 144.99 | 108.74 |
| L) Weight of Ignited Soil + Tare, grams | 164.19 | 180.16 | 113.02 | 164.55 | 200.98 | 157.97 |
| M) Ash, grams [L - I] | 110.74 | 123.49 | 56.35 | 111.10 | 144.51 | 104.52 |
| N) Ash Content, % [M *100 / K] | 89.0 | 96.0 | 94.8 | 95.8 | 99.7 | 96.1 |
| O) Organic Matter, % [100 - N] | **11.0** | **4.0** | **5.2** | **4.2** | **0.3** | **3.9** |

Remarks: Furnace temperature set @ 440° C

Equipment used:

oven: 5.1.16 muffle furn 5.1.17
scales: 3.1.19

MACTEC

# ORGANIC CONTENT TEST REPORT

**(ASTM D2974-07a)**

**Project No.** 6468071777
**Tested By** CS
**Test Date** 3/28/2009
**Assignment No:** 09/089

**Project Name** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Review Date** DSC **Reviewed By** 5-5-09
**Work Inst. No:** 313

| Boring No. | B - 3170A | B - 3170A | B - 3170A |
|---|---|---|---|
| Sample No. | SS-1 | SS-2 | SS-3 |
| Sample Depth, Ft. | 0 -1.5 | 3.5 - 5 | 6 - 7.5 |
| A) Tare No. | 77 | ADAM | WWF |
| B) Tare Weight, grams | 6.80 | 6.86 | 6.80 |
| C) Wet Soil + Tare, grams | 41.72 | 70.21 | 72.51 |
| D) Dry Soil + Tare, grams | 36.33 | 65.38 | 60.94 |
| E) Weight of Dry Soil, grams [D - B] | 29.53 | 58.52 | 54.14 |
| F) Weight of Moisture, grams [C - D] | 5.39 | 4.83 | 11.57 |
| G) Moisture Content, % [F * 100 / E] | 18.3 | 8.3 | 21.4 |
| (based on oven-dried weight) | | | |

| H) Tare No. | G | 9 | Q |
|---|---|---|---|
| I) Weight of Tare, grams | 56.70 | 51.70 | 53.36 |
| J) Weight of Over-Dried Soil + Tare, grams | 149.91 | 141.53 | 128.17 |
| K) Weight of Oven- Dried Soil, grams [J - I] | 93.20 | 89.83 | 74.81 |
| L) Weight of Ignited Soil + Tare, grams | 148.38 | 139.85 | 126.89 |
| M) Ash, grams [L - I] | 91.68 | 88.15 | 73.53 |
| N) Ash Content, % [M *100 / K] | 98.4 | 98.1 | 98.3 |
| O) Organic Matter, % [100 - N] | **1.6** | **1.9** | **1.7** |

Remarks: Furnace temperature set @ 440° C.

Equipment used:

oven: 5.1.16 muffle furnace: 5.1.17
scales: 3.1.19

MACTEC

# ORGANIC CONTENT TEST REPORT

**(ASTM D2974-07a)**

| | | | |
|---|---|---|---|
| **Project No.** | 6468071777 | **Project Name** | Exelon COL Victoria |
| **Tested By** | CS | **Reviewed By** | DSC |
| **Test Date** | 3/28/2009 | **Review Date** | 5-5-09 |
| **Assignment No:** | 09/089 | **Work Inst. No:** | 313 |

| Boring No. | B - 3270A | B - 3270A | B - 3270A |
|---|---|---|---|
| Sample No. | SS-1 | SS-2 | SS-3 |
| Sample Depth, Ft. | 0 -1.5 | 3.5 - 5 | 6 - 7.5 |
| A) Tare No. | FREE | Q | V |
| B) Tare Weight, grams | 6.90 | 6.84 | 6.79 |
| C) Wet Soil + Tare, grams | 131.51 | 134.20 | 141.46 |
| D) Dry Soil + Tare, grams | 110.82 | 106.34 | 120.59 |
| E) Weight of Dry Soil, grams [D - B] | 103.92 | 99.50 | 113.80 |
| F) Weight of Moisture, grams [C - D] | 20.69 | 27.86 | 20.87 |
| G) Moisture Content, % [F * 100 / E] | 19.9 | 28.0 | 18.3 |
| (based on oven-dried weight) | | | |

| H) Tare No. | G | 5 | L |
|---|---|---|---|
| I) Weight of Tare, grams | 56.69 | 53.42 | 51.53 |
| J) Weight of Over-Dried Soil + Tare, grams | 160.40 | 167.91 | 164.37 |
| K) Weight of Oven- Dried Soil, grams [J - I] | 103.71 | 114.49 | 112.84 |
| L) Weight of Ignited Soil + Tare, grams | 158.36 | 166.80 | 163.26 |
| M) Ash, grams [L - I] | 101.67 | 113.38 | 111.73 |
| N) Ash Content, % [M *100 / K] | 98.0 | 99.0 | 99.0 |
| O) Organic Matter, % [100 - N] | **2.0** | **1.0** | **1.0** |

Remarks: Furnace temperature set @ 440° C.

Equipment used:

oven: 5.1.16 muffle furnac 5.1.17

scales: 3.1.19

# Moisture Content – Split Spoon Samples

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-18 (MACTEC lab # 09-058)
**DATE:** 3/30/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3123 | SS-1 | 0 - 1.5 | 76.54 | 70.76 | 6.77 | 5.78 | 63.99 | **9.0** |
| B-3123 | SS-2 | 3.5 - 5.0 | 104.29 | 86.74 | 6.94 | 17.55 | 79.80 | **22.0** |
| B-3123 | SS-3 | 6 - 7.5 | 79.69 | 69.63 | 9.00 | 10.06 | 60.63 | **16.6** |
| B-3123 | SS-4 | 8.5 - 10.0 | 122.01 | 105.28 | 7.00 | 16.73 | 98.28 | **17.0** |
| B-3123 | SS-5 | 11 - 12.5 | 116.36 | 98.36 | 7.00 | 18.00 | 91.36 | **19.7** |
| B-3123 | SS-6 | 13.5 - 15.0 | 94.74 | 80.31 | 6.76 | 14.43 | 73.55 | **19.6** |
| B-3123 | SS-7 | 17.5 - 19.0 | 136.13 | 111.63 | 7.50 | 24.50 | 104.13 | **23.5** |
| B-3123 | SS-8 | 22.5 - 24.0 | 103.54 | 85.76 | 6.85 | 17.78 | 78.91 | **22.5** |
| B-3123 | SS-9 | 27.5 - 29.0 | 136.39 | 110.23 | 9.10 | 26.16 | 101.13 | **25.9** |
| B-3123 | SS-10 | 32.5 - 34.0 | 140.45 | 111.74 | 6.91 | 28.71 | 104.83 | **27.4** |
| B-3123 | SS-11 | 37.5 - 39.0 | 136.39 | 116.53 | 7.93 | 19.86 | 108.60 | **18.3** |
| B-3123 | SS-12 | 42.5 - 44.0 | 116.81 | 99.98 | 7.08 | 16.83 | 92.90 | **18.1** |
| B-3123 | SS-13 | 47.5 - 49.0 | 126.93 | 108.96 | 7.50 | 17.97 | 101.46 | **17.7** |
| B-3123 | SS-14 | 52.5 - 54.0 | 116.97 | 99.59 | 7.68 | 17.38 | 91.91 | **18.9** |
| B-3123 | SS-15 | 57.5-59.0 | 136.89 | 110.23 | 9.50 | 26.66 | 100.73 | **26.5** |
| B-3123 | SS-16 | 62.5-64.0 | 164.65 | 132.58 | 6.80 | 32.07 | 125.78 | **25.5** |
| B-3123 | SS-17 | 67.5 - 69.0 | 128.99 | 102.61 | 6.73 | 26.38 | 95.88 | **27.5** |
| B-3123 | SS-18 | 72.5 - 74.0 | 118.51 | 100.74 | 6.97 | 17.77 | 93.77 | **19.0** |
| B-3123 | SS-21 | 87.5 - 88.75 | 110.74 | 99.31 | 6.72 | 11.43 | 92.59 | **12.3** |
| B-3123 | SS-22A | 92.5 - 93.4 | 97.17 | 89.84 | 6.87 | 7.33 | 82.97 | **8.8** |

REMARKS:Moisture Content for all samples including samples with Limits and Organic Content tests requested

SUBMITTED BY: DSC 5-6-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-18 (MACTEC lab # 09-058)
**DATE:** 3/30/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3123 | SS-23 | 97.5-98.0 | 138.76 | 121.32 | 7.14 | 17.44 | 114.18 | **15.3** |
| B-3123 | SS-25 | 112.5 - 114 | 82.76 | 66.86 | 6.83 | 15.90 | 60.03 | **26.5** |
| B-3123 | SS-26 | 122.5 - 124 | 144.80 | 120.73 | 6.85 | 24.07 | 113.88 | **21.1** |
| B-3123 | SS-28 | 142.5 - 144 | 50.89 | 43.22 | 6.77 | 7.67 | 36.45 | **21.0** |
| B-3123 | SS-34 | 202.5-204.0 | 156.98 | 130.73 | 9.16 | 26.25 | 121.57 | **21.6** |
| B-3123 | SS-35 | 212.5 - 214 | 93.24 | 74.31 | 6.90 | 18.93 | 67.41 | **28.1** |
| B-3123 | SS-36 | 222.5 - 224 | 112.79 | 96.92 | 9.28 | 15.87 | 87.64 | **18.1** |
| B-3123 | SS-37 | 232.5 - 234 | 113.70 | 92.58 | 6.81 | 21.12 | 85.77 | **24.6** |
| B-3123 | SS-38 | 242.5 - 244 | 88.75 | 71.30 | 6.76 | 17.45 | 64.54 | **27.0** |
| B-3123 | SS-39 | 252.5 - 254 | 126.96 | 106.17 | 6.91 | 20.79 | 99.26 | **20.9** |
| B-3123 | SS-41B | 273.2 - 274 | 133.98 | 115.96 | 6.91 | 18.02 | 109.05 | **16.5** |
| B-3123 | SS-42 | 282.5 - 284 | 92.57 | 75.46 | 6.84 | 17.11 | 68.62 | **24.9** |
| B-3123 | SS-43 | 292.5 - 294 | 136.27 | 112.47 | 6.77 | 23.80 | 105.70 | **22.5** |
| B-3123 | SS-44 | 302.5 - 304 | 74.19 | 62.26 | 6.96 | 11.93 | 55.30 | **21.6** |
| B-3123 | SS-45 | 312.5 - 314 | 121.87 | 100.64 | 6.90 | 21.23 | 93.74 | **22.6** |
| B-3123 | SS-48 | 342.5 - 344 | 140.97 | 119.97 | 6.73 | 21.00 | 113.24 | **18.5** |
| B-3123 | SS-49 | 352.5 - 354 | 143.36 | 120.03 | 6.80 | 23.33 | 113.23 | **20.6** |
| B-3123 | SS-50 | 362.5 - 364 | 129.16 | 108.14 | 9.33 | 21.02 | 98.81 | **21.3** |
| B-3123 | SS-51 | 372.5 - 374 | 78.48 | 62.98 | 7.03 | 15.50 | 55.95 | **27.7** |
| B-3123 | SS-52 | 382.5 - 384 | 134.49 | 102.34 | 6.84 | 32.15 | 95.50 | **33.7** |
| B-3123 | SS-53 | 392.5 - 394 | 77.67 | 62.88 | 6.85 | 14.79 | 56.03 | **26.4** |
| B-3123 | SS-54 | 402.5 - 404 | 121.20 | 97.64 | 6.66 | 23.56 | 90.98 | **25.9** |

REMARKS:Moisture Content for all samples including samples with Limits and Organic Content tests requested

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** EXELON Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-17 (MACTEC lab # 09-027)
**DATE:** 3/13/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3129 | SS-1 | 0-1.5 | 87.10 | 73.58 | 6.91 | 13.52 | 66.67 | **20.3** |
| B-3129 | SS-2 | 3.5-5.0 | 128.76 | 101.86 | 8.22 | 26.90 | 93.64 | **28.7** |
| B-3129 | SS-3 | 6.0-7.5 | 126.07 | 106.09 | 6.96 | 19.98 | 99.13 | **20.2** |
| B-3129 | SS-4 | 8.5-10.0 | 144.09 | 128.09 | 6.88 | 16.00 | 121.21 | **13.2** |
| B-3129 | SS-5 | 11-12.5 | 136.39 | 120.45 | 6.87 | 15.94 | 113.58 | **14.0** |
| B-3129 | SS-6 | 13.5-15.0 | 224.58 | 190.09 | 6.67 | 34.49 | 183.42 | **18.8** |
| B-3129 | SS-7 | 18.5-20.0 | 119.23 | 99.30 | 6.75 | 19.93 | 92.55 | **21.5** |
| B-3129 | SS-8 | 23.5-25.0 | 123.79 | 99.29 | 9.41 | 24.50 | 89.88 | **27.3** |
| B-3129 | SS-9 | 28.5-30.0 | 189.36 | 156.33 | 33.05 | 33.03 | 123.28 | **26.8** |
| B-3129 | SS-10 | 33.5-35.0 | 149.06 | 122.58 | 9.41 | 26.48 | 113.17 | **23.4** |
| B-3129 | SS-11 | 38.5-40.0 | 108.23 | 84.34 | 6.91 | 23.89 | 77.43 | **30.9** |
| B-3129 | SS-12 | 43.5-45.0 | 133.71 | 108.12 | 6.91 | 25.59 | 101.21 | **25.3** |
| B-3129 | SS-13 | 48.5-50.0 | 120.36 | 102.15 | 6.90 | 18.21 | 95.25 | **19.1** |
| B-3129 | SS-14 | 53.5-55.0 | 85.73 | 72.68 | 9.21 | 13.05 | 63.47 | **20.6** |
| B-3129 | SS-15 | 58.5-60.0 | 147.32 | 123.01 | 6.78 | 24.31 | 116.23 | **20.9** |
| B-3129 | SS-16 | 63.5-65.0 | 216.23 | 184.15 | 6.72 | 32.08 | 177.43 | **18.1** |
| B-3129 | SS-19 | 78.5-80.0 | 130.94 | 116.01 | 6.88 | 14.93 | 109.13 | **13.7** |
| B-3129 | SS-21 | 88.5-90.0 | 41.35 | 34.91 | 6.84 | 6.44 | 28.07 | **22.9** |
| B-3129 | SS-24 | 108.5-110.0 | 117.34 | 90.47 | 6.86 | 26.87 | 83.61 | **32.1** |
| B-3129 | SS-25 | 118.5-120.0 | 86.90 | 74.73 | 6.60 | 12.17 | 68.13 | **17.9** |

REMARKS: Moisture Content for all samples including samples with Limits and Organic Content tests requestec

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Inestigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** #21 (MACTEC lab # 09-089)
**DATE:** 4/20/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3170A | SS-1 | 0.0-1.5 | 41.72 | 36.33 | 6.80 | 5.39 | 29.53 | **18.3** |
| B-3170A | SS-2 | 3.5-5.0 | 71.75 | 66.58 | 6.80 | 5.17 | 59.78 | **8.6** |
| B-3170A | SS-3 | 6.0-7.5 | 72.51 | 60.94 | 6.80 | 11.57 | 54.14 | **21.4** |
| B-3170A | SS-4 | 8.5-10 | 114.06 | 96.90 | 6.79 | 17.16 | 90.11 | **19.0** |
| B-3170A | SS-5 | 11.0-12.5 | 72.09 | 71.80 | 9.36 | 0.29 | 62.44 | **0.5** |
| B-3170A | SS-6 | 13.5-15 | 71.75 | 66.58 | 6.80 | 5.17 | 59.78 | **8.6** |
| B-3170A | SS-7 | 19.0-20.5 | 72.71 | 64.85 | 6.84 | 7.86 | 58.01 | **13.5** |
| B-3170A | SS-8 | 24-25.5 | 71.18 | 66.89 | 9.48 | 4.29 | 57.41 | **7.5** |
| B-3170A | SS-9 | 29-30.5 | 97.62 | 94.90 | 6.78 | 2.72 | 88.12 | **3.1** |
| B-3170A | SS-10 | 34-35.5 | 71.25 | 58.75 | 6.91 | 12.50 | 51.84 | **24.1** |
| B-3170A | SS-11 | 39-40.5 | 73.12 | 69.31 | 6.85 | 3.81 | 62.46 | **6.1** |
| B-3170A | SS-12 | 44-45.5 | 71.74 | 63.68 | 7.02 | 8.06 | 56.66 | **14.2** |
| B-3170A | SS-13 | 49-50.5 | 83.08 | 69.82 | 6.91 | 13.26 | 62.91 | **21.1** |
| B-3170A | SS-14 | 54-55.5 | 96.27 | 84.00 | 6.75 | 12.27 | 77.25 | **15.9** |
| B-3170A | SS-15 | 59-60.5 | 113.92 | 94.34 | 6.87 | 19.58 | 87.47 | **22.4** |
| B-3170A | SS-16 | 64-65.5 | 101.28 | 84.81 | 7.10 | 16.47 | 77.71 | **21.2** |
| B-3170A | SS-17 | 69-70.5 | 101.52 | 83.65 | 6.59 | 17.87 | 77.06 | **23.2** |
| B-3170A | SS-18 | 74-75.5 | 138.93 | 122.44 | 8.21 | 16.49 | 114.23 | **14.4** |
| B-3170A | SS-19 | 79-80.5 | 123.78 | 105.49 | 9.50 | 18.29 | 95.99 | **19.1** |
| B-3170A | SS-20 | 84-85.5 | 88.70 | 79.72 | 6.76 | 8.98 | 72.96 | **12.3** |

REMARKS:

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Inestigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** #21 (MACTEC lab # 09-089)
**DATE:** 4/20/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3170A | SS-21 | 89-90.5 | 69.01 | 57.74 | 6.73 | 11.27 | 51.01 | **22.1** |
| B-3170A | SS-22 | 94-95.5 | 82.83 | 73.41 | 6.71 | 9.42 | 66.70 | **14.1** |
| B-3170A | SS-24 | 109-110.5 | 116.14 | 97.76 | 9.42 | 18.38 | 88.34 | **20.8** |
| B-3170A | SS-25 | 119-120.5 | 82.10 | 67.71 | 6.70 | 14.39 | 61.01 | **23.6** |
| B-3170A | SS-26 | 129-130.5 | 128.46 | 106.42 | 6.89 | 22.04 | 99.53 | **22.1** |
| B-3170A | SS-27 | 139-140.5 | 94.09 | 82.59 | 7.37 | 11.50 | 75.22 | **15.3** |
| B-3170A | SS-28 | 149-150.5 | 90.87 | 80.88 | 6.84 | 9.99 | 74.04 | **13.5** |
| B-3170A | SS-29 | 159-160.5 | 93.49 | 80.95 | 6.86 | 12.54 | 74.09 | **16.9** |
| B-3170A | SS-31 | 179-180.5 | 106.15 | 92.20 | 6.69 | 13.95 | 85.51 | **16.3** |
| B-3170A | SS-32 | 189-190.5 | 109.42 | 95.71 | 29.57 | 13.71 | 66.14 | **20.7** |
| B-3170A | SS-33 | 199-199.5 | 43.47 | 38.59 | 6.89 | 4.88 | 31.70 | **15.4** |
| B-3170A | SS-36 | 229-230.5 | 84.98 | 68.99 | 6.70 | 15.99 | 62.29 | **25.7** |
| B-3170A | SS-40 | 269-270.5 | 120.02 | 101.63 | 7.03 | 18.39 | 94.60 | **19.4** |
| B-3170A | SS-41A | 279-279.9 | 54.66 | 46.94 | 6.66 | 7.72 | 40.28 | **19.2** |
| B-3170A | SS-42 | 289-290.5 | 76.19 | 65.02 | 8.23 | 11.17 | 56.79 | **19.7** |
| B-3170A | SS-43 | 299-300.5 | 86.86 | 72.09 | 9.47 | 14.77 | 62.62 | **23.6** |

REMARKS:

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-18 (MACTEC lab # 09-058)
**DATE:** 3/30/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3223 | SS-1 | 0 - 1.5 | 76.54 | 70.76 | 6.77 | 5.78 | 63.99 | **9.0** |
| B-3223 | SS-2 | 3.2 - 4.7 | 100.76 | 89.61 | 7.00 | 11.15 | 82.61 | **13.5** |
| B-3223 | SS-3 | 5.8 - 7.3 | 124.39 | 109.64 | 6.89 | 14.75 | 102.75 | **14.4** |
| B-3223 | SS-4 | 8.7 - 10.2 | 103.78 | 89.49 | 6.83 | 14.29 | 82.66 | **17.3** |
| B-3223 | SS-5 | 11.8 - 13.3 | 94.03 | 79.44 | 9.19 | 14.59 | 70.25 | **20.8** |
| B-3223 | SS-6 | 14.1 - 15.6 | 120.62 | 99.70 | 6.79 | 20.92 | 92.91 | **22.5** |
| B-3223 | SS-7 | 18.9 - 20.4 | 113.50 | 89.01 | 6.85 | 24.49 | 82.16 | **29.8** |
| B-3223 | SS-8 | 23.5 - 25.0 | 121.68 | 100.18 | 6.72 | 21.50 | 93.46 | **23.0** |
| B-3223 | SS-9 | 28.4 -29.9 | 111.45 | 97.00 | 6.77 | 14.45 | 90.23 | **16.0** |
| B-3223 | SS-10 | 33.5 - 35.0 | 205.06 | 178.49 | 6.40 | 26.57 | 172.09 | **15.4** |
| B-3223 | SS-11 | 38.4 -39.9 | 142.13 | 126.42 | 6.85 | 15.71 | 119.57 | **13.1** |
| B-3223 | SS-12 | 43.3 - 44.8 | 86.86 | 76.40 | 6.66 | 10.46 | 69.74 | **15.0** |
| B-3223 | SS-13A | 48.4 - 49.9 | 132.35 | 118.57 | 6.80 | 13.78 | 111.77 | **12.3** |
| B-3223 | SS-13B | 49.4 - 49.9 | 74.14 | 64.66 | 9.22 | 9.48 | 55.44 | **17.1** |
| B-3223 | SS-14 | 53.4 - 54.9 | 89.92 | 79.24 | 6.96 | 10.68 | 72.28 | **14.8** |
| B-3223 | SS-15 | 58.4 - 59.9 | 112.61 | 98.84 | 6.70 | 13.77 | 92.14 | **14.9** |
| B-3223 | SS-16 | 63.5 - 65.0 | 133.76 | 112.90 | 7.16 | 20.86 | 105.74 | **19.7** |
| B-3223 | SS-17 | 68.6 - 70.1 | 98.21 | 75.80 | 9.48 | 22.41 | 66.32 | **33.8** |
| B-3223 | SS-18 | 73.5 - 75.0 | 127.42 | 103.98 | 6.83 | 23.44 | 97.15 | **24.1** |
| B-3223 | SS-19 | 78.5 - 80 | 107.31 | 92.90 | 6.88 | 14.41 | 86.02 | **16.8** |
| B-3223 | SS-20 | 83.5 - 85.0 | 76.36 | 64.03 | 6.90 | 12.33 | 57.13 | **21.6** |
| B-3223 | SS-21 | 88.5 - 90 | 92.47 | 80.46 | 6.86 | 12.01 | 73.60 | **16.3** |
| B-3223 | SS-23 | 98.5 - 100 | 247.37 | 216.96 | 9.20 | 30.41 | 207.76 | **14.6** |
| B-3223 | SS-25 | 118.7-120.2 | 93.95 | 71.42 | 7.06 | 22.53 | 64.36 | **35.0** |

REMARKS:Moisture Content for all samples including samples with Limits and Organic Content tests requested

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** EXELON COL VICTORIA
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-18 (MACTEC lab # 09-058)
**DATE:** 3/30/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3223 | SS-28 | 148.3-149.8 | 96.36 | 82.24 | 6.89 | 14.12 | 75.35 | **18.7** |
| B-3223 | SS-29 | 158.5-160 | 122.81 | 104.11 | 6.89 | 18.70 | 97.22 | **19.2** |
| B-3223 | SS-30A | 168.5-169.5 | 123.27 | 116.18 | 9.19 | 7.09 | 106.99 | **6.6** |
| B-3223 | SS-30B | 169.2-169.5 | 55.61 | 46.18 | 6.96 | 9.43 | 39.22 | **24.0** |
| B-3223 | SS-31 | 178.5-180 | 89.65 | 73.78 | 7.08 | 15.87 | 66.70 | **23.8** |
| B-3223 | SS-33B | 198.7-200 | 110.74 | 93.62 | 6.85 | 17.12 | 86.77 | **19.7** |
| B-3223 | SS-34A | 208.5-209 | 115.02 | 63.09 | 6.90 | 51.93 | 56.19 | **92.4** |
| B-3223 | SS-35 | 218.5-220 | 92.04 | 72.84 | 6.68 | 19.20 | 66.16 | **29.0** |
| B-3223 | SS-36 | 228.5-230 | 130.24 | 118.81 | 6.90 | 11.43 | 111.91 | **10.2** |
| B-3223 | SS-37 | 238.6-240.1 | 90.60 | 74.04 | 9.45 | 16.56 | 64.59 | **25.6** |
| B-3223 | SS-40 | 268.5-270 | 113.75 | 95.03 | 6.84 | 18.72 | 88.19 | **21.2** |
| B-3223 | SS-41 | 278.5-280. | 112.60 | 94.88 | 6.90 | 17.72 | 87.98 | **20.1** |
| B-3223 | SS-42 | 288.5-290 | 92.39 | 78.63 | 6.86 | 13.76 | 71.77 | **19.2** |
| B-3223 | SS-43 | 298.5-300 | 125.14 | 99.64 | 6.76 | 25.50 | 92.88 | **27.5** |
| B-3223 | SS-44 | 308.5-310. | 82.17 | 67.71 | 6.86 | 14.46 | 60.85 | **23.8** |
| B-3223 | SS-45 | 318.5-320.0 | 121.54 | 102.12 | 6.76 | 19.42 | 95.36 | **20.4** |
| B-3223 | SS-46 | 328.5-330.0 | 110.94 | 97.41 | 6.91 | 13.53 | 90.50 | **15.0** |
| B-3223 | SS-48 | 348.3-349.8 | 97.12 | 81.95 | 6.86 | 15.17 | 75.09 | **20.2** |
| B-3223 | SS-49 | 358.4-359.9 | 120.19 | 99.51 | 9.24 | 20.68 | 90.27 | **22.9** |
| B-3223 | SS-50 | 368.4-369.9 | 83.09 | 71.09 | 6.78 | 12.00 | 64.31 | **18.7** |
| B-3223 | SS-51 | 378.5-380 | 107.00 | 83.46 | 6.87 | 23.54 | 76.59 | **30.7** |
| B-3223 | SS-52 | 388.5-390.0 | 86.64 | 67.08 | 9.34 | 19.56 | 57.74 | **33.9** |
| B-3223 | SS-53 | 398.5-400. | 85.86 | 69.46 | 7.00 | 16.40 | 62.46 | **26.3** |

REMARKS:Moisture Content for all samples including samples with Limits and Organic Content tests requested

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** EXELON Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-17 (MACTEC lab # 09-027)
**DATE:** 3/13/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3229 | SS-1 | 0-1.5 | 34.48 | 30.62 | 6.78 | 3.86 | 23.84 | **16.2** |
| B-3229 | SS-2 | 3.5-5.0 | 63.47 | 54.59 | 6.93 | 8.88 | 47.66 | **18.6** |
| B-3229 | SS-3 | 6.0-7.5 | 96.02 | 82.89 | 6.85 | 13.13 | 76.04 | **17.3** |
| B-3229 | SS-4 | 8.5-10.0 | 84.11 | 71.59 | 6.78 | 12.52 | 64.81 | **19.3** |
| B-3229 | SS-5 | 11-12.5 | 203.49 | 176.11 | 6.92 | 27.38 | 169.19 | **16.2** |
| B-3229 | SS-6 | 13.5-15.0 | 84.47 | 70.72 | 7.02 | 13.75 | 63.70 | **21.6** |
| B-3229 | SS-7 | 18.5-20.0 | 107.15 | 83.82 | 6.74 | 23.33 | 77.08 | **30.3** |
| B-3229 | SS-8 | 23.5-25.0 | 141.44 | 119.56 | 6.84 | 21.88 | 112.72 | **19.4** |
| B-3229 | SS-9 | 28.5-30.0 | 141.65 | 121.27 | 6.99 | 20.38 | 114.28 | **17.8** |
| B-3229 | SS-10 | 33.5-35.0 | 42.36 | 35.36 | 6.95 | 7.00 | 28.41 | **24.6** |
| B-3229 | SS-11 | 38.5-40.0 | 93.63 | 80.94 | 6.76 | 12.69 | 74.18 | **17.1** |
| B-3229 | SS-12 | 43.5-45.0 | 78.63 | 65.36 | 6.95 | 13.27 | 58.41 | **22.7** |
| B-3229 | SS-13 | 48.5-50.0 | 81.31 | 64.72 | 7.03 | 16.59 | 57.69 | **28.8** |
| B-3229 | SS-14 | 53.5-55.0 | 97.43 | 81.07 | 6.79 | 16.36 | 74.28 | **22.0** |
| B-3229 | SS-15 | 58.5-60.0 | 126.09 | 109.39 | 9.21 | 16.70 | 100.18 | **16.7** |
| B-3229 | SS-16 | 63.5-65.0 | 204.44 | 169.61 | 6.90 | 34.83 | 162.71 | **21.4** |
| B-3229 | SS-18 | 73.5-75.0 | 142.63 | 116.02 | 6.91 | 26.61 | 109.11 | **24.4** |
| B-3229 | SS-19 | 78.5-80.0 | 174.94 | 149.66 | 6.90 | 25.28 | 142.76 | **17.7** |
| B-3229 | SS-20 | 83.5-85.0 | 116.14 | 94.99 | 6.87 | 21.15 | 88.12 | **24.0** |
| B-3229 | SS-21 | 88.5-90.0 | 134.43 | 113.28 | 9.45 | 21.15 | 103.83 | **20.4** |

REMARKS:Moisture Content for all samples including samples with Limits and Organic Content tests requested

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** EXELON Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-17 (MACTEC lab # 09-027)
**DATE:** 3/13/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3229 | SS-22A | 93.5-94.6 | 93.76 | 79.98 | 6.75 | 13.78 | 73.23 | **18.8** |
| B-3229 | SS-22B | 94.6-95.0 | 148.87 | 125.30 | 6.76 | 23.57 | 118.54 | **19.9** |
| B-3229 | SS-23 | 98.5-100.0 | 237.09 | 206.58 | 6.92 | 30.51 | 199.66 | **15.3** |
| B-3229 | SS-24 | 108.5-110.0 | 89.02 | 72.14 | 6.91 | 16.88 | 65.23 | **25.9** |
| B-3229 | SS-25 | 118.5-120.0 | 169.99 | 140.48 | 6.88 | 29.51 | 133.60 | **22.1** |
| B-3229 | SS-26 | 128.5-130.0 | 105.01 | 88.89 | 7.06 | 16.12 | 81.83 | **19.7** |

REMARKS: Moisture Content for all samples including samples with Limits and Organic Content tests requested

SUBMITTED BY: DSC 5-5-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-21 (MACTEC lab # 09-089)
**DATE:** 3/9/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3270A | SS-1 | 0-1.5 | 131.54 | 110.82 | 6.90 | 20.72 | 103.92 | **19.9** |
| B-3270A | SS-2 | 3.9-5.4 | 134.20 | 106.34 | 6.84 | 27.86 | 99.50 | **28.0** |
| B-3270A | SS-3 | 6.3-7.8 | 141.46 | 120.59 | 6.79 | 20.87 | 113.80 | **18.3** |
| B-3270A | SS-4 | 9.0-10.5 | 99.02 | 82.46 | 6.84 | 16.56 | 75.62 | **21.9** |
| B-3270A | SS-5 | 11.4-12.9 | 106.09 | 89.68 | 6.87 | 16.41 | 82.81 | **19.8** |
| B-3270A | SS-6 | 13.8-15.3 | 102.18 | 89.84 | 9.22 | 12.34 | 80.62 | **15.3** |
| B-3270A | SS-7 | 18.8-20.3 | 131.41 | 112.10 | 6.80 | 19.31 | 105.30 | **18.3** |
| B-3270A | SS-8 | 23.7-25.2 | 111.96 | 95.71 | 6.78 | 16.25 | 88.93 | **18.3** |
| B-3270A | SS-9 | 28.8-30.3 | 128.59 | 103.54 | 6.80 | 25.05 | 96.74 | **25.9** |
| B-3270A | SS-10 | 33.7-35.2 | 115.18 | 100.04 | 6.83 | 15.14 | 93.21 | **16.2** |
| B-3270A | SS-11 | 38.8-40.3 | 103.46 | 79.96 | 7.01 | 23.50 | 72.95 | **32.2** |
| B-3270A | SS-12 | 43.9-45.4 | 105.36 | 86.74 | 6.90 | 18.62 | 79.84 | **23.3** |
| B-3270A | SS-13 | 48.8-50.3 | 123.38 | 106.21 | 6.91 | 17.17 | 99.30 | **17.3** |
| B-3270A | SS-14 | 53.8-55.3 | 110.54 | 93.72 | 6.81 | 16.82 | 86.91 | **19.4** |
| B-3270A | SS-15 | 58.9-60.4 | 151.95 | 126.69 | 6.77 | 25.26 | 119.92 | **21.1** |
| B-3270A | SS-16 | 63.9-65.4 | 129.35 | 106.34 | 6.81 | 23.01 | 99.53 | **23.1** |
| B-3270A | SS-17 | 68.9-70.4 | 89.99 | 68.03 | 6.71 | 21.96 | 61.32 | **35.8** |
| B-3270A | SS-18 | 73.9-75.4 | 116.65 | 101.24 | 6.79 | 15.41 | 94.45 | **16.3** |
| B-3270A | SS-19 | 78.9-80.4 | 115.31 | 98.44 | 6.79 | 16.87 | 91.65 | **18.4** |
| B-3270A | SS-20 | 84.2-85.7 | 116.87 | 99.16 | 6.85 | 17.71 | 92.31 | **19.2** |
| B-3270A | SS-21 | 89.2-90.7 | 114.06 | 96.90 | 6.79 | 17.16 | 90.11 | **19.0** |
| B-3270A | SS-22 | 94.3-95.8 | 116.55 | 98.86 | 6.78 | 17.69 | 92.08 | **19.2** |
| B-3270A | SS-23 | 99.2-100.7 | 111.39 | 94.71 | 6.87 | 16.68 | 87.84 | **19.0** |

SUBMITTED BY: DSC 8-6-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:** V-21 (MACTEC lab # 09-089)
**DATE:** 3/9/2009

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3270A | SS-25 | 119.3-120.8 | 113.13 | 88.15 | 6.78 | 24.98 | 81.37 | **30.7** |
| B-3270A | SS-26 | 129.2-130.7 | 120.31 | 103.33 | 6.57 | 16.98 | 96.76 | **17.5** |
| B-3270A | SS-28 | 149.3-150.9 | 114.80 | 88.70 | 6.72 | 26.10 | 81.98 | **31.8** |
| B-3270A | SS-29 | 159.3-160.8 | 119.62 | 101.33 | 6.79 | 18.29 | 94.54 | **19.3** |
| B-3270A | SS-31 | 179.3-180.8 | 123.25 | 104.10 | 6.85 | 19.15 | 97.25 | **19.7** |
| B-3270A | SS-33 | 199.2-200.7 | 126.03 | 106.26 | 6.80 | 19.77 | 99.46 | **19.9** |
| B-3270A | SS-35 | 219.2-220.7 | 115.15 | 98.42 | 9.17 | 16.73 | 89.25 | **18.7** |
| B-3270A | SS-37 | 239.2-240.7 | 118.65 | 98.31 | 6.80 | 20.34 | 91.51 | **22.2** |
| B-3270A | SS-38 | 249.2-250.7 | 118.09 | 98.68 | 6.99 | 19.41 | 91.69 | **21.2** |
| B-3270A | SS-39 | 259.2-260.7 | 119.98 | 101.12 | 6.92 | 18.86 | 94.20 | **20.0** |
| B-3270A | SS-40 | 269.2-270.7 | 114.48 | 96.47 | 6.82 | 18.01 | 89.65 | **20.1** |
| B-3270A | SS-41 | 279.3-280.8 | 121.58 | 105.46 | 6.94 | 16.12 | 98.52 | **16.4** |
| B-3270A | SS-42 | 289.3-290.8 | 115.24 | 94.97 | 6.74 | 20.27 | 88.23 | **23.0** |
| B-3270A | SS-43 | 299.3-300.8 | 114.85 | 92.71 | 7.01 | 22.14 | 85.70 | **25.8** |
| | | | | | | | | |
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REMARKS:Moisture Content for all samples including samples with Limits and Organic Content tests requested

SUBMITTED BY: DSC 8-6-09
Laboratory Manager

# MACTEC

## MACTEC ENGINEERING AND CONSULTING, INC.
## RALEIGH, NORTH CAROLINA

### REPORT OF STANDARD TEST METHOD FOR
### LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK BY MASS
### (ASTM D 2216-05)

**PROJECT NAME:** Exelon Texas COL Project - Supplemental Investigation, including U
**MACTEC PROJECT NUMBER:** 6468-07-1777
**ASSIGNMENT NUMBER:**
**DATE:**

| SAMPLE IDENTIFICATION | | | TEST DATA | | | | | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| Boring # | Sample # | Depth (ft.) | WET WT. & TARE | DRY WT. & TARE | TARE WT. | WT. WATER | WT. DRY SOIL | |
| B-3101UD | UD-1 | 8.0-10.0 | 90.83 | 80.23 | 14.50 | 10.60 | 65.73 | **16.1** |
| B-3101UD | UD-6 | 100.0-102.5 | see Remark (2) below | | | N/A | N/A | **15.7** |
| B-3101UD | UD-7 | 115.0-117.5 | 89.73 | 78.62 | 15.41 | 11.11 | 63.21 | **17.6** |
| B-3101UD | UD-8 | 120.0-122.0 | 98.19 | 80.33 | 16.36 | 17.86 | 63.97 | **27.9** |
| B-3101UD | UD-10 | 126.0-128.5 | 89.63 | 80.68 | 16.25 | 8.95 | 64.43 | **13.9** |
| B-3101UD | UD-13 | 159.0-161.5 | 92.28 | 80.34 | 15.84 | 11.94 | 64.50 | **18.5** |
| B-3101UD | UD-14 | 209.0-211.5 | 97.13 | 87.59 | 15.99 | 9.54 | 71.60 | **13.3** |
| B-3101UD | UD-15 | 229.0-231.5 | 96.21 | 82.54 | 16.60 | 13.67 | 65.94 | **20.7** |
| B-3101UD | UD-16 | 279.0-281 | 89.77 | 77.08 | 16.50 | 12.69 | 60.58 | **20.9** |
| B-3101UD | UD-17 | 289.0-291.5 | 95.74 | 82.19 | 15.32 | 13.55 | 66.87 | **20.3** |
| B-3234UD | UD-2 | 35.0-36.6 | 92.43 | 83.86 | 15.93 | 8.57 | 67.93 | **12.6** |
| B-3234UD | UD-4 | 53.8-55.4 | 80.57 | 66.25 | 16.44 | 14.32 | 49.81 | **28.7** |
| B-3234UD | UD-5 | 70.0-71.6 | 91.53 | 76.88 | 31.81 | 14.65 | 45.07 | **32.5** |
| B-3234UD | UD-7 | 105.0-107.5 | see Remark (2) below | | | N/A | N/A | **20.5** |
| B-3234UD | UD-8 | 125.0-126.6 | 85.09 | 70.71 | 16.44 | 14.38 | 54.27 | **26.5** |
| B-3234UD | UD-9 | 150.0-151.6 | 83.38 | 71.65 | 16.57 | 11.73 | 55.08 | **21.3** |
| B-3234UD | UD-11 | 168.8-171.3 | see Remark (2) below | | | N/A | N/A | **16.1** |
| B-3234UD | UD-14 | 216.8-219.3 | see Remark (2) below | | | N/A | N/A | **18.4** |
| B-3234UD | UD-15 | 260.0-262.5 | see Remark (2) below | | | N/A | N/A | **22.5** |
| B-3234UD | UD-16 | 305.0-307.3 | 79.00 | 67.92 | 16.62 | 11.08 | 51.30 | **21.6** |
| B-3234UD | UD-19 | 393.0-394.8 | 84.18 | 67.61 | 16.46 | 16.57 | 51.15 | **32.4** |

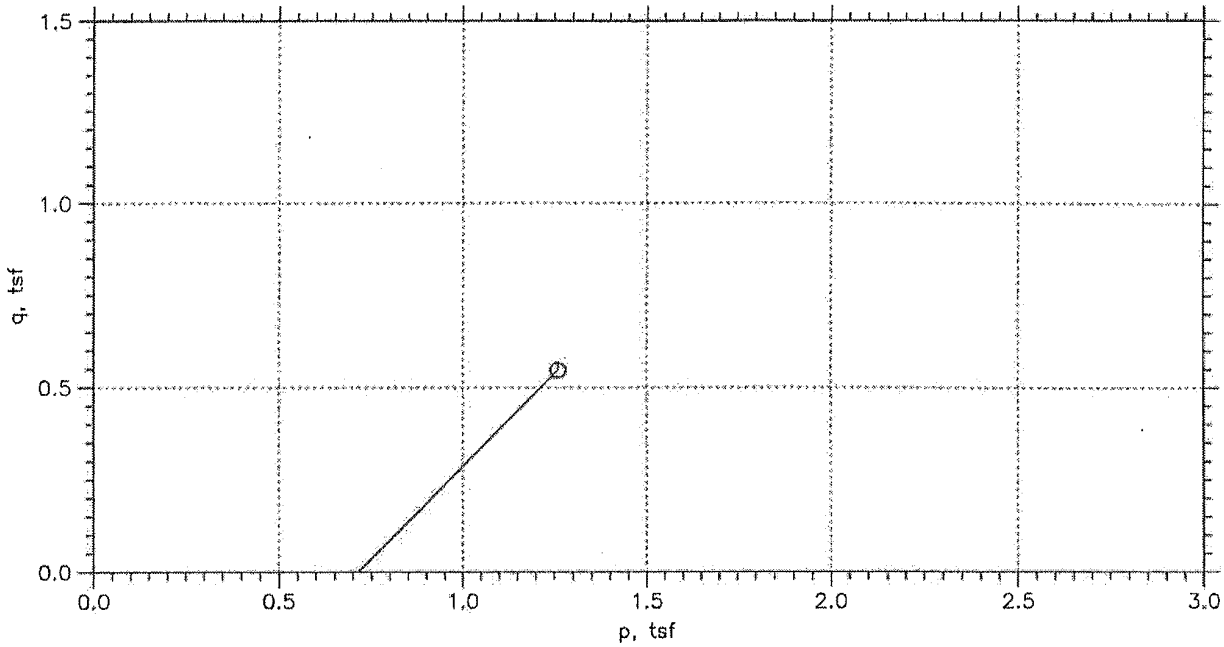
REMARKS: (1) Moisture Content for undisturbed samples as determined during Index testing.
(2) Values shown are the average values from direct shear samples.

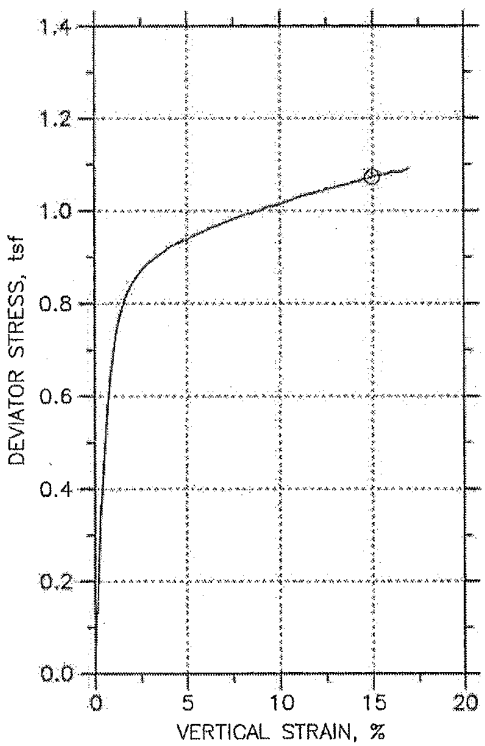
SUBMITTED BY: DSC 8-10-09
Laboratory Manager

Form revised for Exelon 6468-07-1777 3-13-09

# Unconsolidated Undrained Triaxial Compression Tests

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊕ | | | |
|---|---|---|---|---|
| Sample No. | UD-1 | | | |
| Test No. | 9568 | | | |
| Depth | 8.0-10.0' | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | JCJ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.858 | | | |
| Height, in | 6.008 | | | |
| Water Content, % | 21.1 | | | |
| Dry Density, pcf | 95.65 | | | |
| Saturation, % | 74.4 | | | |
| Void Ratio | 0.769 | | | |
| Confining Stress, tsf | 0.714 | | | |
| Undrained Strength, tsf | 0.5362 | | | |
| Max. Dev. Stress, tsf | 1.072 | | | |
| Strain at Failure, % | 15 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.71 | | | |
| Liquid Limit | 38 | | | |
| Plastic Limit | 16 | | | |
| Plasticity Index | 22 | | | |

MACTEC

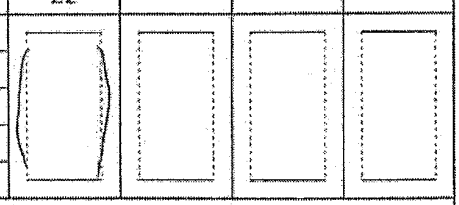
Project: Exelon Texas COL SI

Location: B-3101UD, UD-1

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed



Description: Light Gray Sandy Lean Clay (CL)

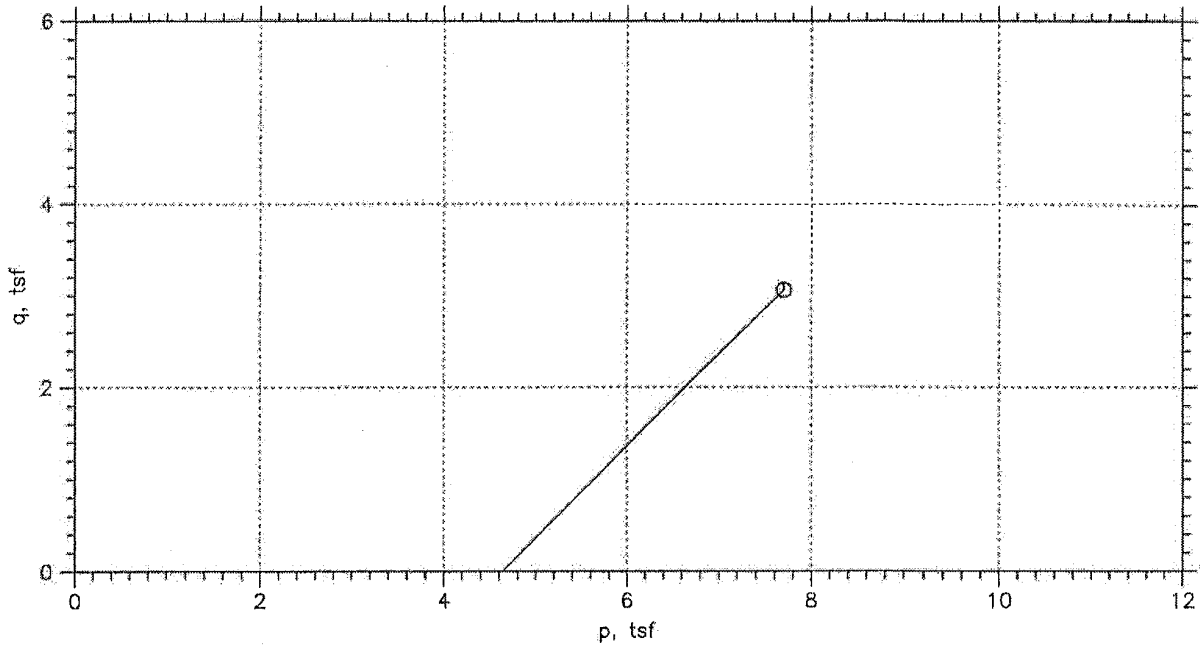
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

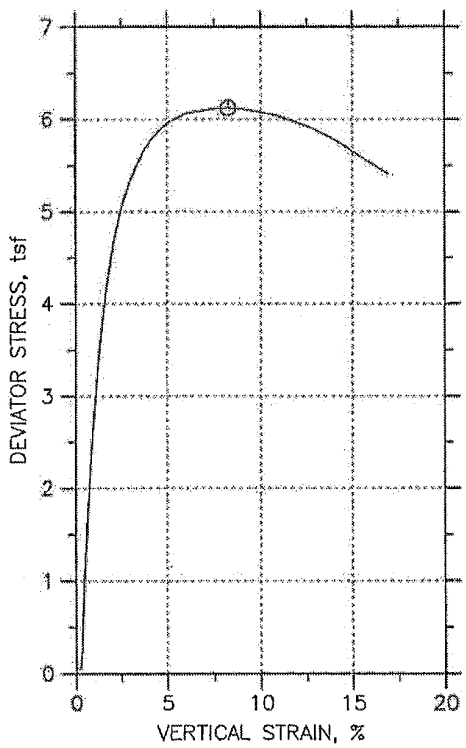
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:36:24

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| | | | | |
|---|---|---|---|---|
| Symbol | ⊕ | | | |
| Sample No. | UD-7 | | | |
| Test No. | 9569 | | | |
| Depth | 115.0-117.5 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | JEJ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.879 | | | |
| Height, in | 5.996 | | | |
| Water Content, % | 18.4 | | | |
| Dry Density, pcf | 111.5 | | | |
| Saturation, % | 95.6 | | | |
| Void Ratio | 0.522 | | | |
| Confining Stress, tsf | 4.64 | | | |
| Undrained Strength, tsf | 3.06 | | | |
| Max. Dev. Stress, tsf | 6.121 | | | |
| Strain at Failure, % | 8.26 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.72 | | | |
| Liquid Limit | 50 | | | |
| Plastic Limit | 18 | | | |
| Plasticity Index | 32 | | | |

MACTEC

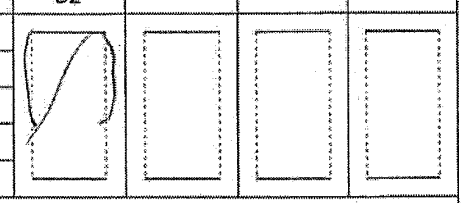
Project: Exelon Texas COL SI

Location: B-3101UD, UD-7

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed



Description: Light Gray mottled Light Yellowish Brown Fat CLAY with Sand (CH)

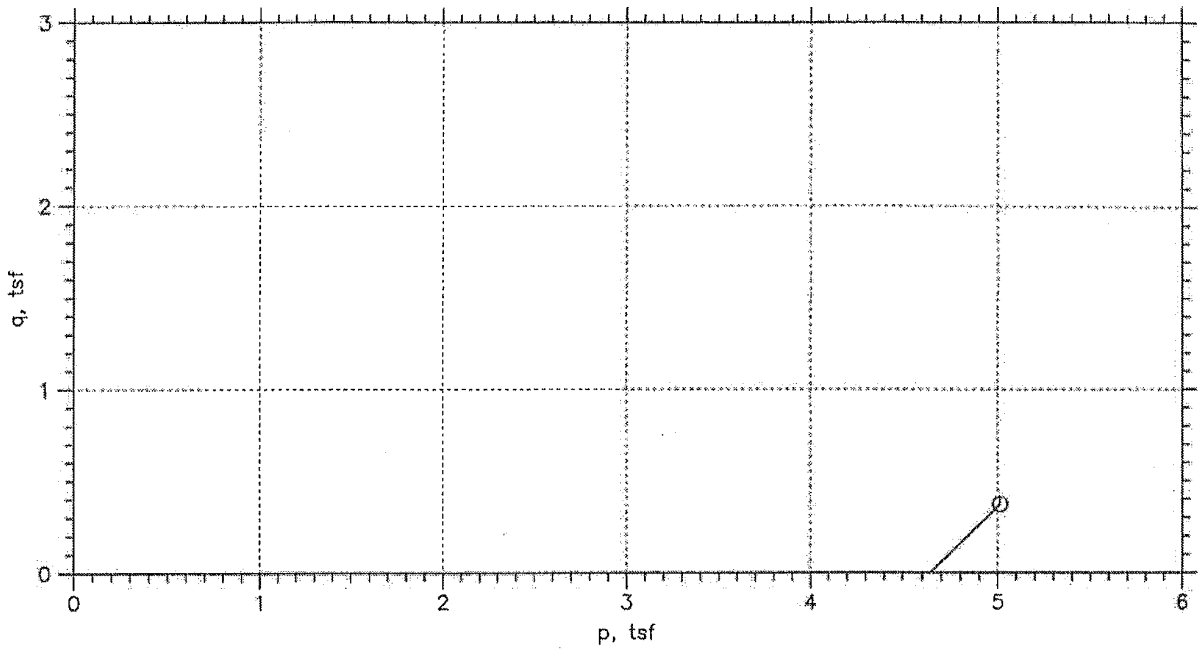
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

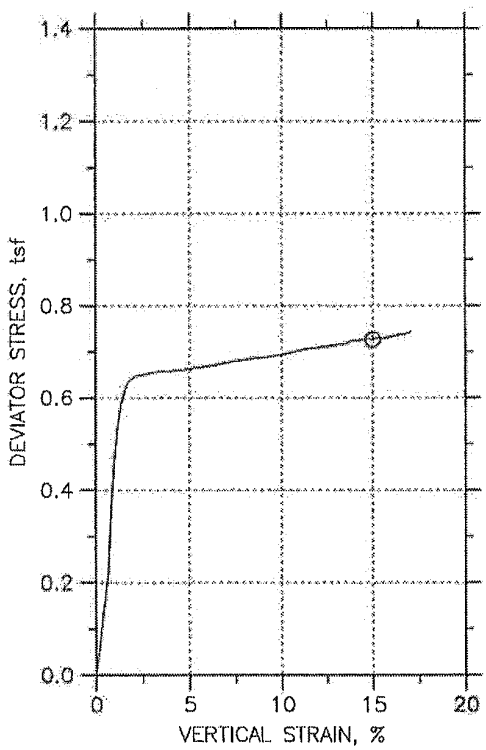
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:59:46

DSC 5-15-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| | | | | |
|---|---|---|---|---|
| Symbol | ⊕ | | | |
| Sample No. | UD-8 | | | |
| Test No. | 9570 | | | |
| Depth | 120.0-122.0 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | JGZ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.88 | | | |
| Height, in | 5.957 | | | |
| Water Content, % | 26.4 | | | |
| Dry Density, pcf | 95.87 | | | |
| Saturation, % | 94.0 | | | |
| Void Ratio | 0.758 | | | |
| Confining Stress, tsf | 4.64 | | | |
| Undrained Strength, tsf | 0.3629 | | | |
| Max. Dev. Stress, tsf | 0.7258 | | | |
| Strain at Failure, % | 15 | | | |
| Strain Rate, %/min | 1 | | | |
| Estimated Specific Gravity | 2.7 | | | |
| Liquid Limit | 60 | | | |
| Plastic Limit | 19 | | | |
| Plasticity Index | 41 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3101UD, UD-8

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed

Description: Light Gray Fat CLAY with Sand (CH)

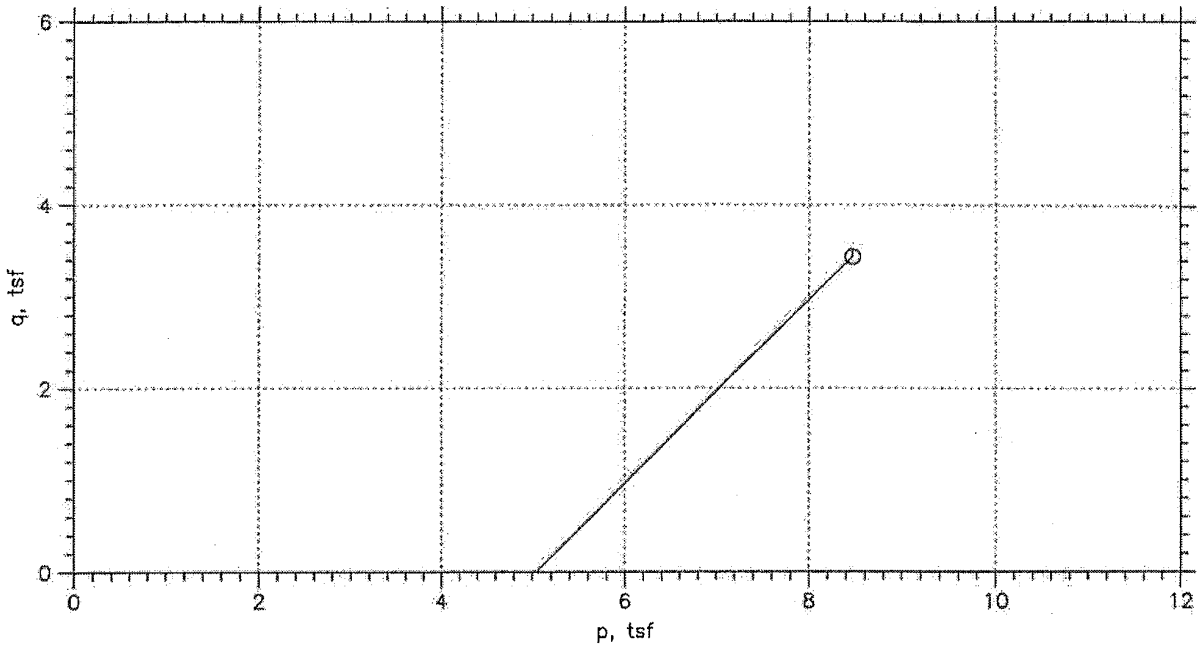
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

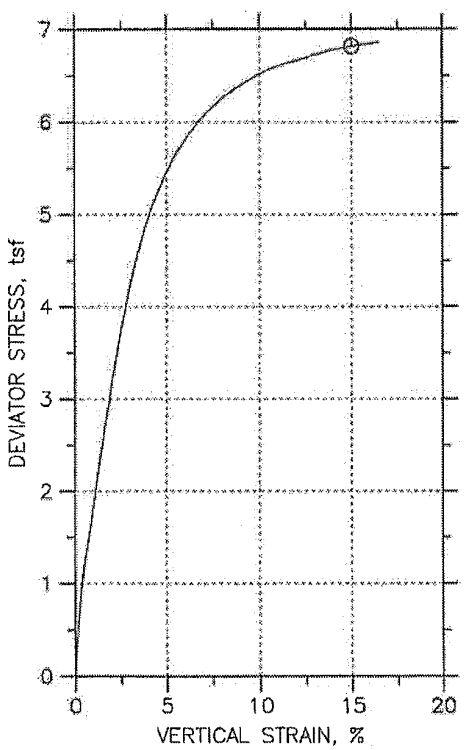
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:42:42

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊙ | | | |
|---|---|---|---|---|
| Sample No. | UD-10 | | | |
| Test No. | 9571 | | | |
| Depth | 126.0-128.5 | | | |
| Tested by | JW | | | |
| Test Date | 4/27/09 | | | |
| Checked by | JCJ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.828 | | | |
| Height, in | 5.575 | | | |
| Water Content, % | 15.9 | | | |
| Dry Density, pcf | 111.1 | | | |
| Saturation, % | 82.9 | | | |
| Void Ratio | 0.517 | | | |
| Confining Stress, tsf | 5.04 | | | |
| Undrained Strength, tsf | 3.408 | | | |
| Max. Dev. Stress, tsf | 6.815 | | | |
| Strain at Failure, % | 15 | | | |
| Strain Rate, %/min | 1 | | | |
| Estimated Specific Gravity | 2.7 | | | |
| Liquid Limit | 25 | | | |
| Plastic Limit | 15 | | | |
| Plasticity Index | 10 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3101UD, UD-10

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed

Description: Light Gray Sandy Lean CLAY (CL)

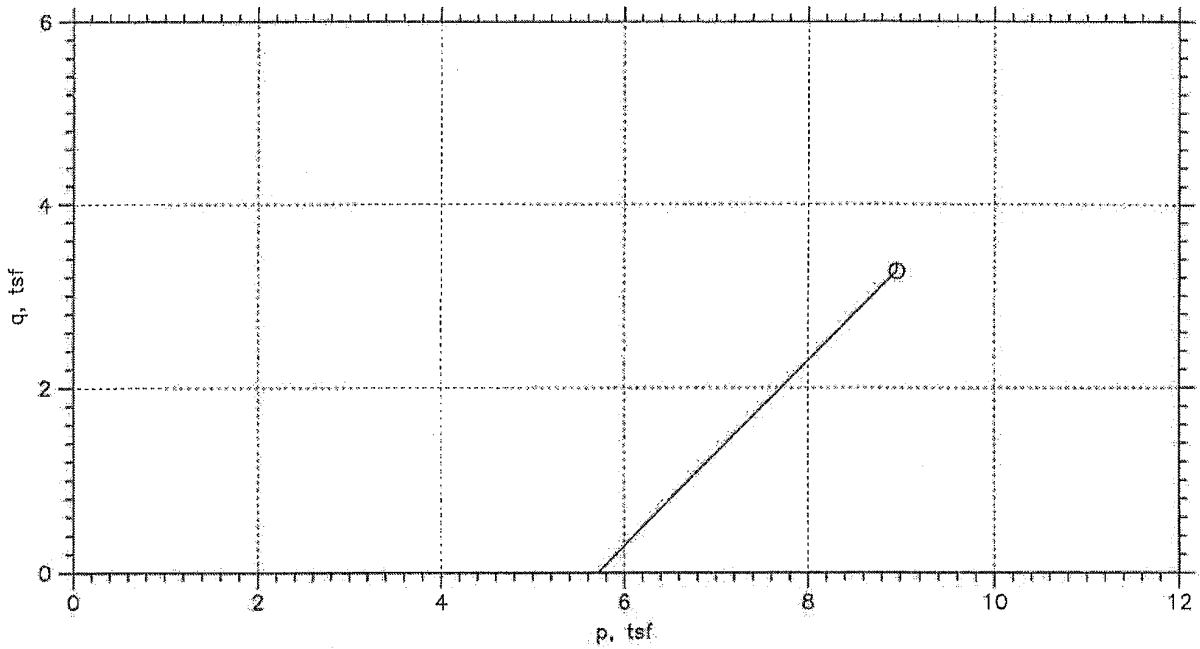
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

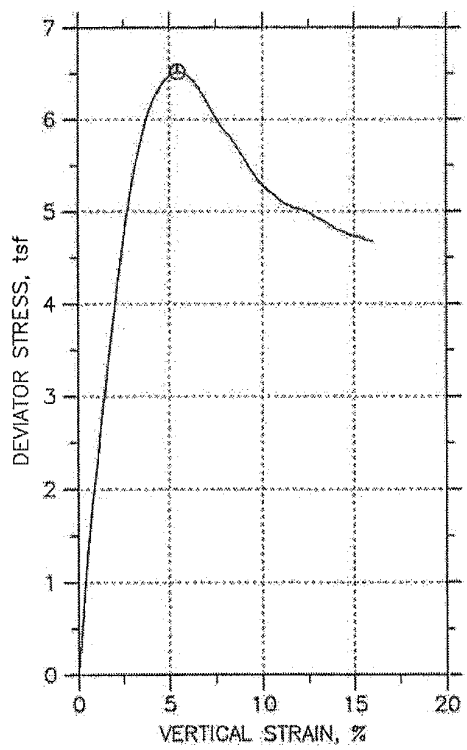
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:44:32

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊙ | | | |
|---|---|---|---|---|
| Sample No. | UD-13 | | | |
| Test No. | 9572 | | | |
| Depth | 159.0-161.5 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | JEJ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.841 | | | |
| Height, in | 5.979 | | | |
| Water Content, % | 21.3 | | | |
| Dry Density, pcf | 106.9 | | | |
| Saturation, % | 99.2 | | | |
| Void Ratio | 0.582 | | | |
| Confining Stress, tsf | 5.71 | | | |
| Undrained Strength, tsf | 3.259 | | | |
| Max. Dev. Stress, tsf | 6.518 | | | |
| Strain at Failure, % | 5.46 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.71 | | | |
| Liquid Limit | 45 | | | |
| Plastic Limit | 18 | | | |
| Plasticity Index | 27 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3101UD, UD-13

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed

Description: Very Pale Brown Lean CLAY (CL)

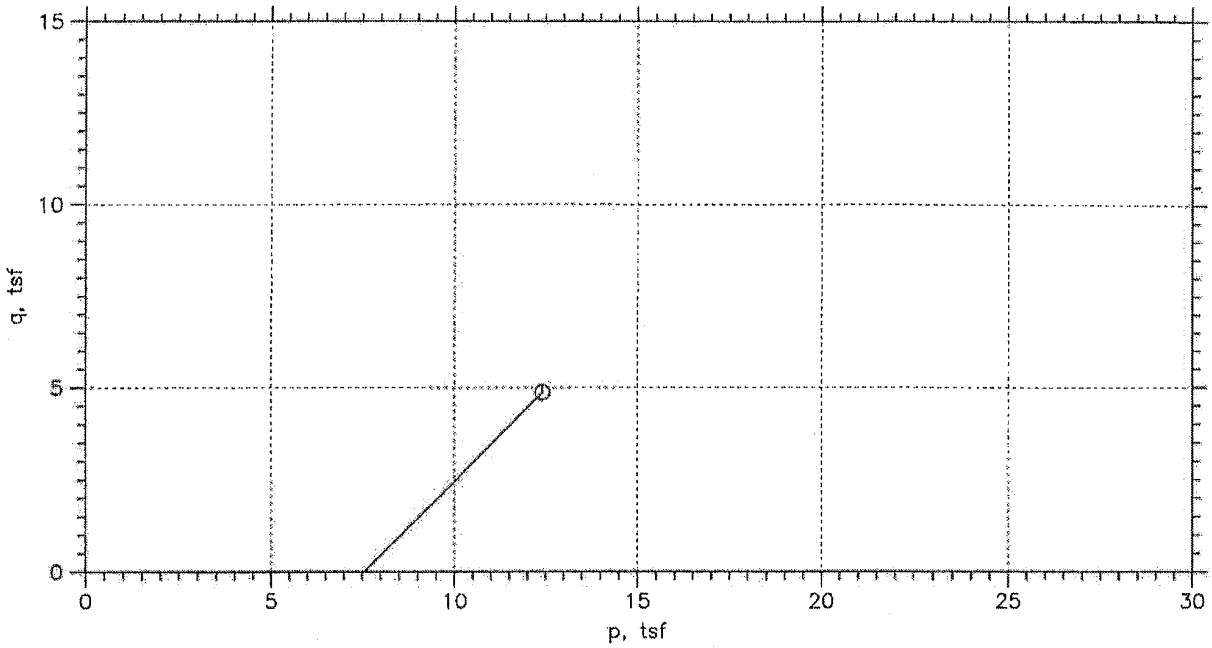
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

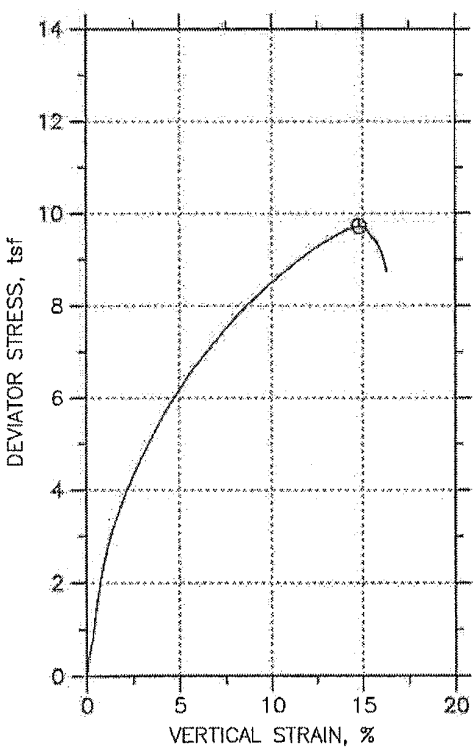
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:46:37

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| | | | | |
|---|---|---|---|---|
| Symbol | ⊙ | | | |
| Sample No. | UD-14 | | | |
| Test No. | 9573 | | | |
| Depth | 209.0-211.5 | | | |
| Tested by | JW | | | |
| Test Date | 4/27/09 | | | |
| Checked by | JCF | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.849 | | | |
| Height, in | 5.58 | | | |
| Water Content, % | 14.3 | | | |
| Dry Density, pcf | 114.1 | | | |
| Saturation, % | 80.6 | | | |
| Void Ratio | 0.477 | | | |
| Confining Stress, tsf | 7.56 | | | |
| Undrained Strength, tsf | 4.861 | | | |
| Max. Dev. Stress, tsf | 9.722 | | | |
| Strain at Failure, % | 14.8 | | | |
| Strain Rate, %/min | 1 | | | |
| Estimated Specific Gravity | 2.7 | | | |
| Liquid Limit | 23 | | | |
| Plastic Limit | 18 | | | |
| Plasticity Index | 5 | | | |

MACTEC

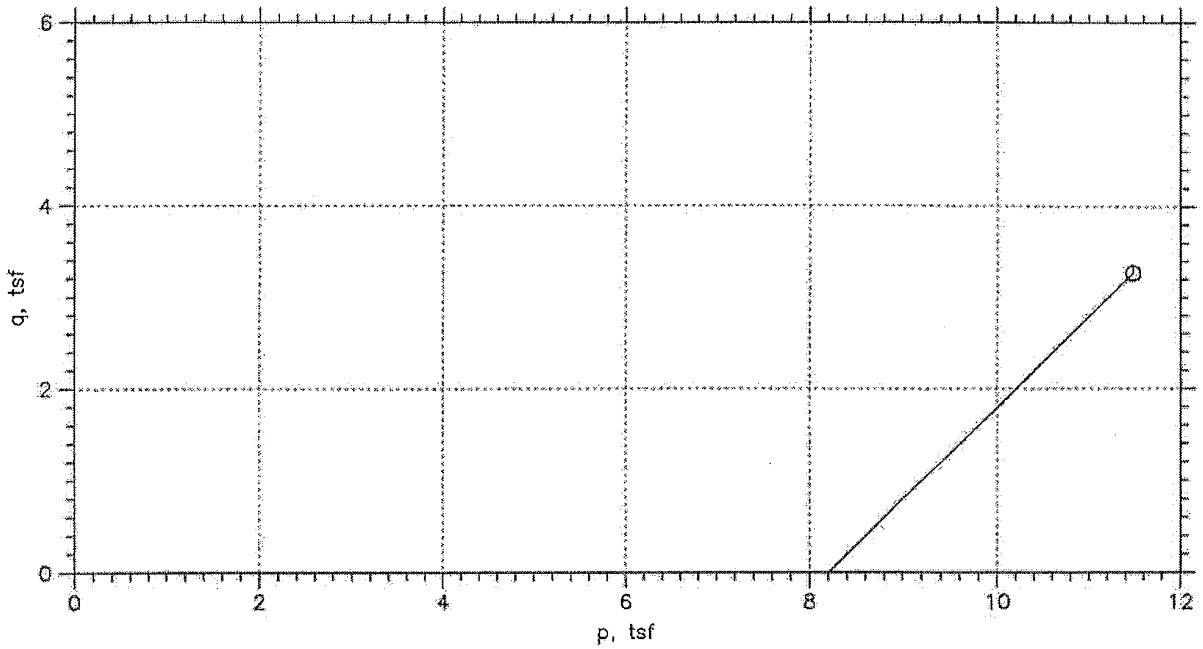
Project: Exelon Texasl COL SI
Location: B-3101UD, UD-14
Project No.: 6468071777
Boring No.: B-3101UD
Sample Type: Undisturbed
Description: Pale Yellow Silty, Clayey SAND (SC-SM)
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

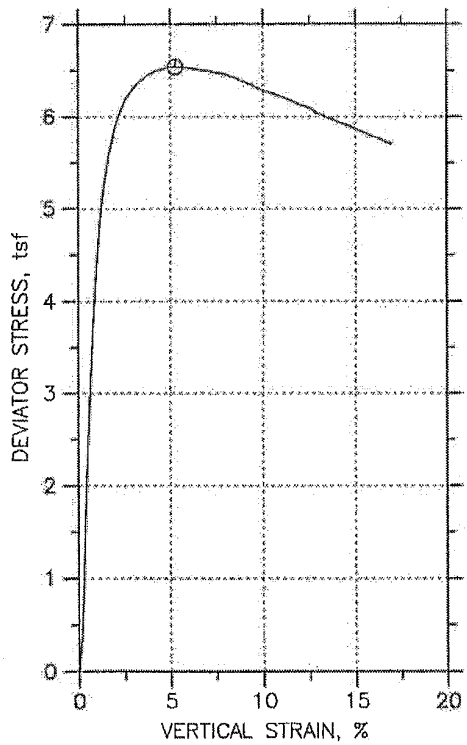
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:48:48

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊖ | | | |
|---|---|---|---|---|
| Sample No. | UD-15 | | | |
| Test No. | 9574 | | | |
| Depth | 229.0-231.5 | | | |
| Tested by | JW | | | |
| Test Date | 4/24/09 | | | |
| Checked by | JCF | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.854 | | | |
| Height, in | 5.957 | | | |
| Water Content, % | 22.0 | | | |
| Dry Density, pcf | 105.3 | | | |
| Saturation, % | 100.2 | | | |
| Void Ratio | 0.589 | | | |
| Confining Stress, tsf | 8.21 | | | |
| Undrained Strength, tsf | 3.269 | | | |
| Max. Dev. Stress, tsf | 6.538 | | | |
| Strain at Failure, % | 5.26 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.68 | | | |
| Liquid Limit | 58 | | | |
| Plastic Limit | 21 | | | |
| Plasticity Index | 37 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3101UD, UD-15

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed

Description: Light Gray mottled Brownish Yellow Fat CLAY with Sand (CH)

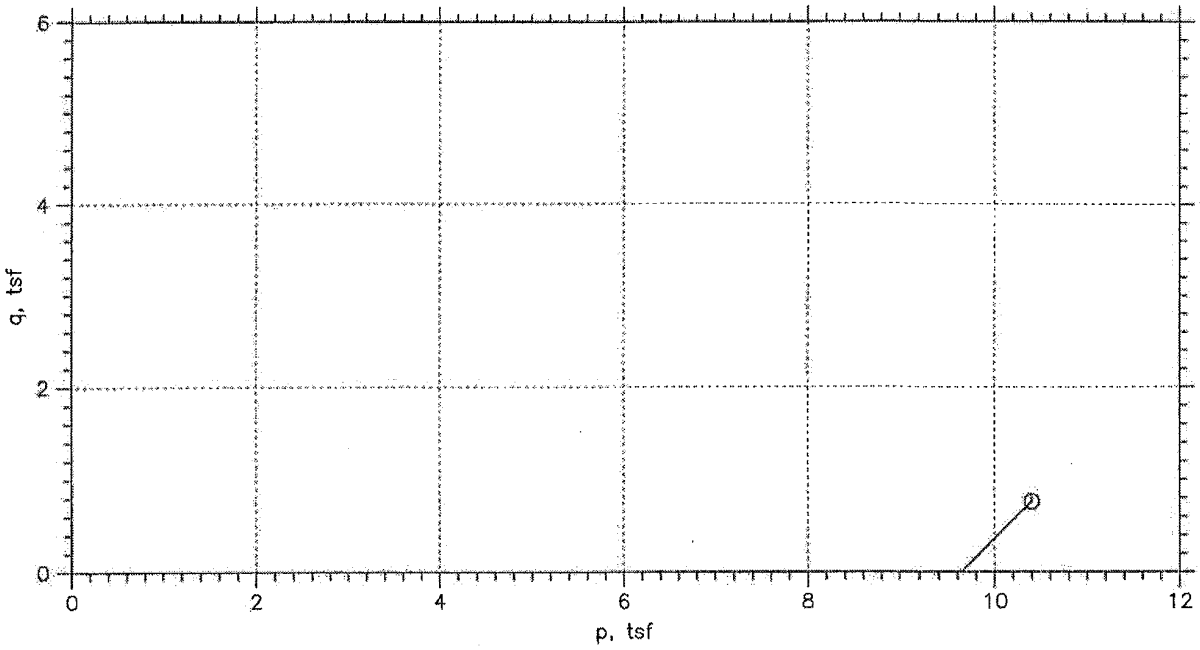
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

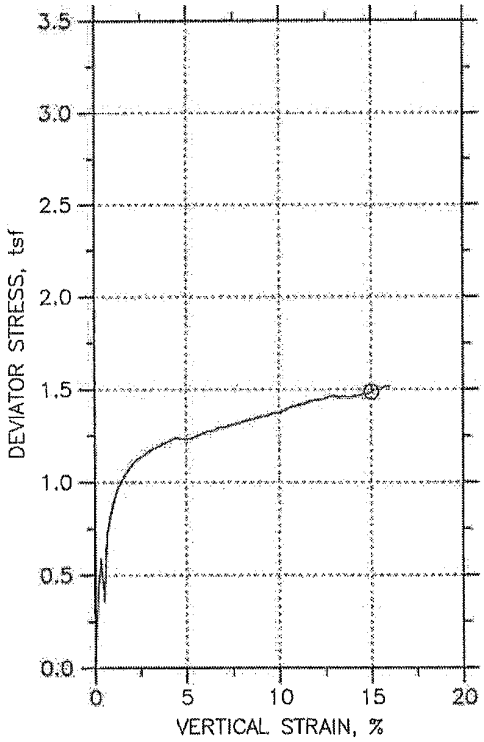
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:50:08

DJC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊕ | | | |
|---|---|---|---|---|
| Sample No. | UD-16 | | | |
| Test No. | 9575 | | | |
| Depth | 279.0-281.0 | | | |
| Tested by | JW | | | |
| Test Date | 4/24/09 | | | |
| Checked by | JEF | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.857 | | | |
| Height, in | 5.561 | | | |
| Water Content, % | 25.9 | | | |
| Dry Density, pcf | 98.84 | | | |
| Saturation, % | 101.9 | | | |
| Void Ratio | 0.674 | | | |
| Confining Stress, tsf | 9.64 | | | |
| Undrained Strength, tsf | 0.743 | | | |
| Max. Dev. Stress, tsf | 1.486 | | | |
| Strain at Failure, % | 15 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.65 | | | |
| Liquid Limit | 48 | | | |
| Plastic Limit | 19 | | | |
| Plasticity Index | 29 | | | |

MACTEC

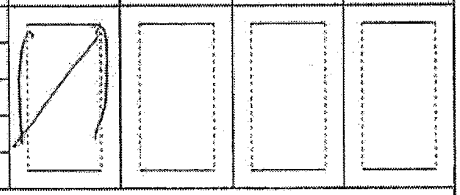
Project: Exelon Texas COL SI

Location: B-3101UD, UD-16

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed



Description: Light Gray mottled Brownish Yellow Sandy Lean CLAY (CH)

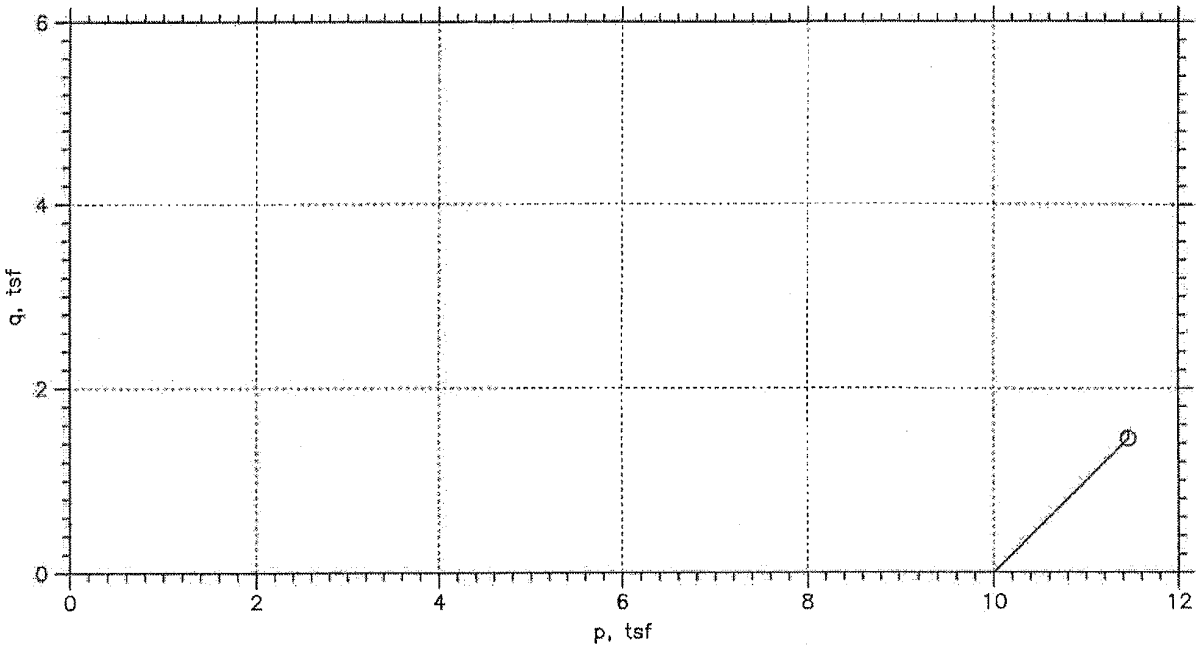
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

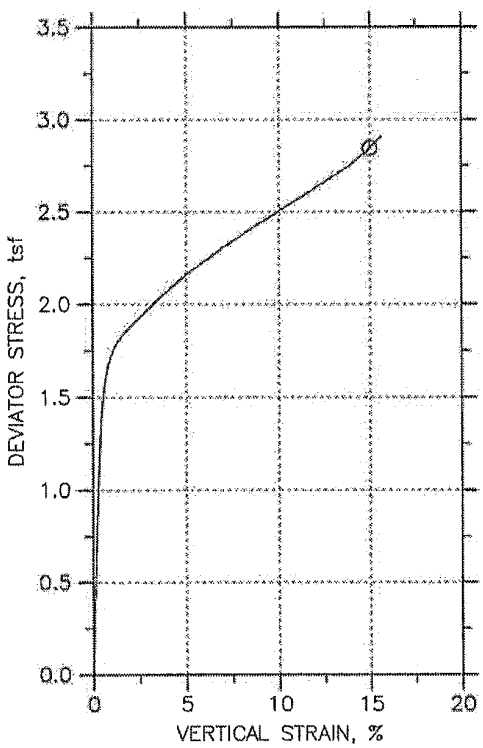
Phase calculations based on start of test.

Tue, 05-MAY-2009 12:00:19

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| | | | | |
|---|---|---|---|---|
| Symbol | ⦶ | | | |
| Sample No. | UD-17 | | | |
| Test No. | 9576 | | | |
| Depth | 289.0-291.5 | | | |
| Tested by | JW | | | |
| Test Date | 4/29/09 | | | |
| Checked by | JCF | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.863 | | | |
| Height, in | 5.561 | | | |
| Water Content, % | 21.3 | | | |
| Dry Density, pcf | 105.3 | | | |
| Saturation, % | 95.7 | | | |
| Void Ratio | 0.6 | | | |
| Confining Stress, tsf | 10 | | | |
| Undrained Strength, tsf | 1.422 | | | |
| Max. Dev. Stress, tsf | 2.844 | | | |
| Strain at Failure, % | 15 | | | |
| Strain Rate, %/min | 1 | | | |
| Estimated Specific Gravity | 2.7 | | | |
| Liquid Limit | 47 | | | |
| Plastic Limit | 24 | | | |
| Plasticity Index | 23 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3101UD, UD-17

Project No.: 6468071777

Boring No.: B-3101UD

Sample Type: Undisturbed

Description: Light Gray mottled Brownish Yellow Lean CLAY (CL)

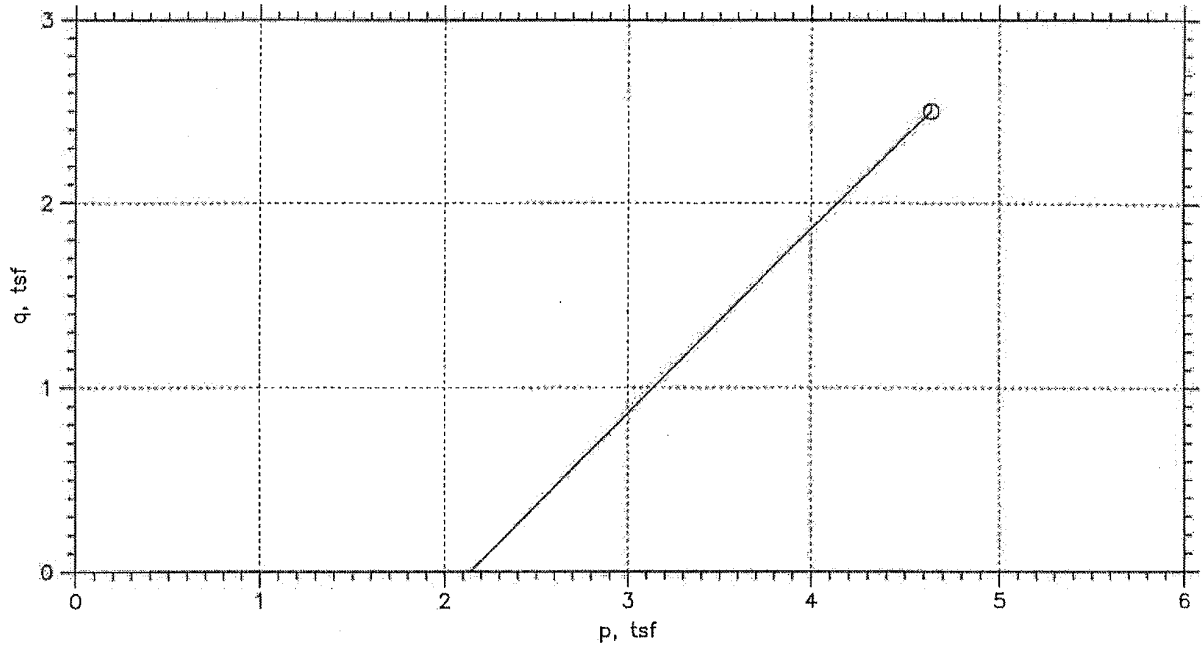
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

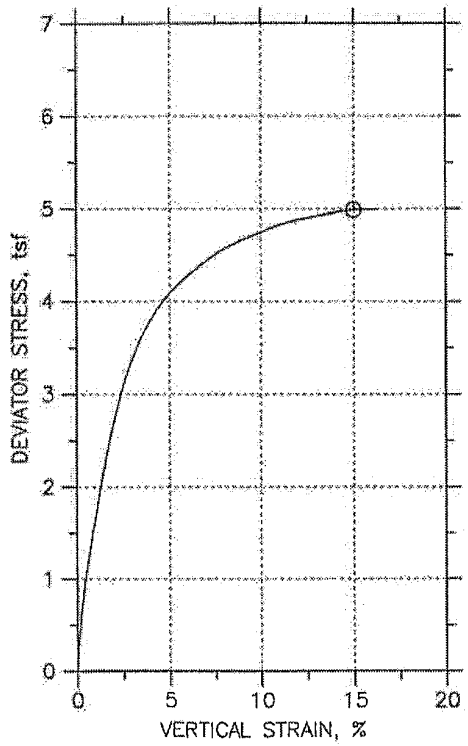
Phase calculations based on start of test.

Tue, 05-MAY-2009 12:00:43

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| | | | | |
|---|---|---|---|---|
| Symbol | ⊙ | | | |
| Sample No. | UD-2 | | | |
| Test No. | 9561 | | | |
| Depth | 35.0-36.6' | | | |
| Tested by | JW | | | |
| Test Date | 4/16/09 | | | |
| Checked by | DEJ | | | |
| Check Date | 5/4/09 | | | |
| Diameter, in | 2.87 | | | |
| Height, in | 5.966 | | | |
| Water Content, % | 15.5 | | | |
| Dry Density, pcf | 114.9 | | | |
| Saturation, % | 88.5 | | | |
| Void Ratio | 0.477 | | | |
| Confining Stress, tsf | 2.142 | | | |
| Undrained Strength, tsf | 2.494 | | | |
| Max. Dev. Stress, tsf | 4.988 | | | |
| Strain at Failure, % | 15 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.72 | | | |
| Liquid Limit | 36 | | | |
| Plastic Limit | 15 | | | |
| Plasticity Index | 21 | | | |

MACTEC

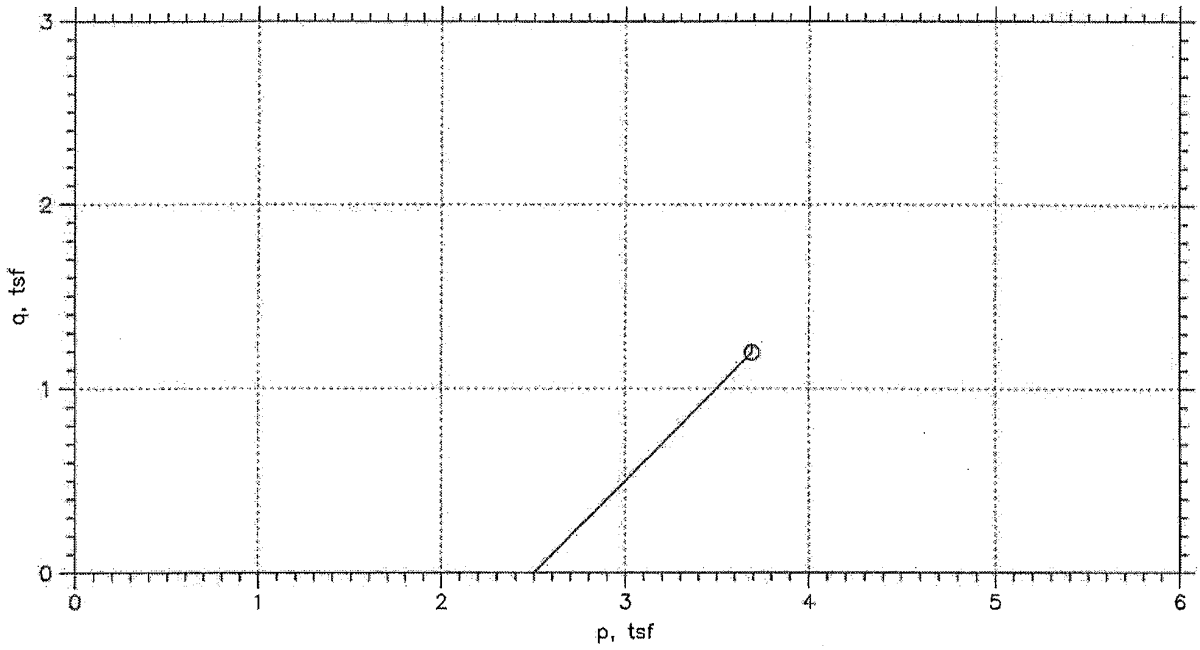
Project: Exelon Texas COL SI
Location: B-3234UD, UD-2
Project No.: 6468071777
Boring No.: B-3234UD
Sample Type: Undisturbed
Description: Very Pale Brown Sandy Lean CLAY (CL)
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

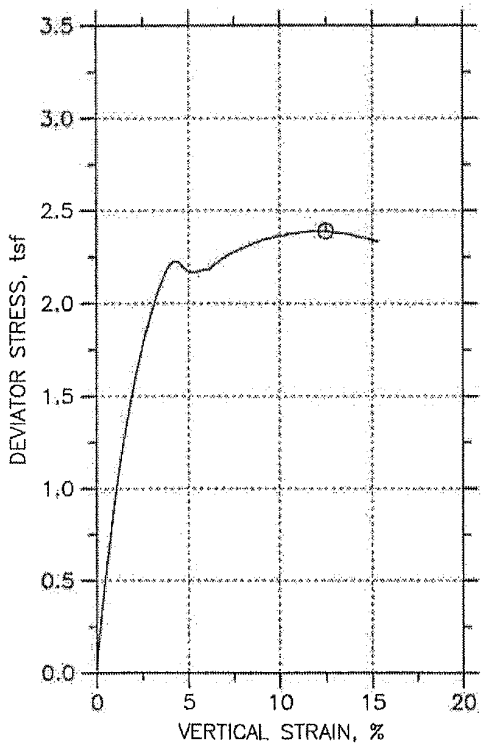
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:16:36

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊕ | | | |
|---|---|---|---|---|
| Sample No. | UD-4 | | | |
| Test No. | 9562 | | | |
| Depth | 53.8-55.4' | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | JEJ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.832 | | | |
| Height, in | 5.984 | | | |
| Water Content, % | 28.6 | | | |
| Dry Density, pcf | 92.27 | | | |
| Saturation, % | 93.1 | | | |
| Void Ratio | 0.834 | | | |
| Confining Stress, tsf | 2.5 | | | |
| Undrained Strength, tsf | 1.194 | | | |
| Max. Dev. Stress, tsf | 2.388 | | | |
| Strain at Failure, % | 12.5 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.71 | | | |
| Liquid Limit | 78 | | | |
| Plastic Limit | 26 | | | |
| Plasticity Index | 52 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3234UD, UD-4

Project No.: 6468071777

Boring No.: B-3234UD

Sample Type: Undisturbed

Description: Light Gray mottled Brownish Yellow Fat CLAY (CH)

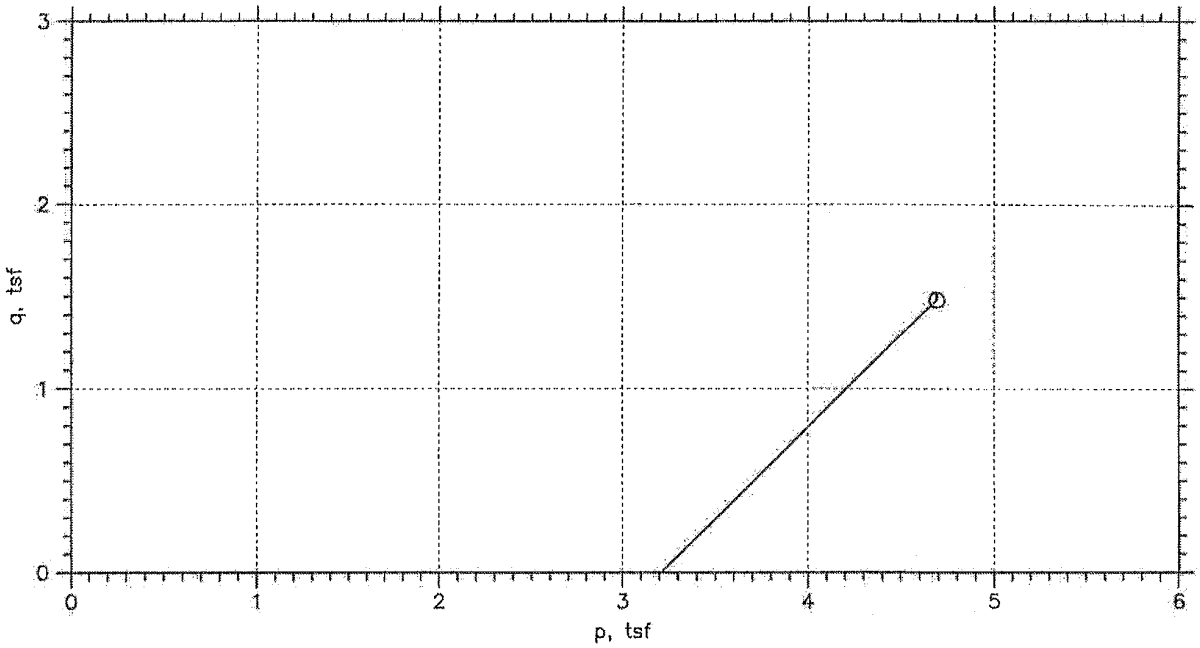
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

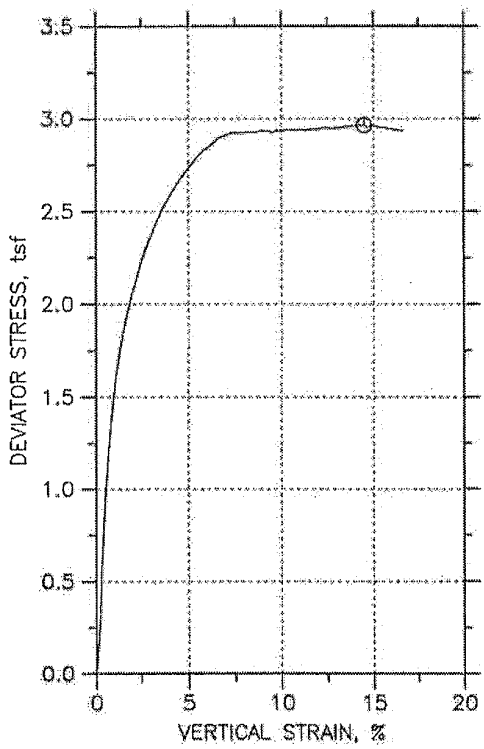
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:21:26

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊕ | | | |
|---|---|---|---|---|
| Sample No. | UD-5 | | | |
| Test No. | 9563 | | | |
| Depth | 70.0-71.6 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | 9SS | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.872 | | | |
| Height, in | 5.586 | | | |
| Water Content, % | 32.7 | | | |
| Dry Density, pcf | 88.21 | | | |
| Saturation, % | 94.7 | | | |
| Void Ratio | 0.953 | | | |
| Confining Stress, tsf | 3.21 | | | |
| Undrained Strength, tsf | 1.482 | | | |
| Max. Dev. Stress, tsf | 2.965 | | | |
| Strain at Failure, % | 14.5 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.76 | | | |
| Liquid Limit | 79 | | | |
| Plastic Limit | 31 | | | |
| Plasticity Index | 48 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3234UD, UD-5

Project No.: 6468071777

Boring No.: B-3234UD

Sample Type: Undisturbed

Description: Light Gray mottled Brownish Yellow Fat CLAY (CH)

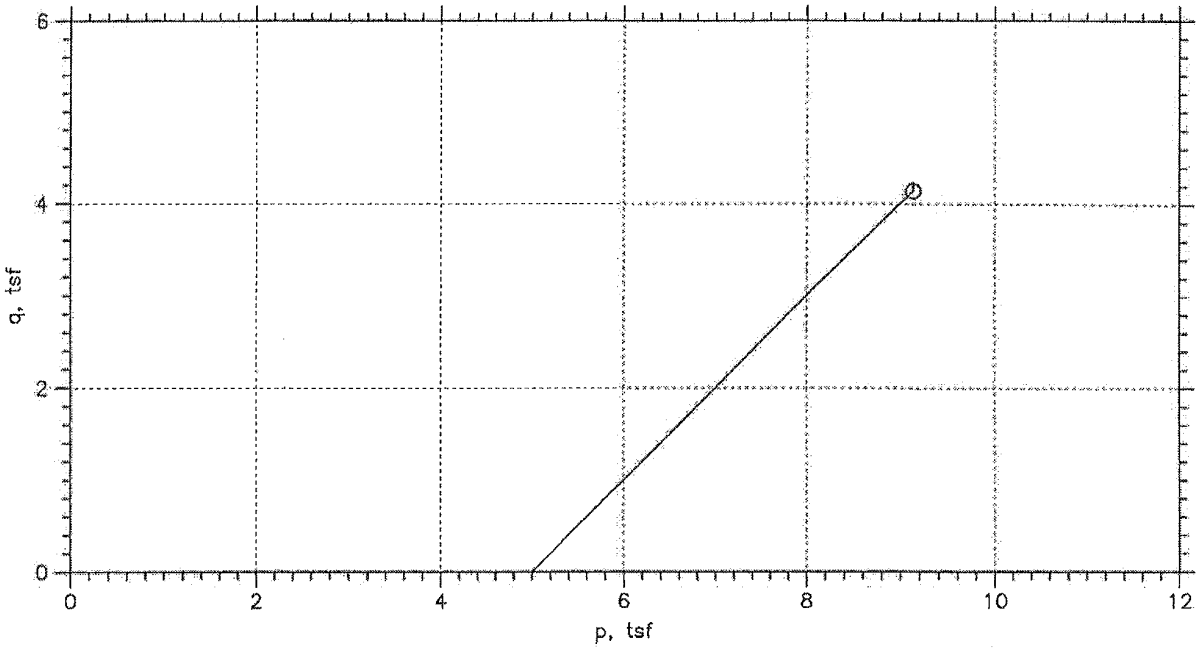
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

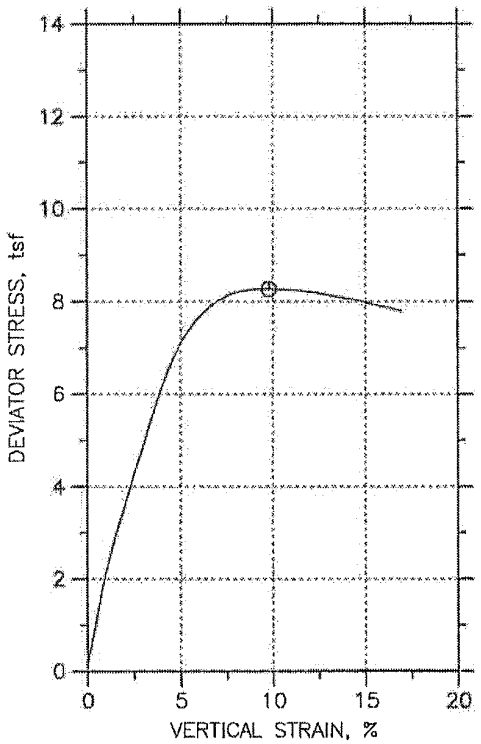
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:24:52

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊕ | | | |
|---|---|---|---|---|
| Sample No. | UD-8 | | | |
| Test No. | 9564 | | | |
| Depth | 125.0-126.6 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | DEF | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.861 | | | |
| Height, in | 5.967 | | | |
| Water Content, % | 19.2 | | | |
| Dry Density, pcf | 109.5 | | | |
| Saturation, % | 95.6 | | | |
| Void Ratio | 0.545 | | | |
| Confining Stress, tsf | 5 | | | |
| Undrained Strength, tsf | 4.135 | | | |
| Max. Dev. Stress, tsf | 8.27 | | | |
| Strain at Failure, % | 9.79 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.71 | | | |
| Liquid Limit | 56 | | | |
| Plastic Limit | 18 | | | |
| Plasticity Index | 38 | | | |

MACTEC

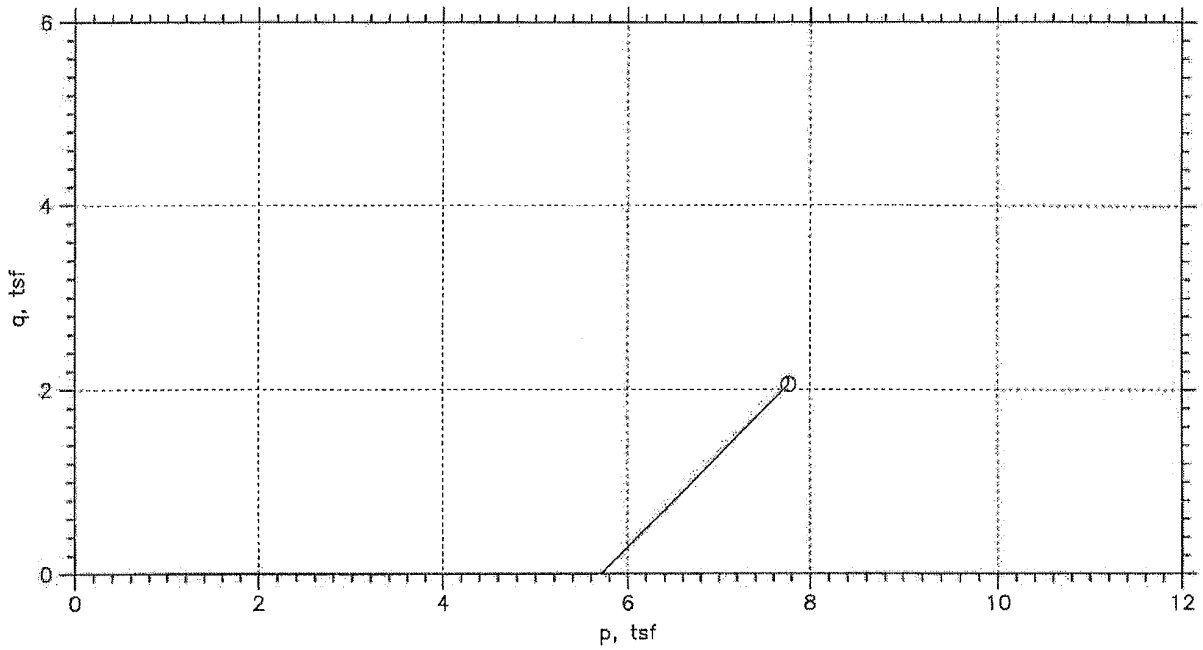
Project: Exelon Phase III COL
Location: B-3234UD, UD-8
Project No.: 6468071777
Boring No.: B-3234UD
Sample Type: Undisturbed
Description: Light Gray mottled Brownish Yellow Fat CLAY (CH)
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

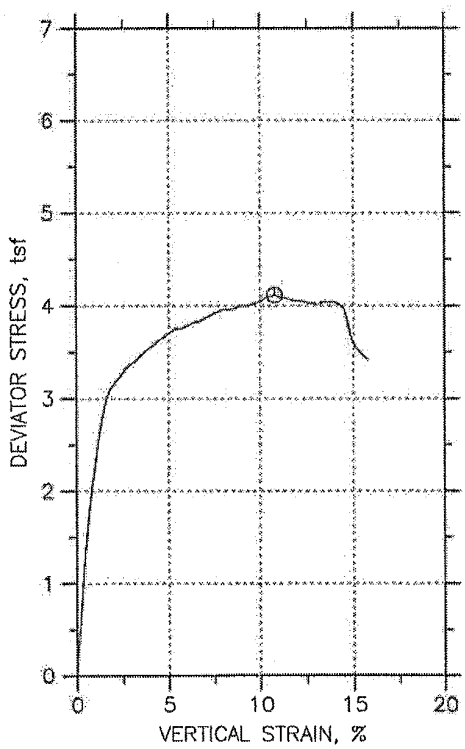
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:28:11

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊙ | | | |
|---|---|---|---|---|
| Sample No. | UD-9 | | | |
| Test No. | 9565 | | | |
| Depth | 150.0-151.6 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | DEJ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.865 | | | |
| Height, in | 5.956 | | | |
| Water Content, % | 22.2 | | | |
| Dry Density, pcf | 102.9 | | | |
| Saturation, % | 94.6 | | | |
| Void Ratio | 0.632 | | | |
| Confining Stress, tsf | 5.71 | | | |
| Undrained Strength, tsf | 2.055 | | | |
| Max. Dev. Stress, tsf | 4.11 | | | |
| Strain at Failure, % | 10.8 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.69 | | | |
| Liquid Limit | 50 | | | |
| Plastic Limit | 18 | | | |
| Plasticity Index | 32 | | | |

MACTEC

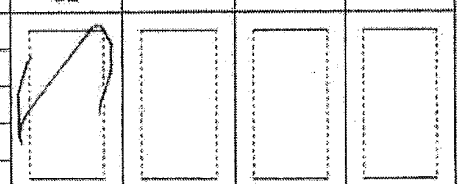
Project: Exelon Texas COL SI

Location: B-3234UD, UD-9

Project No.: 6468071777

Boring No.: B-3234UD

Sample Type: Undisturbed



Description: Light Gray mottled Brownish Yellow Fat CLAY (CH)

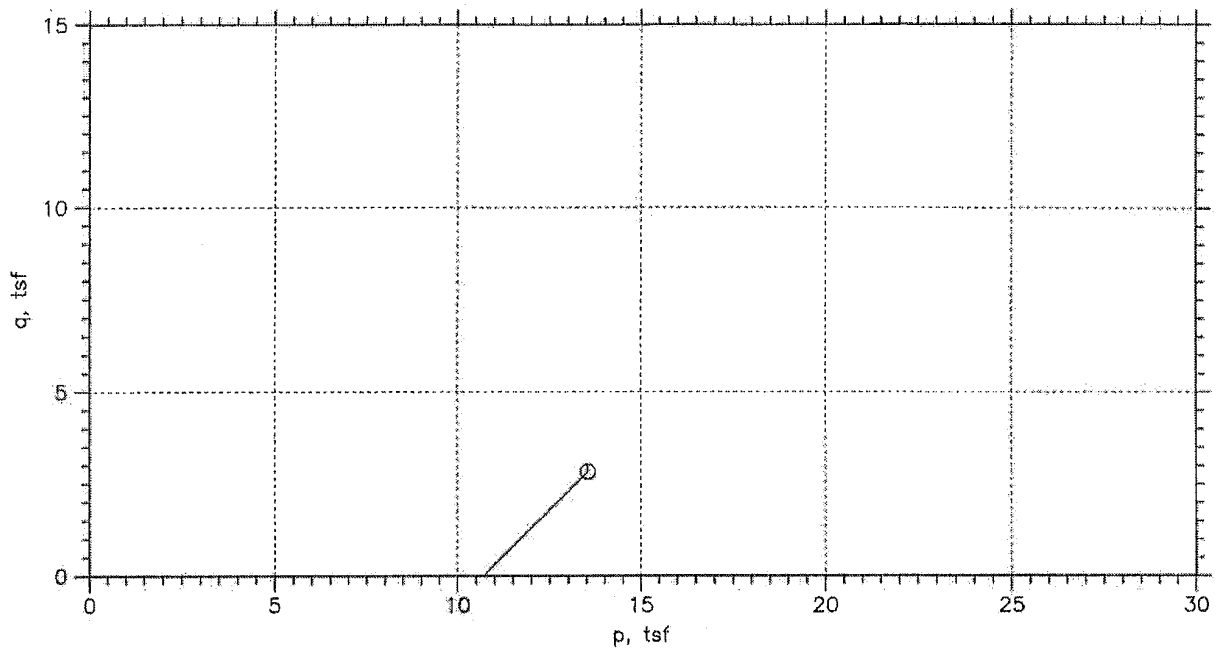
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

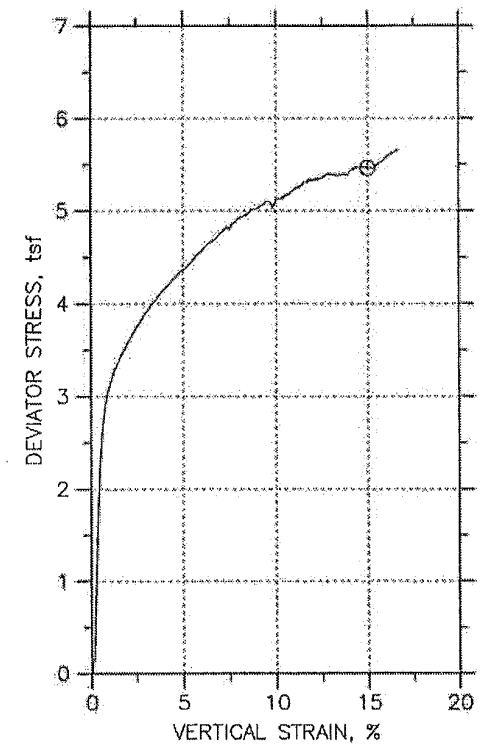
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:30:34

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| | | | | |
|---|---|---|---|---|
| Symbol | ⊙ | | | |
| Sample No. | UD-16 | | | |
| Test No. | 9566 | | | |
| Depth | 305.0-307.3 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | JGS | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.874 | | | |
| Height, in | 5.966 | | | |
| Water Content, % | 23.6 | | | |
| Dry Density, pcf | 102.1 | | | |
| Saturation, % | 95.8 | | | |
| Void Ratio | 0.675 | | | |
| Confining Stress, tsf | 10.71 | | | |
| Undrained Strength, tsf | 2.731 | | | |
| Max. Dev. Stress, tsf | 5.462 | | | |
| Strain at Failure, % | 15 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.74 | | | |
| Liquid Limit | 67 | | | |
| Plastic Limit | 23 | | | |
| Plasticity Index | 44 | | | |

MACTEC

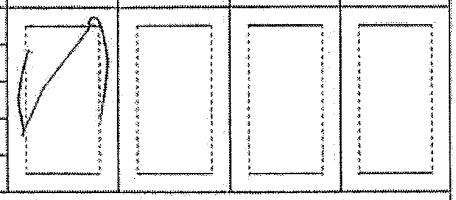
Project: Exelon Texas COL SI

Location: B-3234UD, UD-16

Project No.: 6468071777

Boring No.: B-3234UD

Sample Type: Undisturbed



Description: Very Pale Brown mottled Brownish Yellow Fat CLAY (CH)

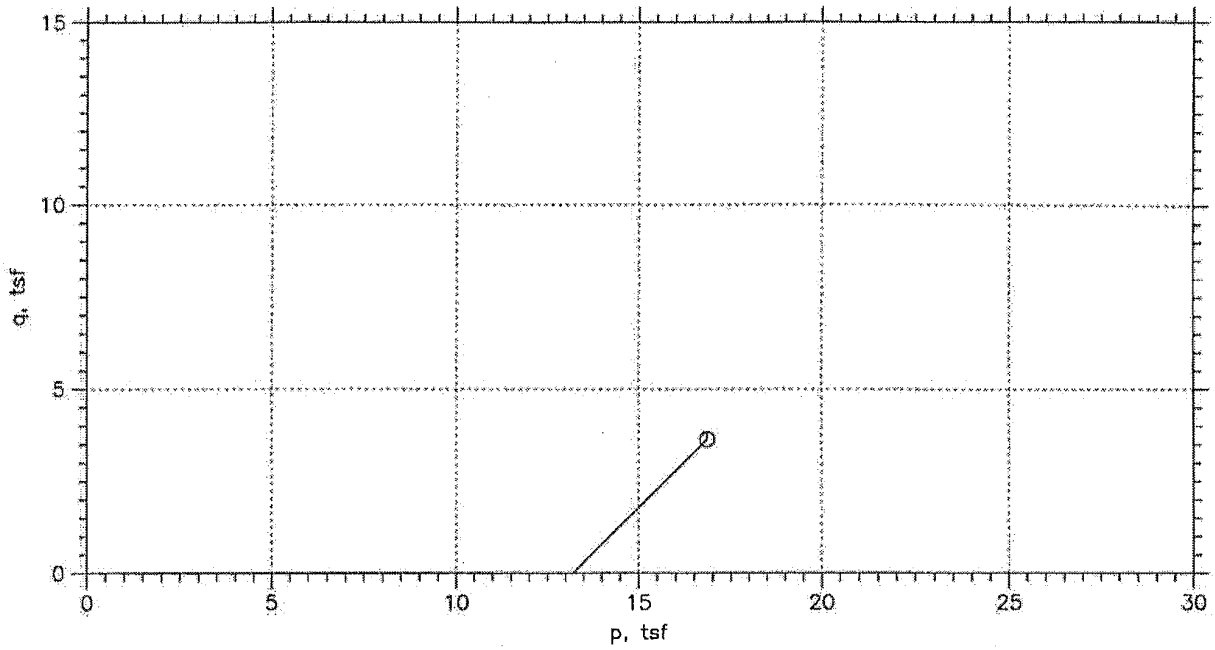
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

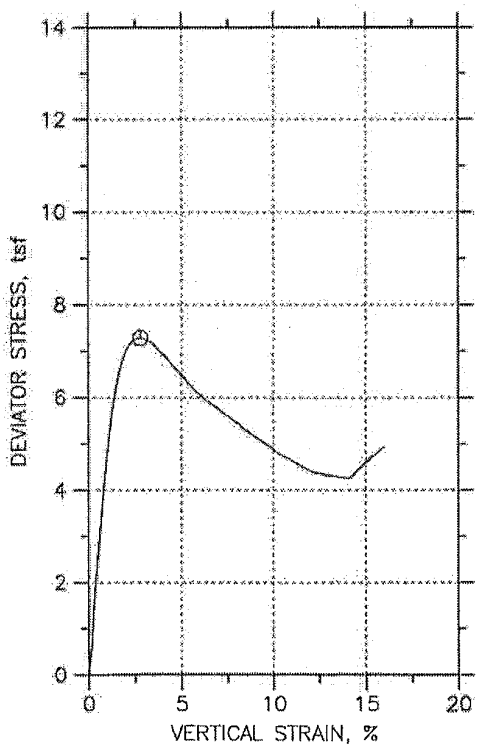
Phase calculations based on start of test.

Tue, 05-MAY-2009 11:33:07

DSC 5-5-09

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850




| Symbol | ⊕ | | | |
|---|---|---|---|---|
| Sample No. | UD-19 | | | |
| Test No. | 9567 | | | |
| Depth | 393.0-394.8 | | | |
| Tested by | JW | | | |
| Test Date | 4/17/09 | | | |
| Checked by | JEJ | | | |
| Check Date | 5/5/09 | | | |
| Diameter, in | 2.865 | | | |
| Height, in | 5.82 | | | |
| Water Content, % | 31.0 | | | |
| Dry Density, pcf | 86.65 | | | |
| Saturation, % | 87.0 | | | |
| Void Ratio | 0.981 | | | |
| Confining Stress, tsf | 13.21 | | | |
| Undrained Strength, tsf | 3.64 | | | |
| Max. Dev. Stress, tsf | 7.28 | | | |
| Strain at Failure, % | 2.78 | | | |
| Strain Rate, %/min | 1 | | | |
| Measured Specific Gravity | 2.75 | | | |
| Liquid Limit | 68 | | | |
| Plastic Limit | 30 | | | |
| Plasticity Index | 38 | | | |

MACTEC

Project: Exelon Texas COL SI

Location: B-3234UD, UD-19

Project No.: 6468071777

Boring No.: B-3234UD

Sample Type: Undisturbed

Description: Pale Yellow Fat CLAY (CH)

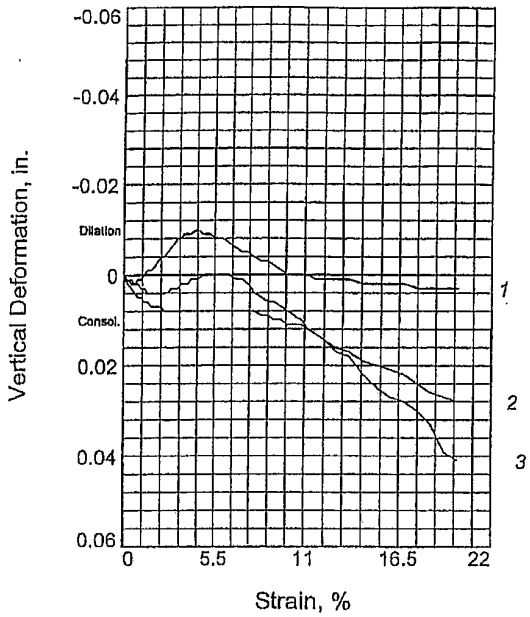
Remarks: By ASTM D2850-03a 2007 Membrane correction not applied

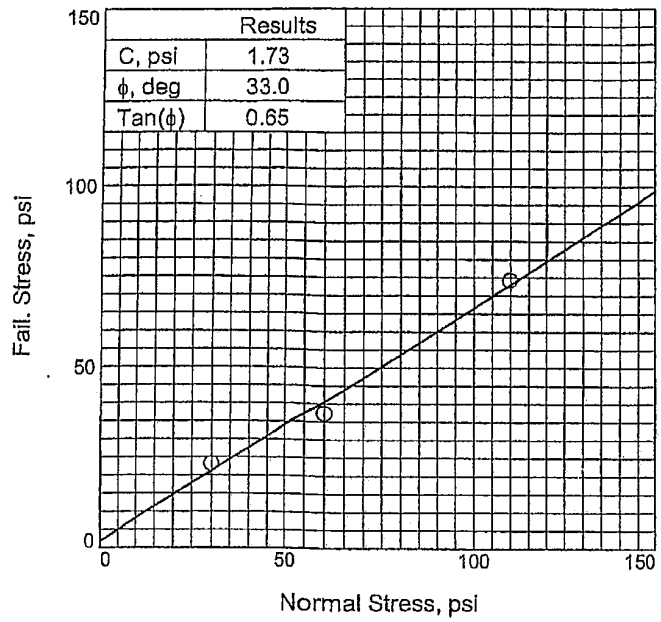
Phase calculations based on start of test.

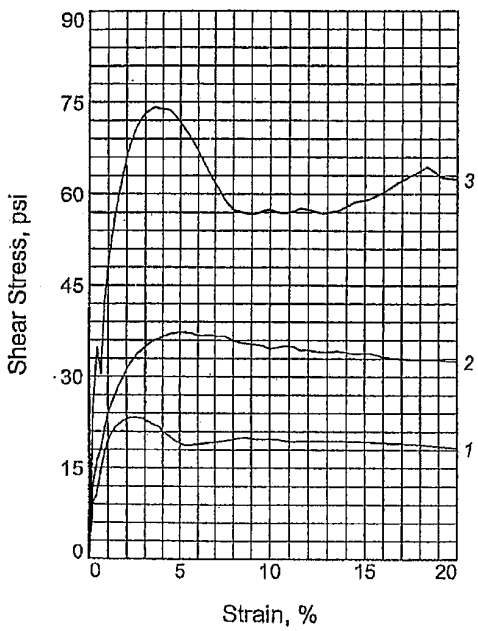
Tue, 05-MAY-2009 11:34:46

DSC 5-5-09

# Direct Shear Tests




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 17.2 | 14.3 | 15.7 |
| | Dry Density, pcf | 112.3 | 106.8 | 115.7 |
| | Saturation, % | 92.9 | 66.8 | 92.8 |
| | Void Ratio | 0.5008 | 0.5780 | 0.4569 |
| | Diameter, in. | 2.50 | 2.50 | 2.50 |
| | Height, in. | 0.93 | 0.93 | 0.93 |
| At Test | Water Content, % | 17.6 | 17.8 | 16.3 |
| | Dry Density, pcf | 113.4 | 108.8 | 118.1 |
| | Saturation, % | | | |
| | Void Ratio | | NA | |
| | Diameter, in. | | | |
| | Height, in. | | | |
| Normal Stress, psi | | 30.00 | 60.00 | 109.90 |
| Fail. Stress, psi | | 23.27 | 37.29 | 74.24 |
| Strain, % | | 2.6 | 5.2 | 3.6 |
| Ult. Stress, psi | | | | |
| Strain, % | | | | |
| Strain rate, in./min. | | 0.01 | 0.01 | 0.01 |

**Sample Type:** Undisturbed
**Description:** Very Pale Brown Silty SAND

**LL=** 17 **PL=** 16 **PI=** 1
**Assumed Specific Gravity=** 2.70
**Remarks:** ASTM D3080-04
Direct Shear Machine-Soil Test D-120-B

Figure MA 5-13-09

**Client:** Bechtel

**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Location:** B-3101 UD
**Sample Number:** UD-6 **Depth:** 100.0'-102.5'
Proj. No.: 6468-07-1777 **Date Sampled:** 2-19-09

DIRECT SHEAR TEST REPORT

MACTEC Engineering and Consulting, Inc.

**Tested By:** J Alexander **Checked By:** D Kopitsky

DSC 8-4-09

# DIRECT SHEAR TEST

5/12/2009

| | |
|---|---|
| Date: | 2-19-09 |
| Client: | Bechtel |
| Project: | Exelon Texas COL Project - Supplemental Investigation, including UHS |
| Project No.: | 6468-07-1777 |
| Location: | B-3101 UD |
| Depth: | 100.0'-102.5' |
| Sample Number: | UD-6 |
| Description: | Very Pale Brown Silty SAND |
| Remarks: | ASTM D3080-04 |
| | Direct Shear Machine-Soil Test D-120-B |
| Type of Sample: | Undisturbed |

Assumed Specific Gravity=2.70 LL=17 PL=16 PI=1

## Parameters for Specimen No. 1

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 128.990 | | 150.040 |
| Moisture content: Dry soil+tare, gms. | 111.010 | | 128.590 |
| Moisture content: Tare, gms. | 6.700 | | 6.840 |
| Moisture, % | 17.2 | 17.6 | 17.6 |
| Moist specimen weight, gms. | 158.6 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.01 | |
| Wet Density, pcf | 131.7 | 133.4 | |
| Dry density, pcf | 112.3 | 113.4 | |
| Void ratio | 0.5008 | | |
| Saturation, % | 92.9 | | |

## Test Readings for Specimen No. 1

Normal stress = 30.0 psi

Strain rate, in./min. = 0.01

Fail. Stress = 23.27 psi at reading no. 13

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4900 |
| 1 | 0.0050 | 44.300 | 44.3 | 0.2 | 9.02 | 0.4890 |
| 2 | 0.0100 | 52.700 | 52.7 | 0.4 | 10.73 | 0.4890 |
| 3 | 0.0150 | 72.300 | 72.3 | 0.6 | 14.72 | 0.4880 |
| 4 | 0.0200 | 85.200 | 85.2 | 0.8 | 17.34 | 0.4890 |
| 5 | 0.0250 | 94.300 | 94.3 | 1.0 | 19.20 | 0.4890 |
| 6 | 0.0300 | 100.900 | 100.9 | 1.2 | 20.54 | 0.4900 |
| 7 | 0.0350 | 105.900 | 105.9 | 1.4 | 21.56 | 0.4910 |
| 8 | 0.0400 | 109.100 | 109.1 | 1.6 | 22.21 | 0.4910 |
| 9 | 0.0450 | 111.400 | 111.4 | 1.8 | 22.68 | 0.4920 |
| 10 | 0.0500 | 112.800 | 112.8 | 2.0 | 22.96 | 0.4930 |
| 11 | 0.0550 | 114.000 | 114.0 | 2.2 | 23.21 | 0.4940 |
| 12 | 0.0600 | 114.200 | 114.2 | 2.4 | 23.25 | 0.4940 |
| 13 | 0.0650 | 114.300 | 114.3 | 2.6 | 23.27 | 0.4950 |

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MA 5-13-09

DSC 8-4-09

## Test Readings for Specimen No. 1

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 14 | 0.0700 | 113.800 | 113.8 | 2.8 | 23.16 | 0.4960 |
| 15 | 0.0750 | 112.800 | 112.8 | 3.0 | 22.96 | 0.4970 |
| 16 | 0.0800 | 111.100 | 111.1 | 3.2 | 22.62 | 0.4980 |
| 17 | 0.0850 | 109.400 | 109.4 | 3.4 | 22.27 | 0.4980 |
| 18 | 0.0900 | 108.000 | 108.0 | 3.6 | 21.98 | 0.4990 |
| 19 | 0.0950 | 106.800 | 106.8 | 3.8 | 21.74 | 0.4990 |
| 20 | 0.1000 | 103.600 | 103.6 | 4.0 | 21.09 | 0.4990 |
| 21 | 0.1100 | 99.200 | 99.2 | 4.4 | 20.19 | 0.5000 |
| 22 | 0.1200 | 95.100 | 95.1 | 4.8 | 19.36 | 0.4990 |
| 23 | 0.1300 | 92.200 | 92.2 | 5.2 | 18.77 | 0.4990 |
| 24 | 0.1400 | 92.300 | 92.3 | 5.6 | 18.79 | 0.4980 |
| 25 | 0.1500 | 92.800 | 92.8 | 6.0 | 18.89 | 0.4980 |
| 26 | 0.1600 | 93.500 | 93.5 | 6.4 | 19.03 | 0.4970 |
| 27 | 0.1700 | 94.200 | 94.2 | 6.8 | 19.17 | 0.4960 |
| 28 | 0.1800 | 95.100 | 95.1 | 7.2 | 19.36 | 0.4950 |
| 29 | 0.1900 | 95.700 | 95.7 | 7.6 | 19.48 | 0.4950 |
| 30 | 0.2000 | 96.800 | 96.8 | 8.0 | 19.70 | 0.4940 |
| 31 | 0.2100 | 97.900 | 97.9 | 8.4 | 19.93 | 0.4930 |
| 32 | 0.2200 | 98.200 | 98.2 | 8.8 | 19.99 | 0.4930 |
| 33 | 0.2300 | 97.100 | 97.1 | 9.2 | 19.77 | 0.4920 |
| 34 | 0.2400 | 97.100 | 97.1 | 9.6 | 19.77 | 0.4910 |
| 35 | 0.2500 | 97.000 | 97.0 | 10.0 | 19.74 | 0.4900 |
| 36 | 0.2600 | 96.800 | 96.8 | 10.4 | 19.70 | 0.4900 |
| 37 | 0.2700 | 95.600 | 95.6 | 10.8 | 19.46 | 0.4900 |
| 38 | 0.2800 | 95.100 | 95.1 | 11.2 | 19.36 | 0.4900 |
| 39 | 0.2900 | 95.200 | 95.2 | 11.6 | 19.38 | 0.4890 |
| 40 | 0.3000 | 95.300 | 95.3 | 12.0 | 19.40 | 0.4890 |
| 41 | 0.3200 | 95.400 | 95.4 | 12.8 | 19.42 | 0.4890 |
| 42 | 0.3400 | 95.300 | 95.3 | 13.6 | 19.40 | 0.4890 |
| 43 | 0.3600 | 95.000 | 95.0 | 14.4 | 19.34 | 0.4880 |
| 44 | 0.3800 | 94.800 | 94.8 | 15.2 | 19.30 | 0.4880 |
| 45 | 0.4000 | 94.000 | 94.0 | 16.0 | 19.13 | 0.4880 |
| 46 | 0.4200 | 93.500 | 93.5 | 16.8 | 19.03 | 0.4880 |
| 47 | 0.4400 | 93.000 | 93.0 | 17.6 | 18.93 | 0.4870 |
| 48 | 0.4600 | 92.200 | 92.2 | 18.4 | 18.77 | 0.4870 |
| 49 | 0.4800 | 91.000 | 91.0 | 19.2 | 18.52 | 0.4870 |
| 50 | 0.5000 | 90.000 | 90.0 | 20.0 | 18.32 | 0.4870 |

## Parameters for Specimen No. 2

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 222.970 | | 253.000 |
| Moisture content: Dry soil+tare, gms. | 209.470 | | 230.950 |
| Moisture content: Tare, gms. | 115.000 | | 106.820 |
| Moisture, % | 14.3 | 17.8 | 17.8 |
| Moist specimen weight, gms. | 147.0 | | |
| Diameter, in. | 2.50 | | |
| Area, in.² | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 122.1 | 128.1 | |
| Dry density, pcf | 106.8 | 108.8 | |
| Void ratio | 0.5780 | | |
| Saturation, % | 66.8 | | |

## Test Readings for Specimen No. 2

Normal stress = 60.0 psi

Strain rate, in./min. = 0.01

Fail. Stress = 37.29 psi at reading no. 23

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4800 |
| 1 | 0.0050 | 59.900 | 59.9 | 0.2 | 12.19 | 0.4780 |
| 2 | 0.0100 | 79.000 | 79.0 | 0.4 | 16.08 | 0.4770 |
| 3 | 0.0150 | 89.000 | 89.0 | 0.6 | 18.12 | 0.4760 |
| 4 | 0.0200 | 104.300 | 104.3 | 0.8 | 21.23 | 0.4750 |
| 5 | 0.0250 | 116.300 | 116.3 | 1.0 | 23.67 | 0.4750 |
| 6 | 0.0300 | 124.700 | 124.7 | 1.2 | 25.38 | 0.4740 |
| 7 | 0.0350 | 132.500 | 132.5 | 1.4 | 26.97 | 0.4740 |
| 8 | 0.0400 | 139.900 | 139.9 | 1.6 | 28.48 | 0.4730 |
| 9 | 0.0450 | 146.200 | 146.2 | 1.8 | 29.76 | 0.4730 |
| 10 | 0.0500 | 152.400 | 152.4 | 2.0 | 31.02 | 0.4730 |
| 11 | 0.0550 | 157.600 | 157.6 | 2.2 | 32.08 | 0.4730 |
| 12 | 0.0600 | 161.600 | 161.6 | 2.4 | 32.89 | 0.4720 |
| 13 | 0.0650 | 166.000 | 166.0 | 2.6 | 33.79 | 0.4720 |
| 14 | 0.0700 | 168.300 | 168.3 | 2.8 | 34.26 | 0.4720 |
| 15 | 0.0750 | 170.700 | 170.7 | 3.0 | 34.75 | 0.4720 |
| 16 | 0.0800 | 173.400 | 173.4 | 3.2 | 35.30 | 0.4720 |
| 17 | 0.0850 | 175.600 | 175.6 | 3.4 | 35.74 | 0.4720 |
| 18 | 0.0900 | 176.800 | 176.8 | 3.6 | 35.99 | 0.4720 |
| 19 | 0.0950 | 178.000 | 178.0 | 3.8 | 36.23 | 0.4720 |
| 20 | 0.1000 | 179.300 | 179.3 | 4.0 | 36.50 | 0.4720 |
| 21 | 0.1100 | 181.500 | 181.5 | 4.4 | 36.95 | 0.4720 |
| 22 | 0.1200 | 182.700 | 182.7 | 4.8 | 37.19 | 0.4720 |
| 23 | 0.1300 | 183.200 | 183.2 | 5.2 | 37.29 | 0.4720 |
| 24 | 0.1400 | 182.400 | 182.4 | 5.6 | 37.13 | 0.4720 |
| 25 | 0.1500 | 180.600 | 180.6 | 6.0 | 36.76 | 0.4720 |
| 26 | 0.1600 | 180.200 | 180.2 | 6.4 | 36.68 | 0.4720 |
| 27 | 0.1700 | 180.800 | 180.8 | 6.8 | 36.80 | 0.4720 |
| 28 | 0.1800 | 179.500 | 179.5 | 7.2 | 36.54 | 0.4720 |

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## Test Readings for Specimen No. 2

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 179.800 | 179.8 | 7.6 | 36.60 | 0.4720 |
| 30 | 0.2000 | 176.500 | 176.5 | 8.0 | 35.93 | 0.4720 |
| 31 | 0.2100 | 174.800 | 174.8 | 8.4 | 35.58 | 0.4710 |
| 32 | 0.2200 | 173.900 | 173.9 | 8.8 | 35.40 | 0.4710 |
| 33 | 0.2300 | 173.000 | 173.0 | 9.2 | 35.22 | 0.4700 |
| 34 | 0.2400 | 172.400 | 172.4 | 9.6 | 35.09 | 0.4700 |
| 35 | 0.2500 | 169.800 | 169.8 | 10.0 | 34.56 | 0.4690 |
| 36 | 0.2600 | 170.800 | 170.8 | 10.4 | 34.77 | 0.4690 |
| 37 | 0.2700 | 172.000 | 172.0 | 10.8 | 35.01 | 0.4690 |
| 38 | 0.2800 | 171.700 | 171.7 | 11.2 | 34.95 | 0.4680 |
| 39 | 0.2900 | 168.700 | 168.7 | 11.6 | 34.34 | 0.4670 |
| 40 | 0.3000 | 168.800 | 168.8 | 12.0 | 34.36 | 0.4660 |
| 41 | 0.3200 | 167.000 | 167.0 | 12.8 | 33.99 | 0.4640 |
| 42 | 0.3400 | 168.000 | 168.0 | 13.6 | 34.20 | 0.4630 |
| 43 | 0.3600 | 165.600 | 165.6 | 14.4 | 33.71 | 0.4610 |
| 44 | 0.3800 | 166.300 | 166.3 | 15.2 | 33.85 | 0.4600 |
| 45 | 0.4000 | 163.300 | 163.3 | 16.0 | 33.24 | 0.4590 |
| 46 | 0.4200 | 162.100 | 162.1 | 16.8 | 33.00 | 0.4580 |
| 47 | 0.4400 | 160.900 | 160.9 | 17.6 | 32.75 | 0.4560 |
| 48 | 0.4600 | 161.300 | 161.3 | 18.4 | 32.83 | 0.4540 |
| 49 | 0.4800 | 160.200 | 160.2 | 19.2 | 32.61 | 0.4530 |
| 50 | 0.5000 | 159.600 | 159.6 | 20.0 | 32.49 | 0.4520 |

## Parameters for Specimen No. 3

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 141.500 | | 138.460 |
| Moisture content: Dry soil+tare, gms. | 124.180 | | 120.020 |
| Moisture content: Tare, gms. | 13.910 | | 6.810 |
| Moisture, % | 15.7 | 16.3 | 16.3 |
| Moist specimen weight, gms. | 161.2 | | |
| Diameter, in. | 2.50 | | |
| Area, in.² | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 133.9 | 137.3 | |
| Dry density, pcf | 115.7 | 118.1 | |
| Void ratio | 0.4569 | | |
| Saturation, % | 92.8 | | |

## Test Readings for Specimen No. 3

Normal stress = 109.9 psi

Strain rate, in./min. = 0.01

Fail. Stress = 74.24 psi at reading no. 18

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4740 |
| 1 | 0.0050 | 119.200 | 119.2 | 0.2 | 24.26 | 0.4730 |
| 2 | 0.0100 | 170.300 | 170.3 | 0.4 | 34.67 | 0.4720 |
| 3 | 0.0150 | 149.200 | 149.2 | 0.6 | 30.37 | 0.4720 |
| 4 | 0.0200 | 206.400 | 206.4 | 0.8 | 42.01 | 0.4720 |
| 5 | 0.0250 | 234.400 | 234.4 | 1.0 | 47.71 | 0.4710 |
| 6 | 0.0300 | 257.000 | 257.0 | 1.2 | 52.31 | 0.4710 |
| 7 | 0.0350 | 278.000 | 278.0 | 1.4 | 56.59 | 0.4700 |
| 8 | 0.0400 | 295.600 | 295.6 | 1.6 | 60.17 | 0.4700 |
| 9 | 0.0450 | 311.600 | 311.6 | 1.8 | 63.43 | 0.4700 |
| 10 | 0.0500 | 323.500 | 323.5 | 2.0 | 65.85 | 0.4700 |
| 11 | 0.0550 | 333.300 | 333.3 | 2.2 | 67.85 | 0.4700 |
| 12 | 0.0600 | 342.500 | 342.5 | 2.4 | 69.72 | 0.4700 |
| 13 | 0.0650 | 349.700 | 349.7 | 2.6 | 71.18 | 0.4700 |
| 14 | 0.0700 | 355.000 | 355.0 | 2.8 | 72.26 | 0.4710 |
| 15 | 0.0750 | 359.200 | 359.2 | 3.0 | 73.12 | 0.4710 |
| 16 | 0.0800 | 361.300 | 361.3 | 3.2 | 73.54 | 0.4710 |
| 17 | 0.0850 | 363.300 | 363.3 | 3.4 | 73.95 | 0.4720 |
| 18 | 0.0900 | 364.700 | 364.7 | 3.6 | 74.24 | 0.4720 |
| 19 | 0.0950 | 363.300 | 363.3 | 3.8 | 73.95 | 0.4720 |
| 20 | 0.1000 | 363.100 | 363.1 | 4.0 | 73.91 | 0.4730 |
| 21 | 0.1100 | 362.200 | 362.2 | 4.4 | 73.73 | 0.4730 |
| 22 | 0.1200 | 356.000 | 356.0 | 4.8 | 72.47 | 0.4740 |
| 23 | 0.1300 | 348.200 | 348.2 | 5.2 | 70.88 | 0.4740 |
| 24 | 0.1400 | 339.400 | 339.4 | 5.6 | 69.09 | 0.4740 |
| 25 | 0.1500 | 329.400 | 329.4 | 6.0 | 67.05 | 0.4740 |
| 26 | 0.1600 | 318.600 | 318.6 | 6.4 | 64.85 | 0.4740 |
| 27 | 0.1700 | 307.700 | 307.7 | 6.8 | 62.63 | 0.4730 |
| 28 | 0.1800 | 299.200 | 299.2 | 7.2 | 60.90 | 0.4730 |

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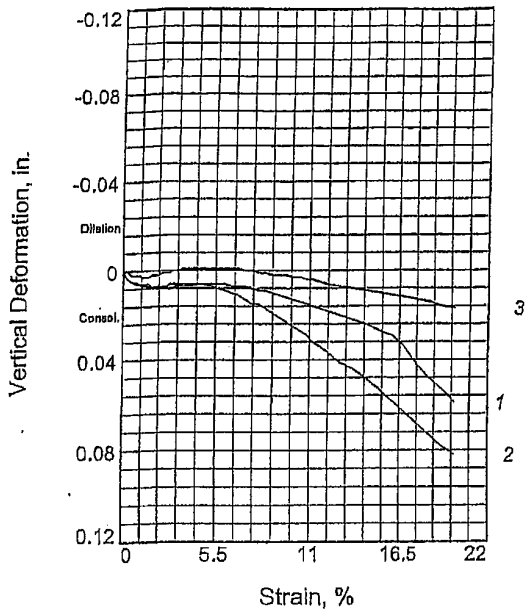
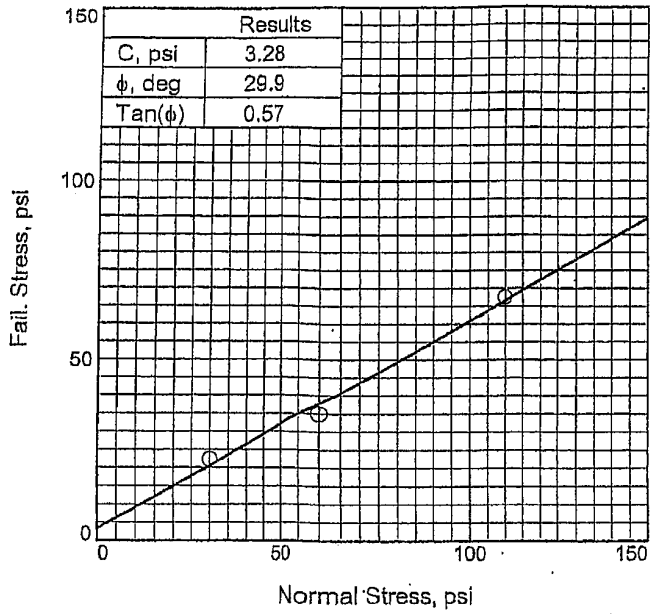
MA 5-13-09

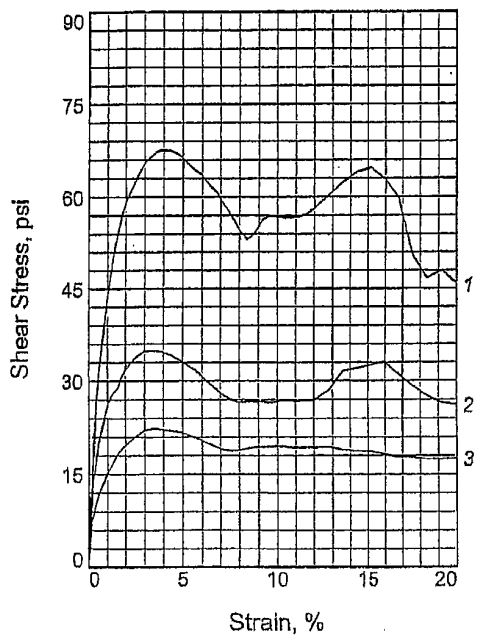
DSC 8489

## Test Readings for Specimen No. 3

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 288.800 | 288.8 | 7.6 | 58.79 | 0.4720 |
| 30 | 0.2000 | 281.800 | 281.8 | 8.0 | 57.36 | 0.4700 |
| 31 | 0.2100 | 280.800 | 280.8 | 8.4 | 57.16 | 0.4690 |
| 32 | 0.2200 | 278.500 | 278.5 | 8.8 | 56.69 | 0.4680 |
| 33 | 0.2300 | 278.600 | 278.6 | 9.2 | 56.71 | 0.4680 |
| 34 | 0.2400 | 280.900 | 280.9 | 9.6 | 57.18 | 0.4670 |
| 35 | 0.2500 | 282.200 | 282.2 | 10.0 | 57.44 | 0.4660 |
| 36 | 0.2600 | 279.900 | 279.9 | 10.4 | 56.98 | 0.4650 |
| 37 | 0.2700 | 278.900 | 278.9 | 10.8 | 56.77 | 0.4640 |
| 38 | 0.2800 | 280.600 | 280.6 | 11.2 | 57.12 | 0.4620 |
| 39 | 0.2900 | 282.900 | 282.9 | 11.6 | 57.59 | 0.4610 |
| 40 | 0.3000 | 282.200 | 282.2 | 12.0 | 57.44 | 0.4600 |
| 41 | 0.3200 | 278.900 | 278.9 | 12.8 | 56.77 | 0.4570 |
| 42 | 0.3400 | 281.300 | 281.3 | 13.6 | 57.26 | 0.4560 |
| 43 | 0.3600 | 287.900 | 287.9 | 14.4 | 58.60 | 0.4520 |
| 44 | 0.3800 | 290.300 | 290.3 | 15.2 | 59.09 | 0.4490 |
| 45 | 0.4000 | 296.000 | 296.0 | 16.0 | 60.25 | 0.4470 |
| 46 | 0.4200 | 303.800 | 303.8 | 16.8 | 61.84 | 0.4460 |
| 47 | 0.4400 | 309.900 | 309.9 | 17.6 | 63.08 | 0.4440 |
| 48 | 0.4600 | 316.600 | 316.6 | 18.4 | 64.45 | 0.4410 |
| 49 | 0.4800 | 307.800 | 307.8 | 19.2 | 62.65 | 0.4350 |
| 50 | 0.5000 | 306.500 | 306.5 | 20.0 | 62.39 | 0.4330 |




| | Sample No. | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 21.1 | 19.8 | 20.7 |
| | Dry Density, pcf | 105.8 | 104.0 | 103.5 |
| | Saturation, % | 95.7 | 86.0 | 89.1 |
| | Void Ratio | 0.5938 | 0.6201 | 0.6280 |
| | Diameter, in. | 2.50 | 2.50 | 2.50 |
| | Height, in. | 0.93 | 0.93 | 0.93 |
| At Test | Water Content, % | 21.3 | 25.6 | 25.1 |
| | Dry Density, pcf | 107.6 | 105.9 | 105.7 |
| | Saturation, % | | | |
| | Void Ratio | | NA | |
| | Diameter, in. | | | |
| | Height, in. | | | |
| | Normal Stress, psi | 109.90 | 60.00 | 30.00 |
| | Fail. Stress, psi | 67.54 | 34.89 | 22.33 |
| | Strain, % | 4.0 | 3.4 | 3.6 |
| | Ult. Stress, psi | | | |
| | Strain, % | | | |
| | Strain rate, in./min. | 0.01 | 0.01 | 0.01 |

**Sample Type:** Undisturbed
**Description:** Very Pale Brown Silty Fine to Medium Sand
LL= NI PI= NI
**Assumed Specific Gravity=** 2.70
**Remarks:** ASTM D3080-04
Direct Shear Machine-Soil Test Model D-120-B

**Figure** MA 5-5-09

**Client:** Bechtel

**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Location:** B-3234 UD
**Sample Number:** UD-7 **Depth:** 105.0'-107.5'
Proj. No.: 6468-07-1777 **Date Sampled:** NI

DIRECT SHEAR TEST REPORT

MACTEC Engineering and Consulting, Inc.

**Tested By:** J Alexander **Checked By:** D Kopitsky

# DIRECT SHEAR TEST

5/5/2009

| | |
|---|---|
| Date: | NI |
| Client: | Bechtel |
| Project: | Exelon Texas COL Project - Supplemental Investigation, including UHS |
| Project No.: | 6468-07-1777 |
| Location: | B-3234 UD |
| Depth: | 105.0'-107.5' Sample Number: UD-7 |
| Description: | Very Pale Brown Silty Fine to Medium Sand |
| Remarks: | ASTM D3080-04 |
| | Direct Shear Machine-Soil Test Model D-120-B |
| Type of Sample: | Undisturbed |

Assumed Specific Gravity=2.70 LL=NI PL= PI=NI

## Parameters for Specimen No. 1

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 169.400 | | 144.900 |
| Moisture content: Dry soil+tare, gms. | 142.300 | | 121.900 |
| Moisture content: Tare, gms. | 13.600 | | 13.720 |
| Moisture, % | 21.1 | 21.3 | 21.3 |
| Moist specimen weight, gms. | 154.2 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 128.0 | 130.5 | |
| Dry density, pcf | 105.8 | 107.6 | |
| Void ratio | 0.5938 | | |
| Saturation, % | 95.7 | | |

## Test Readings for Specimen No. 1

Normal stress = 109.9 psi

Strain rate, in./min. = 0.01

Fail. Stress = 67.54 psi at reading no. 20

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4770 |
| 1 | 0.0050 | 76.800 | 76.8 | 0.2 | 15.63 | 0.4740 |
| 2 | 0.0100 | 123.300 | 123.3 | 0.4 | 25.10 | 0.4730 |
| 3 | 0.0150 | 157.700 | 157.7 | 0.6 | 32.10 | 0.4720 |
| 4 | 0.0200 | 187.000 | 187.0 | 0.8 | 38.06 | 0.4710 |
| 5 | 0.0250 | 212.400 | 212.4 | 1.0 | 43.24 | 0.4710 |
| 6 | 0.0300 | 233.300 | 233.3 | 1.2 | 47.49 | 0.4700 |
| 7 | 0.0350 | 250.700 | 250.7 | 1.4 | 51.03 | 0.4700 |
| 8 | 0.0400 | 265.700 | 265.7 | 1.6 | 54.08 | 0.4700 |
| 9 | 0.0450 | 278.900 | 278.9 | 1.8 | 56.77 | 0.4690 |
| 10 | 0.0500 | 289.300 | 289.3 | 2.0 | 58.89 | 0.4690 |
| 11 | 0.0550 | 297.000 | 297.0 | 2.2 | 60.46 | 0.4690 |
| 12 | 0.0600 | 304.300 | 304.3 | 2.4 | 61.94 | 0.4690 |
| 13 | 0.0650 | 311.100 | 311.1 | 2.6 | 63.33 | 0.4690 |

MACTEC Engineering and Consulting, Inc.

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## Test Readings for Specimen No. 1

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 14 | 0.0700 | 316.500 | 316.5 | 2.8 | 64.43 | 0.4690 |
| 15 | 0.0750 | 320.800 | 320.8 | 3.0 | 65.30 | 0.4690 |
| 16 | 0.0800 | 324.300 | 324.3 | 3.2 | 66.01 | 0.4700 |
| 17 | 0.0850 | 327.300 | 327.3 | 3.4 | 66.62 | 0.4700 |
| 18 | 0.0900 | 329.900 | 329.9 | 3.6 | 67.15 | 0.4700 |
| 19 | 0.0950 | 331.400 | 331.4 | 3.8 | 67.46 | 0.4700 |
| 20 | 0.1000 | 331.800 | 331.8 | 4.0 | 67.54 | 0.4700 |
| 21 | 0.1100 | 331.700 | 331.7 | 4.4 | 67.52 | 0.4710 |
| 22 | 0.1200 | 328.400 | 328.4 | 4.8 | 66.85 | 0.4710 |
| 23 | 0.1300 | 322.600 | 322.6 | 5.2 | 65.67 | 0.4710 |
| 24 | 0.1400 | 316.600 | 316.6 | 5.6 | 64.45 | 0.4710 |
| 25 | 0.1500 | 312.000 | 312.0 | 6.0 | 63.51 | 0.4710 |
| 26 | 0.1600 | 304.200 | 304.2 | 6.4 | 61.92 | 0.4700 |
| 27 | 0.1700 | 298.000 | 298.0 | 6.8 | 60.66 | 0.4700 |
| 28 | 0.1800 | 288.400 | 288.4 | 7.2 | 58.71 | 0.4700 |
| 29 | 0.1900 | 279.100 | 279.1 | 7.6 | 56.81 | 0.4690 |
| 30 | 0.2000 | 268.500 | 268.5 | 8.0 | 54.65 | 0.4680 |
| 31 | 0.2100 | 260.400 | 260.4 | 8.4 | 53.01 | 0.4680 |
| 32 | 0.2200 | 265.700 | 265.7 | 8.8 | 54.08 | 0.4670 |
| 33 | 0.2300 | 276.300 | 276.3 | 9.2 | 56.24 | 0.4660 |
| 34 | 0.2400 | 279.500 | 279.5 | 9.6 | 56.89 | 0.4650 |
| 35 | 0.2500 | 279.200 | 279.2 | 10.0 | 56.83 | 0.4640 |
| 36 | 0.2600 | 278.100 | 278.1 | 10.4 | 56.61 | 0.4630 |
| 37 | 0.2700 | 278.200 | 278.2 | 10.8 | 56.63 | 0.4620 |
| 38 | 0.2800 | 278.800 | 278.8 | 11.2 | 56.75 | 0.4610 |
| 39 | 0.2900 | 280.800 | 280.8 | 11.6 | 57.16 | 0.4600 |
| 40 | 0.3000 | 285.300 | 285.3 | 12.0 | 58.07 | 0.4590 |
| 41 | 0.3200 | 295.800 | 295.8 | 12.8 | 60.21 | 0.4570 |
| 42 | 0.3400 | 306.300 | 306.3 | 13.6 | 62.35 | 0.4550 |
| 43 | 0.3600 | 314.400 | 314.4 | 14.4 | 64.00 | 0.4530 |
| 44 | 0.3800 | 317.900 | 317.9 | 15.2 | 64.71 | 0.4500 |
| 45 | 0.4000 | 308.800 | 308.8 | 16.0 | 62.86 | 0.4480 |
| 46 | 0.4200 | 293.900 | 293.9 | 16.8 | 59.82 | 0.4430 |
| 47 | 0.4400 | 247.100 | 247.1 | 17.6 | 50.30 | 0.4350 |
| 48 | 0.4600 | 229.400 | 229.4 | 18.4 | 46.70 | 0.4290 |
| 49 | 0.4800 | 235.800 | 235.8 | 19.2 | 48.00 | 0.4240 |
| 50 | 0.5000 | 224.200 | 224.2 | 20.0 | 45.64 | 0.4180 |

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## Parameters for Specimen No. 2

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 233.540 | | 245.670 |
| Moisture content: Dry soil+tare, gms. | 210.290 | | 218.100 |
| Moisture content: Tare, gms. | 92.640 | | 110.460 |
| Moisture, % | 19.8 | 25.6 | 25.6 |
| Moist specimen weight, gms. | 150.1 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 124.6 | 133.0 | |
| Dry density, pcf | 104.0 | 105.9 | |
| Void ratio | 0.6201 | | |
| Saturation, % | 86.0 | | |

## Test Readings for Specimen No. 2

Normal stress = 60.0 psi

Strain rate, in./min. = 0.01

Fail. Stress = 34.89 psi at reading no. 17

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4810 |
| 1 | 0.0050 | 58.800 | 58.8 | 0.2 | 11.97 | 0.4780 |
| 2 | 0.0100 | 82.800 | 82.8 | 0.4 | 16.85 | 0.4770 |
| 3 | 0.0150 | 100.600 | 100.6 | 0.6 | 20.48 | 0.4760 |
| 4 | 0.0200 | 114.400 | 114.4 | 0.8 | 23.29 | 0.4760 |
| 5 | 0.0250 | 126.300 | 126.3 | 1.0 | 25.71 | 0.4750 |
| 6 | 0.0300 | 134.500 | 134.5 | 1.2 | 27.38 | 0.4750 |
| 7 | 0.0350 | 138.100 | 138.1 | 1.4 | 28.11 | 0.4750 |
| 8 | 0.0400 | 141.500 | 141.5 | 1.6 | 28.80 | 0.4750 |
| 9 | 0.0450 | 150.000 | 150.0 | 1.8 | 30.53 | 0.4740 |
| 10 | 0.0500 | 155.300 | 155.3 | 2.0 | 31.61 | 0.4740 |
| 11 | 0.0550 | 159.800 | 159.8 | 2.2 | 32.53 | 0.4740 |
| 12 | 0.0600 | 163.800 | 163.8 | 2.4 | 33.34 | 0.4740 |
| 13 | 0.0650 | 166.700 | 166.7 | 2.6 | 33.93 | 0.4740 |
| 14 | 0.0700 | 168.800 | 168.8 | 2.8 | 34.36 | 0.4750 |
| 15 | 0.0750 | 170.600 | 170.6 | 3.0 | 34.73 | 0.4750 |
| 16 | 0.0800 | 171.300 | 171.3 | 3.2 | 34.87 | 0.4750 |
| 17 | 0.0850 | 171.400 | 171.4 | 3.4 | 34.89 | 0.4750 |
| 18 | 0.0900 | 171.400 | 171.4 | 3.6 | 34.89 | 0.4750 |
| 19 | 0.0950 | 171.200 | 171.2 | 3.8 | 34.85 | 0.4750 |
| 20 | 0.1000 | 170.400 | 170.4 | 4.0 | 34.69 | 0.4750 |
| 21 | 0.1100 | 167.700 | 167.7 | 4.4 | 34.14 | 0.4750 |
| 22 | 0.1200 | 164.300 | 164.3 | 4.8 | 33.44 | 0.4750 |
| 23 | 0.1300 | 160.600 | 160.6 | 5.2 | 32.69 | 0.4740 |
| 24 | 0.1400 | 156.700 | 156.7 | 5.6 | 31.90 | 0.4730 |
| 25 | 0.1500 | 150.900 | 150.9 | 6.0 | 30.72 | 0.4720 |
| 26 | 0.1600 | 145.600 | 145.6 | 6.4 | 29.64 | 0.4710 |
| 27 | 0.1700 | 140.200 | 140.2 | 6.8 | 28.54 | 0.4700 |
| 28 | 0.1800 | 135.900 | 135.9 | 7.2 | 27.66 | 0.4680 |

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## Test Readings for Specimen No. 2

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 132.600 | 132.6 | 7.6 | 26.99 | 0.4660 |
| 30 | 0.2000 | 130.600 | 130.6 | 8.0 | 26.58 | 0.4660 |
| 31 | 0.2100 | 130.800 | 130.8 | 8.4 | 26.63 | 0.4640 |
| 32 | 0.2200 | 131.100 | 131.1 | 8.8 | 26.69 | 0.4620 |
| 33 | 0.2300 | 131.100 | 131.1 | 9.2 | 26.69 | 0.4600 |
| 34 | 0.2400 | 130.200 | 130.2 | 9.6 | 26.50 | 0.4580 |
| 35 | 0.2500 | 130.800 | 130.8 | 10.0 | 26.63 | 0.4560 |
| 36 | 0.2600 | 131.600 | 131.6 | 10.4 | 26.79 | 0.4540 |
| 37 | 0.2700 | 131.400 | 131.4 | 10.8 | 26.75 | 0.4520 |
| 38 | 0.2800 | 131.300 | 131.3 | 11.2 | 26.73 | 0.4490 |
| 39 | 0.2900 | 131.900 | 131.9 | 11.6 | 26.85 | 0.4470 |
| 40 | 0.3000 | 131.600 | 131.6 | 12.0 | 26.79 | 0.4450 |
| 41 | 0.3200 | 139.600 | 139.6 | 12.8 | 28.42 | 0.4400 |
| 42 | 0.3400 | 154.700 | 154.7 | 13.6 | 31.49 | 0.4370 |
| 43 | 0.3600 | 157.200 | 157.2 | 14.4 | 32.00 | 0.4330 |
| 44 | 0.3800 | 159.700 | 159.7 | 15.2 | 32.51 | 0.4280 |
| 45 | 0.4000 | 162.100 | 162.1 | 16.0 | 33.00 | 0.4230 |
| 46 | 0.4200 | 152.600 | 152.6 | 16.8 | 31.06 | 0.4180 |
| 47 | 0.4400 | 143.200 | 143.2 | 17.6 | 29.15 | 0.4130 |
| 48 | 0.4600 | 135.600 | 135.6 | 18.4 | 27.60 | 0.4080 |
| 49 | 0.4800 | 130.200 | 130.2 | 19.2 | 26.50 | 0.4030 |
| 50 | 0.5000 | 128.500 | 128.5 | 20.0 | 26.16 | 0.3990 |

## Parameters for Specimen No. 3

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 309.300 | | 329.320 |
| Moisture content: Dry soil+tare, gms. | 289.540 | | 301.240 |
| Moisture content: Tare, gms. | 194.150 | | 189.150 |
| Moisture, % | 20.7 | 25.1 | 25.1 |
| Moist specimen weight, gms. | 150.5 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 125.0 | 132.2 | |
| Dry density, pcf | 103.5 | 105.7 | |
| Void ratio | 0.6280 | | |
| Saturation, % | 89.1 | | |

## Test Readings for Specimen No. 3

Normal stress = 30.0 psi

Strain rate, in./min. = 0.01

Fail. Stress = 22.33 psi at reading no. 18

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4800 |
| 1 | 0.0050 | 36.200 | 36.2 | 0.2 | 7.37 | 0.4800 |
| 2 | 0.0100 | 49.200 | 49.2 | 0.4 | 10.01 | 0.4790 |
| 3 | 0.0150 | 58.900 | 58.9 | 0.6 | 11.99 | 0.4780 |
| 4 | 0.0200 | 66.800 | 66.8 | 0.8 | 13.60 | 0.4780 |
| 5 | 0.0250 | 74.000 | 74.0 | 1.0 | 15.06 | 0.4780 |
| 6 | 0.0300 | 79.200 | 79.2 | 1.2 | 16.12 | 0.4770 |
| 7 | 0.0350 | 84.000 | 84.0 | 1.4 | 17.10 | 0.4770 |
| 8 | 0.0400 | 89.100 | 89.1 | 1.6 | 18.14 | 0.4770 |
| 9 | 0.0450 | 93.000 | 93.0 | 1.8 | 18.93 | 0.4780 |
| 10 | 0.0500 | 96.100 | 96.1 | 2.0 | 19.56 | 0.4780 |
| 11 | 0.0550 | 99.100 | 99.1 | 2.2 | 20.17 | 0.4780 |
| 12 | 0.0600 | 101.600 | 101.6 | 2.4 | 20.68 | 0.4790 |
| 13 | 0.0650 | 104.000 | 104.0 | 2.6 | 21.17 | 0.4790 |
| 14 | 0.0700 | 105.900 | 105.9 | 2.8 | 21.56 | 0.4790 |
| 15 | 0.0750 | 107.800 | 107.8 | 3.0 | 21.94 | 0.4800 |
| 16 | 0.0800 | 108.900 | 108.9 | 3.2 | 22.17 | 0.4800 |
| 17 | 0.0850 | 109.400 | 109.4 | 3.4 | 22.27 | 0.4800 |
| 18 | 0.0900 | 109.700 | 109.7 | 3.6 | 22.33 | 0.4810 |
| 19 | 0.0950 | 109.300 | 109.3 | 3.8 | 22.25 | 0.4810 |
| 20 | 0.1000 | 108.900 | 108.9 | 4.0 | 22.17 | 0.4810 |
| 21 | 0.1100 | 108.000 | 108.0 | 4.4 | 21.98 | 0.4810 |
| 22 | 0.1200 | 107.100 | 107.1 | 4.8 | 21.80 | 0.4810 |
| 23 | 0.1300 | 105.200 | 105.2 | 5.2 | 21.41 | 0.4810 |
| 24 | 0.1400 | 103.100 | 103.1 | 5.6 | 20.99 | 0.4810 |
| 25 | 0.1500 | 100.200 | 100.2 | 6.0 | 20.40 | 0.4810 |
| 26 | 0.1600 | 97.900 | 97.9 | 6.4 | 19.93 | 0.4810 |
| 27 | 0.1700 | 95.000 | 95.0 | 6.8 | 19.34 | 0.4810 |
| 28 | 0.1800 | 93.000 | 93.0 | 7.2 | 18.93 | 0.4800 |

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## Test Readings for Specimen No. 3

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 92.300 | 92.3 | 7.6 | 18.79 | 0.4800 |
| 30 | 0.2000 | 92.400 | 92.4 | 8.0 | 18.81 | 0.4790 |
| 31 | 0.2100 | 93.700 | 93.7 | 8.4 | 19.07 | 0.4790 |
| 32 | 0.2200 | 95.100 | 95.1 | 8.8 | 19.36 | 0.4780 |
| 33 | 0.2300 | 95.400 | 95.4 | 9.2 | 19.42 | 0.4780 |
| 34 | 0.2400 | 95.400 | 95.4 | 9.6 | 19.42 | 0.4780 |
| 35 | 0.2500 | 95.700 | 95.7 | 10.0 | 19.48 | 0.4770 |
| 36 | 0.2600 | 95.700 | 95.7 | 10.4 | 19.48 | 0.4770 |
| 37 | 0.2700 | 94.900 | 94.9 | 10.8 | 19.32 | 0.4760 |
| 38 | 0.2800 | 94.700 | 94.7 | 11.2 | 19.28 | 0.4760 |
| 39 | 0.2900 | 94.800 | 94.8 | 11.6 | 19.30 | 0.4750 |
| 40 | 0.3000 | 94.600 | 94.6 | 12.0 | 19.26 | 0.4740 |
| 41 | 0.3200 | 95.100 | 95.1 | 12.8 | 19.36 | 0.4730 |
| 42 | 0.3400 | 93.100 | 93.1 | 13.6 | 18.95 | 0.4720 |
| 43 | 0.3600 | 92.100 | 92.1 | 14.4 | 18.75 | 0.4710 |
| 44 | 0.3800 | 91.400 | 91.4 | 15.2 | 18.60 | 0.4700 |
| 45 | 0.4000 | 89.500 | 89.5 | 16.0 | 18.22 | 0.4690 |
| 46 | 0.4200 | 87.200 | 87.2 | 16.8 | 17.75 | 0.4680 |
| 47 | 0.4400 | 87.000 | 87.0 | 17.6 | 17.71 | 0.4670 |
| 48 | 0.4600 | 85.800 | 85.8 | 18.4 | 17.47 | 0.4660 |
| 49 | 0.4800 | 85.600 | 85.6 | 19.2 | 17.42 | 0.4640 |
| 50 | 0.5000 | 85.900 | 85.9 | 20.0 | 17.49 | 0.4630 |

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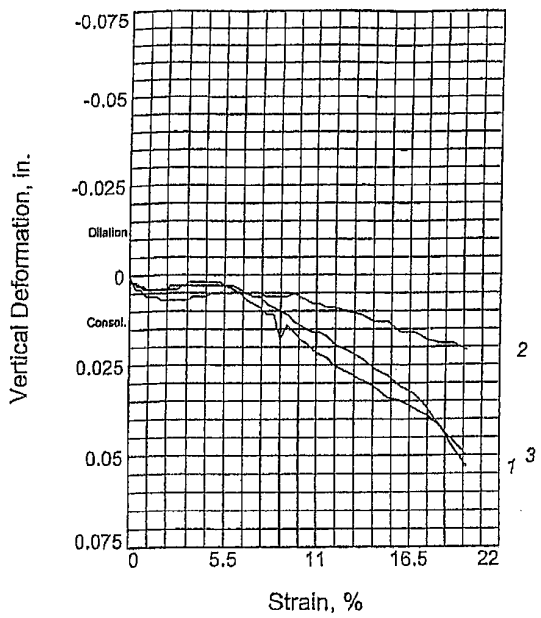


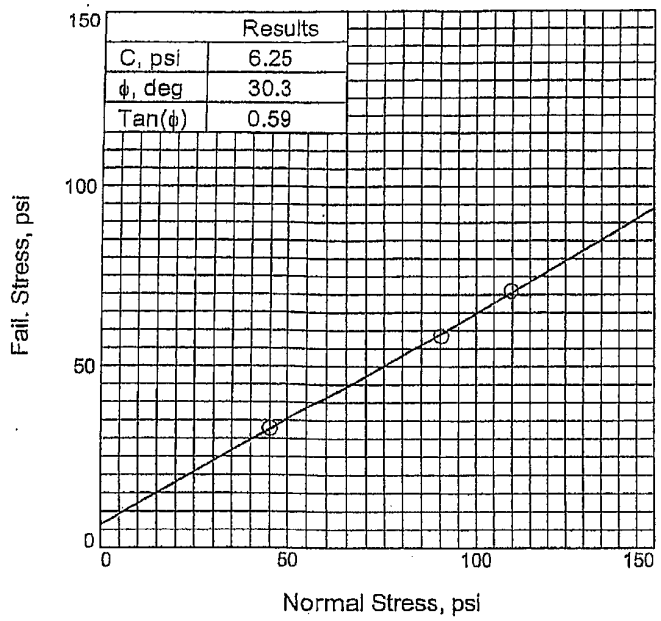


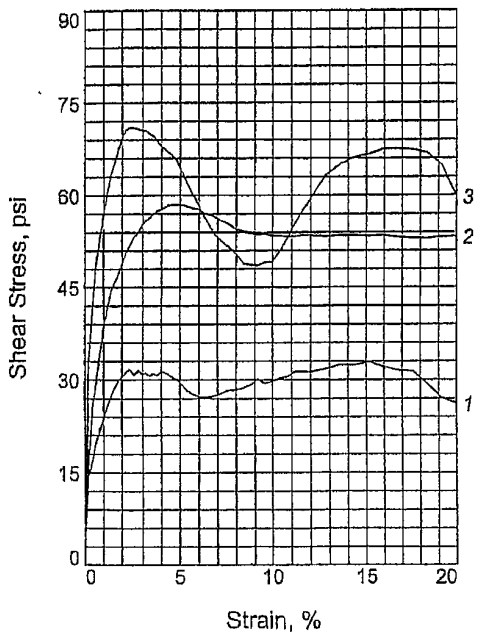


| | Sample No. | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 13.8 | 18.7 | 15.8 |
| | Dry Density, pcf | 113.4 | 108.1 | 112.0 |
| | Saturation, % | 76.4 | 90.2 | 84.3 |
| | Void Ratio | 0.4867 | 0.5587 | 0.5052 |
| | Diameter, in. | 2.50 | 2.50 | 2.50 |
| | Height, in. | 0.93 | 0.93 | 0.93 |
| At Test | Water Content, % | 17.6 | 21.1 | 18.4 |
| | Dry Density, pcf | 114.9 | 110.3 | 112.6 |
| | Saturation, % | | | |
| | Void Ratio | | NA | |
| | Diameter, in. | | | |
| | Height, in. | - | | |
| | Normal Stress, psi | 45.10 | 90.30 | 109.90 |
| | Fail. Stress, psi | 32.81 | 58.48 | 70.96 |
| | Strain, % | 15.2 | 4.8 | 2.4 |
| | Ult. Stress, psi | | | |
| | Strain, % | | | |
| | Strain rate, in./min. | 0.01 | 0.01 | 0.01 |

**Sample Type:** Undisturbed

**Description:** Very Pale Brown Poorly Graded Sand with silt and gravel (SP-SM)

**LL=** 18 **PI=** NP

**Assumed Specific Gravity=** 2.70

**Remarks:** ASTM D3080-04
Direct Shear Machine-Soil Test Model D-120-B

**Figure** MH 5-5-09

**Client:** Bechtel

**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS

**Location:** B-3234 UD

**Sample Number:** UD-11 **Depth:** 168.8'-171.3'

Proj. No.: 6468-07-1777 **Date Sampled:** 2-5-09

DIRECT SHEAR TEST REPORT

MACTEC Engineering and Consulting, Inc.

**Tested By:** J Alexander **Checked By:** D Kopitsky

# DIRECT SHEAR TEST

5/5/2009

| | |
|---|---|
| **Date:** | 2-5-09 |
| **Client:** | Bechtel |
| **Project:** | Exelon Texas COL Project - Supplemental Investigation, including UHS |
| **Project No.:** | 6468-07-1777 |
| **Location:** | B-3234 UD |
| **Depth:** | 168.8'-171.3' **Sample Number:** UD-11 |
| **Description:** | Very Pale Brown Poorly Graded Sand with silt and gravel (SP-SM) |
| **Remarks:** | ASTM D3080-04 |
| | Direct Shear Machine-Soil Test Model D-120-B |
| **Type of Sample:** | Undisturbed |

**Assumed Specific Gravity=**2.70 **LL=**18 **PL=** **PI=**NP

## Parameters for Specimen No. 1

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| **Moisture content: Moist soil+tare, gms.** | 157.440 | | 152.700 |
| **Moisture content: Dry soil+tare, gms.** | 139.200 | | 130.820 |
| **Moisture content: Tare, gms.** | 6.750 | | 6.480 |
| **Moisture, %** | 13.8 | 17.6 | 17.6 |
| **Moist specimen weight, gms.** | 155.4 | | |
| **Diameter, in.** | 2.50 | | |
| **Area, in.²** | 4.91 | | |
| **Height, in.** | 0.93 | | |
| **Net decrease in height, in.** | | 0.01 | |
| **Wet Density, pcf** | 129.0 | 135.1 | |
| **Dry density, pcf** | 113.4 | 114.9 | |
| **Void ratio** | 0.4867 | | |
| **Saturation, %** | 76.4 | | |

## Test Readings for Specimen No. 1

**Normal stress =** 45.1 psi

**Strain rate, in./min. =** 0.01

**Fail. Stress =** 32.81 psi **at reading no.** 44

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.9850 |
| 1 | 0.0050 | 69.500 | 69.5 | 0.2 | 14.15 | 0.9830 |
| 2 | 0.0100 | 82.900 | 82.9 | 0.4 | 16.87 | 0.9830 |
| 3 | 0.0150 | 96.300 | 96.3 | 0.6 | 19.60 | 0.9820 |
| 4 | 0.0200 | 107.600 | 107.6 | 0.8 | 21.90 | 0.9820 |
| 5 | 0.0250 | 115.400 | 115.4 | 1.0 | 23.49 | 0.9810 |
| 6 | 0.0300 | 125.700 | 125.7 | 1.2 | 25.59 | 0.9810 |
| 7 | 0.0350 | 133.200 | 133.2 | 1.4 | 27.11 | 0.9810 |
| 8 | 0.0400 | 140.800 | 140.8 | 1.6 | 28.66 | 0.9810 |
| 9 | 0.0450 | 146.200 | 146.2 | 1.8 | 29.76 | 0.9810 |
| 10 | 0.0500 | 149.200 | 149.2 | 2.0 | 30.37 | 0.9810 |
| 11 | 0.0550 | 153.100 | 153.1 | 2.2 | 31.16 | 0.9810 |
| 12 | 0.0600 | 155.600 | 155.6 | 2.4 | 31.67 | 0.9820 |
| 13 | 0.0650 | 150.800 | 150.8 | 2.6 | 30.70 | 0.9820 |

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## Test Readings for Specimen No. 1

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 14 | 0.0700 | 154.500 | 154.5 | 2.8 | 31.45 | 0.9820 |
| 15 | 0.0750 | 151.600 | 151.6 | 3.0 | 30.86 | 0.9820 |
| 16 | 0.0800 | 152.600 | 152.6 | 3.2 | 31.06 | 0.9820 |
| 17 | 0.0850 | 150.300 | 150.3 | 3.4 | 30.59 | 0.9830 |
| 18 | 0.0900 | 152.300 | 152.3 | 3.6 | 31.00 | 0.9830 |
| 19 | 0.0950 | 150.500 | 150.5 | 3.8 | 30.64 | 0.9830 |
| 20 | 0.1000 | 154.000 | 154.0 | 4.0 | 31.35 | 0.9830 |
| 21 | 0.1100 | 151.500 | 151.5 | 4.4 | 30.84 | 0.9830 |
| 22 | 0.1200 | 147.500 | 147.5 | 4.8 | 30.02 | 0.9830 |
| 23 | 0.1300 | 141.400 | 141.4 | 5.2 | 28.78 | 0.9830 |
| 24 | 0.1400 | 136.300 | 136.3 | 5.6 | 27.74 | 0.9820 |
| 25 | 0.1500 | 133.800 | 133.8 | 6.0 | 27.24 | 0.9820 |
| 26 | 0.1600 | 133.200 | 133.2 | 6.4 | 27.11 | 0.9810 |
| 27 | 0.1700 | 134.200 | 134.2 | 6.8 | 27.32 | 0.9800 |
| 28 | 0.1800 | 136.000 | 136.0 | 7.2 | 27.68 | 0.9790 |
| 29 | 0.1900 | 138.800 | 138.8 | 7.6 | 28.25 | 0.9790 |
| 30 | 0.2000 | 139.200 | 139.2 | 8.0 | 28.33 | 0.9770 |
| 31 | 0.2100 | 140.800 | 140.8 | 8.4 | 28.66 | 0.9760 |
| 32 | 0.2200 | 143.300 | 143.3 | 8.8 | 29.17 | 0.9750 |
| 33 | 0.2300 | 148.000 | 148.0 | 9.2 | 30.13 | 0.9740 |
| 34 | 0.2400 | 144.300 | 144.3 | 9.6 | 29.37 | 0.9720 |
| 35 | 0.2500 | 146.000 | 146.0 | 10.0 | 29.72 | 0.9710 |
| 36 | 0.2600 | 148.200 | 148.2 | 10.4 | 30.17 | 0.9700 |
| 37 | 0.2700 | 149.600 | 149.6 | 10.8 | 30.45 | 0.9690 |
| 38 | 0.2800 | 153.600 | 153.6 | 11.2 | 31.27 | 0.9690 |
| 39 | 0.2900 | 153.400 | 153.4 | 11.6 | 31.23 | 0.9680 |
| 40 | 0.3000 | 153.200 | 153.2 | 12.0 | 31.18 | 0.9660 |
| 41 | 0.3200 | 155.400 | 155.4 | 12.8 | 31.63 | 0.9640 |
| 42 | 0.3400 | 158.900 | 158.9 | 13.6 | 32.34 | 0.9620 |
| 43 | 0.3600 | 158.800 | 158.8 | 14.4 | 32.32 | 0.9590 |
| 44 | 0.3800 | 161.200 | 161.2 | 15.2 | 32.81 | 0.9570 |
| 45 | 0.4000 | 157.600 | 157.6 | 16.0 | 32.08 | 0.9540 |
| 46 | 0.4200 | 154.800 | 154.8 | 16.8 | 31.51 | 0.9520 |
| 47 | 0.4400 | 154.000 | 154.0 | 17.6 | 31.35 | 0.9480 |
| 48 | 0.4600 | 144.000 | 144.0 | 18.4 | 29.31 | 0.9430 |
| 49 | 0.4800 | 132.900 | 132.9 | 19.2 | 27.05 | 0.9370 |
| 50 | 0.5000 | 128.300 | 128.3 | 20.0 | 26.12 | 0.9320 |

## Parameters for Specimen No. 2

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 184.140 | | 157.880 |
| Moisture content: Dry soil+tare, gms. | 156.240 | | 131.580 |
| Moisture content: Tare, gms. | 6.750 | | 6.650 |
| Moisture, % | 18.7 | 21.1 | 21.1 |
| Moist specimen weight, gms. | 154.6 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 128.3 | 133.5 | |
| Dry density, pcf | 108.1 | 110.3 | |
| Void ratio | 0.5587 | | |
| Saturation, % | 90.2 | | |

## Test Readings for Specimen No. 2

Normal stress = 90.3 psi

Strain rate, in./min. = 0.01

Fail. Stress = 58.48 psi at reading no. 22

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.9790 |
| 1 | 0.0050 | 84.700 | 84.7 | 0.2 | 17.24 | 0.9760 |
| 2 | 0.0100 | 123.900 | 123.9 | 0.4 | 25.22 | 0.9750 |
| 3 | 0.0150 | 142.300 | 142.3 | 0.6 | 28.97 | 0.9750 |
| 4 | 0.0200 | 166.400 | 166.4 | 0.8 | 33.87 | 0.9740 |
| 5 | 0.0250 | 187.100 | 187.1 | 1.0 | 38.09 | 0.9730 |
| 6 | 0.0300 | 202.600 | 202.6 | 1.2 | 41.24 | 0.9730 |
| 7 | 0.0350 | 216.700 | 216.7 | 1.4 | 44.11 | 0.9730 |
| 8 | 0.0400 | 224.200 | 224.2 | 1.6 | 45.64 | 0.9730 |
| 9 | 0.0450 | 231.100 | 231.1 | 1.8 | 47.04 | 0.9720 |
| 10 | 0.0500 | 238.000 | 238.0 | 2.0 | 48.45 | 0.9720 |
| 11 | 0.0550 | 248.300 | 248.3 | 2.2 | 50.54 | 0.9720 |
| 12 | 0.0600 | 254.200 | 254.2 | 2.4 | 51.74 | 0.9720 |
| 13 | 0.0650 | 261.000 | 261.0 | 2.6 | 53.13 | 0.9720 |
| 14 | 0.0700 | 265.300 | 265.3 | 2.8 | 54.00 | 0.9720 |
| 15 | 0.0750 | 271.200 | 271.2 | 3.0 | 55.20 | 0.9720 |
| 16 | 0.0800 | 274.600 | 274.6 | 3.2 | 55.90 | 0.9720 |
| 17 | 0.0850 | 277.000 | 277.0 | 3.4 | 56.38 | 0.9720 |
| 18 | 0.0900 | 279.800 | 279.8 | 3.6 | 56.95 | 0.9730 |
| 19 | 0.0950 | 282.300 | 282.3 | 3.8 | 57.46 | 0.9730 |
| 20 | 0.1000 | 283.600 | 283.6 | 4.0 | 57.73 | 0.9730 |
| 21 | 0.1100 | 286.800 | 286.8 | 4.4 | 58.38 | 0.9730 |
| 22 | 0.1200 | 287.300 | 287.3 | 4.8 | 58.48 | 0.9740 |
| 23 | 0.1300 | 286.900 | 286.9 | 5.2 | 58.40 | 0.9740 |
| 24 | 0.1400 | 284.800 | 284.8 | 5.6 | 57.97 | 0.9740 |
| 25 | 0.1500 | 283.400 | 283.4 | 6.0 | 57.69 | 0.9740 |
| 26 | 0.1600 | 280.300 | 280.3 | 6.4 | 57.06 | 0.9740 |
| 27 | 0.1700 | 278.100 | 278.1 | 6.8 | 56.61 | 0.9740 |
| 28 | 0.1800 | 274.800 | 274.8 | 7.2 | 55.94 | 0.9740 |

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## Test Readings for Specimen No. 2

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 271.900 | 271.9 | 7.6 | 55.35 | 0.9740 |
| 30 | 0.2000 | 267.600 | 267.6 | 8.0 | 54.47 | 0.9730 |
| 31 | 0.2100 | 266.000 | 266.0 | 8.4 | 54.15 | 0.9730 |
| 32 | 0.2200 | 264.600 | 264.6 | 8.8 | 53.86 | 0.9730 |
| 33 | 0.2300 | 263.600 | 263.6 | 9.2 | 53.66 | 0.9730 |
| 34 | 0.2400 | 264.000 | 264.0 | 9.6 | 53.74 | 0.9740 |
| 35 | 0.2500 | 261.900 | 261.9 | 10.0 | 53.31 | 0.9730 |
| 36 | 0.2600 | 262.400 | 262.4 | 10.4 | 53.41 | 0.9720 |
| 37 | 0.2700 | 261.300 | 261.3 | 10.8 | 53.19 | 0.9710 |
| 38 | 0.2800 | 261.600 | 261.6 | 11.2 | 53.25 | 0.9710 |
| 39 | 0.2900 | 263.100 | 263.1 | 11.6 | 53.56 | 0.9700 |
| 40 | 0.3000 | 262.700 | 262.7 | 12.0 | 53.47 | 0.9700 |
| 41 | 0.3200 | 261.400 | 261.4 | 12.8 | 53.21 | 0.9690 |
| 42 | 0.3400 | 262.400 | 262.4 | 13.6 | 53.41 | 0.9680 |
| 43 | 0.3600 | 262.600 | 262.6 | 14.4 | 53.45 | 0.9660 |
| 44 | 0.3800 | 262.100 | 262.1 | 15.2 | 53.35 | 0.9660 |
| 45 | 0.4000 | 262.600 | 262.6 | 16.0 | 53.45 | 0.9630 |
| 46 | 0.4200 | 261.000 | 261.0 | 16.8 | 53.13 | 0.9630 |
| 47 | 0.4400 | 260.300 | 260.3 | 17.6 | 52.99 | 0.9610 |
| 48 | 0.4600 | 260.100 | 260.1 | 18.4 | 52.94 | 0.9600 |
| 49 | 0.4800 | 261.300 | 261.3 | 19.2 | 53.19 | 0.9600 |
| 50 | 0.5000 | 261.400 | 261.4 | 20.0 | 53.21 | 0.9580 |

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## Parameters for Specimen No. 3

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 145.370 | | 152.680 |
| Moisture content: Dry soil+tare, gms. | 126.460 | | 129.980 |
| Moisture content: Tare, gms. | 6.630 | | 6.560 |
| Moisture, % | 15.8 | 18.4 | 18.4 |
| Moist specimen weight, gms. | 156.2 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.01 | |
| Wet Density, pcf | 129.7 | 133.3 | |
| Dry density, pcf | 112.0 | 112.6 | |
| Void ratio | 0.5052 | | |
| Saturation, % | 84.3 | | |

## Test Readings for Specimen No. 3

**Normal stress =** 109.9 psi

**Strain rate, in./min. =** 0.01

**Fail. Stress =** 70.96 psi **at reading no.** 12

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.9900 |
| 1 | 0.0050 | 160.000 | 160.0 | 0.2 | 32.57 | 0.9880 |
| 2 | 0.0100 | 202.400 | 202.4 | 0.4 | 41.20 | 0.9870 |
| 3 | 0.0150 | 235.400 | 235.4 | 0.6 | 47.92 | 0.9870 |
| 4 | 0.0200 | 260.600 | 260.6 | 0.8 | 53.05 | 0.9860 |
| 5 | 0.0250 | 277.800 | 277.8 | 1.0 | 56.55 | 0.9860 |
| 6 | 0.0300 | 295.300 | 295.3 | 1.2 | 60.11 | 0.9860 |
| 7 | 0.0350 | 310.600 | 310.6 | 1.4 | 63.22 | 0.9860 |
| 8 | 0.0400 | 320.500 | 320.5 | 1.6 | 65.24 | 0.9860 |
| 9 | 0.0450 | 330.700 | 330.7 | 1.8 | 67.32 | 0.9860 |
| 10 | 0.0500 | 340.100 | 340.1 | 2.0 | 69.23 | 0.9860 |
| 11 | 0.0550 | 346.600 | 346.6 | 2.2 | 70.55 | 0.9860 |
| 12 | 0.0600 | 348.600 | 348.6 | 2.4 | 70.96 | 0.9860 |
| 13 | 0.0650 | 348.400 | 348.4 | 2.6 | 70.92 | 0.9860 |
| 14 | 0.0700 | 347.500 | 347.5 | 2.8 | 70.74 | 0.9860 |
| 15 | 0.0750 | 346.300 | 346.3 | 3.0 | 70.49 | 0.9870 |
| 16 | 0.0800 | 346.200 | 346.2 | 3.2 | 70.47 | 0.9870 |
| 17 | 0.0850 | 343.700 | 343.7 | 3.4 | 69.96 | 0.9870 |
| 18 | 0.0900 | 341.900 | 341.9 | 3.6 | 69.60 | 0.9870 |
| 19 | 0.0950 | 336.900 | 336.9 | 3.8 | 68.58 | 0.9870 |
| 20 | 0.1000 | 333.900 | 333.9 | 4.0 | 67.97 | 0.9870 |
| 21 | 0.1100 | 329.300 | 329.3 | 4.4 | 67.03 | 0.9870 |
| 22 | 0.1200 | 323.000 | 323.0 | 4.8 | 65.75 | 0.9870 |
| 23 | 0.1300 | 310.200 | 310.2 | 5.2 | 63.14 | 0.9870 |
| 24 | 0.1400 | 296.900 | 296.9 | 5.6 | 60.44 | 0.9870 |
| 25 | 0.1500 | 286.400 | 286.4 | 6.0 | 58.30 | 0.9860 |
| 26 | 0.1600 | 274.800 | 274.8 | 6.4 | 55.94 | 0.9850 |
| 27 | 0.1700 | 263.800 | 263.8 | 6.8 | 53.70 | 0.9830 |
| 28 | 0.1800 | 258.500 | 258.5 | 7.2 | 52.62 | 0.9820 |

MACTEC Engineering and Consulting, Inc. MH 5-5-09

## Test Readings for Specimen No. 3

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 253.300 | 253.3 | 7.6 | 51.56 | 0.9810 |
| 30 | 0.2000 | 247.600 | 247.6 | 8.0 | 50.40 | 0.9790 |
| 31 | 0.2100 | 239.900 | 239.9 | 8.4 | 48.83 | 0.9790 |
| 32 | 0.2200 | 239.100 | 239.1 | 8.8 | 48.67 | 0.9720 |
| 33 | 0.2300 | 238.300 | 238.3 | 9.2 | 48.51 | 0.9760 |
| 34 | 0.2400 | 240.800 | 240.8 | 9.6 | 49.02 | 0.9740 |
| 35 | 0.2500 | 241.400 | 241.4 | 10.0 | 49.14 | 0.9720 |
| 36 | 0.2600 | 250.000 | 250.0 | 10.4 | 50.89 | 0.9710 |
| 37 | 0.2700 | 260.500 | 260.5 | 10.8 | 53.03 | 0.9690 |
| 38 | 0.2800 | 272.300 | 272.3 | 11.2 | 55.43 | 0.9680 |
| 39 | 0.2900 | 282.900 | 282.9 | 11.6 | 57.59 | 0.9670 |
| 40 | 0.3000 | 291.700 | 291.7 | 12.0 | 59.38 | 0.9650 |
| 41 | 0.3200 | 310.400 | 310.4 | 12.8 | 63.18 | 0.9630 |
| 42 | 0.3400 | 319.500 | 319.5 | 13.6 | 65.04 | 0.9610 |
| 43 | 0.3600 | 325.100 | 325.1 | 14.4 | 66.18 | 0.9590 |
| 44 | 0.3800 | 327.600 | 327.6 | 15.2 | 66.68 | 0.9560 |
| 45 | 0.4000 | 331.400 | 331.4 | 16.0 | 67.46 | 0.9550 |
| 46 | 0.4200 | 331.700 | 331.7 | 16.8 | 67.52 | 0.9530 |
| 47 | 0.4400 | 330.900 | 330.9 | 17.6 | 67.36 | 0.9510 |
| 48 | 0.4600 | 328.400 | 328.4 | 18.4 | 66.85 | 0.9480 |
| 49 | 0.4800 | 318.800 | 318.8 | 19.2 | 64.89 | 0.9440 |
| 50 | 0.5000 | 293.500 | 293.5 | 20.0 | 59.74 | 0.9400 |

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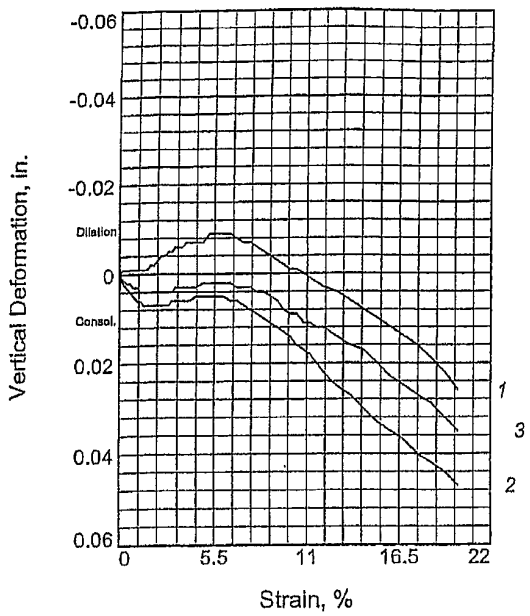


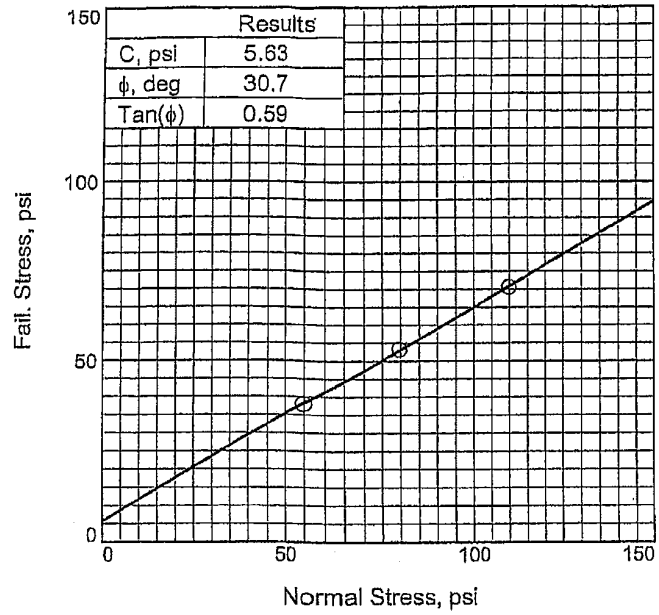


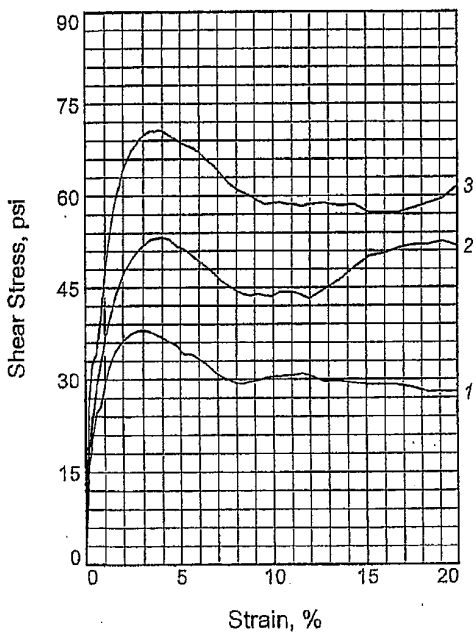


| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 19.7 | 18.7 | 16.8 |
| | Dry Density, pcf | 110.5 | 114.1 | 115.3 |
| | Saturation, % | 101.4 | 106.0 | 98.6 |
| | Void Ratio | 0.5256 | 0.4774 | 0.4614 |
| | Diameter, in. | 2.50 | 2.50 | 2.50 |
| | Height, in. | 0.93 | 0.93 | 0.93 |
| At Test | Water Content, % | 22.4 | 20.0 | 17.9 |
| | Dry Density, pcf | 110.8 | 117.1 | 115.7 |
| | Saturation, % | | NA | |
| | Void Ratio | | | |
| | Diameter, in. | | | |
| | Height, in. | | | |
| Normal Stress, psi | | 54.90 | 79.80 | 109.90 |
| Fail. Stress, psi | | 38.00 | 53.23 | 70.63 |
| Strain, % | | 3.0 | 4.0 | 3.8 |
| Ult. Stress, psi | | | | |
| Strain, % | | | | |
| Strain rate, in./min. | | 0.01 | 0.01 | 0.01 |

**Sample Type:** Undisturbed
**Description:** Very Pale Brown Silty Sand (SM)

LL= 18 **PI=** NP
**Assumed Specific Gravity=** 2.70
**Remarks:** ASTM D3080-04
Direct Shear Machine-Soil Test Model D-120-B

**Figure** M# 5-5-01

**Client:** Bechtel

**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Location:** B-3234 UD
**Sample Number:** UD-14 **Depth:** 216.8'-219.3'
Proj. No.: 6468-07-1777 **Date Sampled:** 2-6-09

DIRECT SHEAR TEST REPORT

MACTEC Engineering and Consulting, Inc.

**Tested By:** J Alexander **Checked By:** D Kopitsky

# DIRECT SHEAR TEST

5/5/2009

| | |
|---|---|
| Date: | 2-6-09 |
| Client: | Bechtel |
| Project: | Exelon Texas COL Project - Supplemental Investigation, including UHS |
| Project No.: | 6468-07-1777 |
| Location: | B-3234 UD |
| Depth: | 216.8'-219.3' |
| Sample Number: | UD-14 |
| Description: | Very Pale Brown Silty Sand (SM) |
| Remarks: | ASTM D3080-04 |
| | Direct Shear Machine-Soil Test Model D-120-B |
| Type of Sample: | Undisturbed |

Assumed Specific Gravity=2.70 LL=18 PL= PI=NP

## Parameters for Specimen No. 1

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 137.440 | | 144.690 |
| Moisture content: Dry soil+tare, gms. | 115.880 | | 119.460 |
| Moisture content: Tare, gms. | 6.690 | | 6.720 |
| Moisture, % | 19.7 | 22.4 | 22.4 |
| Moist specimen weight, gms. | 159.4 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.00 | |
| Wet Density, pcf | 132.3 | 135.6 | |
| Dry density, pcf | 110.5 | 110.8 | |
| Void ratio | 0.5256 | | |
| Saturation, % | 101.4 | | |

## Test Readings for Specimen No. 1

Normal stress = 54.9 psi

Strain rate, in./min. = 0.01

Fail. Stress = 38.00 psi at reading no. 15

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.9940 |
| 1 | 0.0050 | 71.300 | 71.3 | 0.2 | 14.51 | 0.9950 |
| 2 | 0.0100 | 101.100 | 101.1 | 0.4 | 20.58 | 0.9950 |
| 3 | 0.0150 | 120.700 | 120.7 | 0.6 | 24.57 | 0.9950 |
| 4 | 0.0200 | 125.300 | 125.3 | 0.8 | 25.51 | 0.9950 |
| 5 | 0.0250 | 140.700 | 140.7 | 1.0 | 28.64 | 0.9950 |
| 6 | 0.0300 | 153.100 | 153.1 | 1.2 | 31.16 | 0.9950 |
| 7 | 0.0350 | 162.200 | 162.2 | 1.4 | 33.02 | 0.9950 |
| 8 | 0.0400 | 169.000 | 169.0 | 1.6 | 34.40 | 0.9950 |
| 9 | 0.0450 | 173.800 | 173.8 | 1.8 | 35.38 | 0.9960 |
| 10 | 0.0500 | 177.500 | 177.5 | 2.0 | 36.13 | 0.9960 |
| 11 | 0.0550 | 181.000 | 181.0 | 2.2 | 36.84 | 0.9970 |
| 12 | 0.0600 | 183.300 | 183.3 | 2.4 | 37.31 | 0.9980 |
| 13 | 0.0650 | 184.900 | 184.9 | 2.6 | 37.64 | 0.9980 |

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## Test Readings for Specimen No. 1

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 14 | 0.0700 | 186.100 | 186.1 | 2.8 | 37.88 | 0.9990 |
| 15 | 0.0750 | 186.700 | 186.7 | 3.0 | 38.00 | 0.9990 |
| 16 | 0.0800 | 186.200 | 186.2 | 3.2 | 37.90 | 1.0000 |
| 17 | 0.0850 | 185.300 | 185.3 | 3.4 | 37.72 | 1.0000 |
| 18 | 0.0900 | 183.600 | 183.6 | 3.6 | 37.37 | 1.0000 |
| 19 | 0.0950 | 182.200 | 182.2 | 3.8 | 37.09 | 1.0010 |
| 20 | 0.1000 | 180.800 | 180.8 | 4.0 | 36.80 | 1.0010 |
| 21 | 0.1100 | 177.500 | 177.5 | 4.4 | 36.13 | 1.0010 |
| 22 | 0.1200 | 174.600 | 174.6 | 4.8 | 35.54 | 1.0010 |
| 23 | 0.1300 | 167.500 | 167.5 | 5.2 | 34.10 | 1.0030 |
| 24 | 0.1400 | 167.500 | 167.5 | 5.6 | 34.10 | 1.0030 |
| 25 | 0.1500 | 163.500 | 163.5 | 6.0 | 33.28 | 1.0030 |
| 26 | 0.1600 | 159.700 | 159.7 | 6.4 | 32.51 | 1.0030 |
| 27 | 0.1700 | 153.700 | 153.7 | 6.8 | 31.29 | 1.0020 |
| 28 | 0.1800 | 149.400 | 149.4 | 7.2 | 30.41 | 1.0010 |
| 29 | 0.1900 | 146.900 | 146.9 | 7.6 | 29.90 | 1.0010 |
| 30 | 0.2000 | 144.200 | 144.2 | 8.0 | 29.35 | 1.0000 |
| 31 | 0.2100 | 143.600 | 143.6 | 8.4 | 29.23 | 0.9990 |
| 32 | 0.2200 | 145.400 | 145.4 | 8.8 | 29.60 | 0.9980 |
| 33 | 0.2300 | 146.300 | 146.3 | 9.2 | 29.78 | 0.9970 |
| 34 | 0.2400 | 148.200 | 148.2 | 9.6 | 30.17 | 0.9960 |
| 35 | 0.2500 | 149.500 | 149.5 | 10.0 | 30.43 | 0.9950 |
| 36 | 0.2600 | 149.400 | 149.4 | 10.4 | 30.41 | 0.9950 |
| 37 | 0.2700 | 150.200 | 150.2 | 10.8 | 30.57 | 0.9940 |
| 38 | 0.2800 | 150.800 | 150.8 | 11.2 | 30.70 | 0.9930 |
| 39 | 0.2900 | 151.900 | 151.9 | 11.6 | 30.92 | 0.9920 |
| 40 | 0.3000 | 150.400 | 150.4 | 12.0 | 30.61 | 0.9910 |
| 41 | 0.3200 | 145.600 | 145.6 | 12.8 | 29.64 | 0.9900 |
| 42 | 0.3400 | 145.900 | 145.9 | 13.6 | 29.70 | 0.9880 |
| 43 | 0.3600 | 144.400 | 144.4 | 14.4 | 29.39 | 0.9860 |
| 44 | 0.3800 | 143.200 | 143.2 | 15.2 | 29.15 | 0.9840 |
| 45 | 0.4000 | 143.300 | 143.3 | 16.0 | 29.17 | 0.9820 |
| 46 | 0.4200 | 142.700 | 142.7 | 16.8 | 29.05 | 0.9800 |
| 47 | 0.4400 | 140.600 | 140.6 | 17.6 | 28.62 | 0.9780 |
| 48 | 0.4600 | 137.100 | 137.1 | 18.4 | 27.91 | 0.9750 |
| 49 | 0.4800 | 137.600 | 137.6 | 19.2 | 28.01 | 0.9720 |
| 50 | 0.5000 | 137.100 | 137.1 | 20.0 | 27.91 | 0.9680 |

## Parameters for Specimen No. 2

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 194.570 | | 158.780 |
| Moisture content: Dry soil+tare, gms. | 164.930 | | 133.420 |
| Moisture content: Tare, gms. | 6.750 | | 6.720 |
| Moisture, % | 18.7 | 20.0 | 20.0 |
| Moist specimen weight, gms. | 163.2 | | |
| Diameter, in. | 2.50 | | |
| Area, in.² | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 135.5 | 140.5 | |
| Dry density, pcf | 114.1 | 117.1 | |
| Void ratio | 0.4774 | | |
| Saturation, % | 106.0 | | |

## Test Readings for Specimen No. 2

Normal stress = 79.8 psi

Strain rate, in./min. = 0.01

Fail. Stress = 53.23 psi at reading no. 20

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.9720 |
| 1 | 0.0050 | 89.700 | 89.7 | 0.2 | 18.26 | 0.9700 |
| 2 | 0.0100 | 115.900 | 115.9 | 0.4 | 23.59 | 0.9690 |
| 3 | 0.0150 | 141.100 | 141.1 | 0.6 | 28.72 | 0.9680 |
| 4 | 0.0200 | 159.300 | 159.3 | 0.8 | 32.43 | 0.9670 |
| 5 | 0.0250 | 175.800 | 175.8 | 1.0 | 35.79 | 0.9660 |
| 6 | 0.0300 | 189.200 | 189.2 | 1.2 | 38.51 | 0.9660 |
| 7 | 0.0350 | 201.100 | 201.1 | 1.4 | 40.94 | 0.9650 |
| 8 | 0.0400 | 212.900 | 212.9 | 1.6 | 43.34 | 0.9650 |
| 9 | 0.0450 | 222.500 | 222.5 | 1.8 | 45.29 | 0.9650 |
| 10 | 0.0500 | 230.900 | 230.9 | 2.0 | 47.00 | 0.9650 |
| 11 | 0.0550 | 237.500 | 237.5 | 2.2 | 48.34 | 0.9650 |
| 12 | 0.0600 | 243.000 | 243.0 | 2.4 | 49.46 | 0.9650 |
| 13 | 0.0650 | 247.800 | 247.8 | 2.6 | 50.44 | 0.9650 |
| 14 | 0.0700 | 251.400 | 251.4 | 2.8 | 51.17 | 0.9650 |
| 15 | 0.0750 | 254.300 | 254.3 | 3.0 | 51.76 | 0.9660 |
| 16 | 0.0800 | 256.800 | 256.8 | 3.2 | 52.27 | 0.9660 |
| 17 | 0.0850 | 259.500 | 259.5 | 3.4 | 52.82 | 0.9660 |
| 18 | 0.0900 | 260.200 | 260.2 | 3.6 | 52.97 | 0.9660 |
| 19 | 0.0950 | 260.800 | 260.8 | 3.8 | 53.09 | 0.9660 |
| 20 | 0.1000 | 261.500 | 261.5 | 4.0 | 53.23 | 0.9660 |
| 21 | 0.1100 | 259.800 | 259.8 | 4.4 | 52.88 | 0.9670 |
| 22 | 0.1200 | 254.100 | 254.1 | 4.8 | 51.72 | 0.9670 |
| 23 | 0.1300 | 252.000 | 252.0 | 5.2 | 51.30 | 0.9670 |
| 24 | 0.1400 | 247.000 | 247.0 | 5.6 | 50.28 | 0.9670 |
| 25 | 0.1500 | 242.200 | 242.2 | 6.0 | 49.30 | 0.9670 |
| 26 | 0.1600 | 237.900 | 237.9 | 6.4 | 48.43 | 0.9660 |
| 27 | 0.1700 | 232.300 | 232.3 | 6.8 | 47.29 | 0.9660 |
| 28 | 0.1800 | 226.300 | 226.3 | 7.2 | 46.06 | 0.9650 |

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## Test Readings for Specimen No. 2

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 222.200 | 222.2 | 7.6 | 45.23 | 0.9640 |
| 30 | 0.2000 | 218.600 | 218.6 | 8.0 | 44.50 | 0.9630 |
| 31 | 0.2100 | 215.800 | 215.8 | 8.4 | 43.93 | 0.9620 |
| 32 | 0.2200 | 214.100 | 214.1 | 8.8 | 43.58 | 0.9610 |
| 33 | 0.2300 | 215.800 | 215.8 | 9.2 | 43.93 | 0.9600 |
| 34 | 0.2400 | 214.200 | 214.2 | 9.6 | 43.60 | 0.9590 |
| 35 | 0.2500 | 213.700 | 213.7 | 10.0 | 43.50 | 0.9580 |
| 36 | 0.2600 | 217.400 | 217.4 | 10.4 | 44.25 | 0.9560 |
| 37 | 0.2700 | 217.400 | 217.4 | 10.8 | 44.25 | 0.9550 |
| 38 | 0.2800 | 217.100 | 217.1 | 11.2 | 44.19 | 0.9540 |
| 39 | 0.2900 | 214.800 | 214.8 | 11.6 | 43.72 | 0.9520 |
| 40 | 0.3000 | 211.600 | 211.6 | 12.0 | 43.07 | 0.9500 |
| 41 | 0.3200 | 219.800 | 219.8 | 12.8 | 44.74 | 0.9470 |
| 42 | 0.3400 | 227.100 | 227.1 | 13.6 | 46.23 | 0.9450 |
| 43 | 0.3600 | 237.200 | 237.2 | 14.4 | 48.28 | 0.9420 |
| 44 | 0.3800 | 246.100 | 246.1 | 15.2 | 50.09 | 0.9390 |
| 45 | 0.4000 | 248.400 | 248.4 | 16.0 | 50.56 | 0.9370 |
| 46 | 0.4200 | 252.800 | 252.8 | 16.8 | 51.46 | 0.9350 |
| 47 | 0.4400 | 255.300 | 255.3 | 17.6 | 51.97 | 0.9320 |
| 48 | 0.4600 | 255.600 | 255.6 | 18.4 | 52.03 | 0.9300 |
| 49 | 0.4800 | 258.500 | 258.5 | 19.2 | 52.62 | 0.9280 |
| 50 | 0.5000 | 254.400 | 254.4 | 20.0 | 51.78 | 0.9250 |

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## Parameters for Specimen No. 3

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 183.620 | | 163.290 |
| Moisture content: Dry soil+tare, gms. | 158.090 | | 139.470 |
| Moisture content: Tare, gms. | 6.520 | | 6.710 |
| Moisture, % | 16.8 | 17.9 | 17.9 |
| Moist specimen weight, gms. | 162.3 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.00 | |
| Wet Density, pcf | 134.8 | 136.5 | |
| Dry density, pcf | 115.3 | 115.7 | |
| Void ratio | 0.4614 | | |
| Saturation, % | 98.6 | | |

## Test Readings for Specimen No. 3

Normal stress = 109.9 psi

Strain rate, in./min. = 0.01

Fail. Stress = 70.63 psi at reading no. 19

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.9900 |
| 1 | 0.0050 | 129.000 | 129.0 | 0.2 | 26.26 | 0.9890 |
| 2 | 0.0100 | 159.100 | 159.1 | 0.4 | 32.39 | 0.9880 |
| 3 | 0.0150 | 169.100 | 169.1 | 0.6 | 34.42 | 0.9880 |
| 4 | 0.0200 | 196.000 | 196.0 | 0.8 | 39.90 | 0.9870 |
| 5 | 0.0250 | 229.000 | 229.0 | 1.0 | 46.61 | 0.9870 |
| 6 | 0.0300 | 253.700 | 253.7 | 1.2 | 51.64 | 0.9860 |
| 7 | 0.0350 | 275.600 | 275.6 | 1.4 | 56.10 | 0.9860 |
| 8 | 0.0400 | 291.500 | 291.5 | 1.6 | 59.34 | 0.9860 |
| 9 | 0.0450 | 303.400 | 303.4 | 1.8 | 61.76 | 0.9860 |
| 10 | 0.0500 | 315.300 | 315.3 | 2.0 | 64.18 | 0.9860 |
| 11 | 0.0550 | 323.700 | 323.7 | 2.2 | 65.89 | 0.9860 |
| 12 | 0.0600 | 330.700 | 330.7 | 2.4 | 67.32 | 0.9860 |
| 13 | 0.0650 | 334.800 | 334.8 | 2.6 | 68.15 | 0.9860 |
| 14 | 0.0700 | 339.500 | 339.5 | 2.8 | 69.11 | 0.9860 |
| 15 | 0.0750 | 342.600 | 342.6 | 3.0 | 69.74 | 0.9860 |
| 16 | 0.0800 | 344.600 | 344.6 | 3.2 | 70.15 | 0.9870 |
| 17 | 0.0850 | 346.100 | 346.1 | 3.4 | 70.45 | 0.9870 |
| 18 | 0.0900 | 346.000 | 346.0 | 3.6 | 70.43 | 0.9870 |
| 19 | 0.0950 | 347.000 | 347.0 | 3.8 | 70.63 | 0.9870 |
| 20 | 0.1000 | 346.600 | 346.6 | 4.0 | 70.55 | 0.9870 |
| 21 | 0.1100 | 343.200 | 343.2 | 4.4 | 69.86 | 0.9870 |
| 22 | 0.1200 | 339.200 | 339.2 | 4.8 | 69.05 | 0.9880 |
| 23 | 0.1300 | 336.000 | 336.0 | 5.2 | 68.39 | 0.9880 |
| 24 | 0.1400 | 333.500 | 333.5 | 5.6 | 67.89 | 0.9880 |
| 25 | 0.1500 | 329.600 | 329.6 | 6.0 | 67.09 | 0.9880 |
| 26 | 0.1600 | 323.700 | 323.7 | 6.4 | 65.89 | 0.9880 |
| 27 | 0.1700 | 318.700 | 318.7 | 6.8 | 64.87 | 0.9870 |
| 28 | 0.1800 | 311.700 | 311.7 | 7.2 | 63.45 | 0.9870 |

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## Test Readings for Specimen No. 3

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 304.700 | 304.7 | 7.6 | 62.02 | 0.9870 |
| 30 | 0.2000 | 300.200 | 300.2 | 8.0 | 61.11 | 0.9860 |
| 31 | 0.2100 | 297.300 | 297.3 | 8.4 | 60.52 | 0.9860 |
| 32 | 0.2200 | 294.500 | 294.5 | 8.8 | 59.95 | 0.9850 |
| 33 | 0.2300 | 290.800 | 290.8 | 9.2 | 59.19 | 0.9840 |
| 34 | 0.2400 | 287.900 | 287.9 | 9.6 | 58.60 | 0.9820 |
| 35 | 0.2500 | 289.000 | 289.0 | 10.0 | 58.83 | 0.9810 |
| 36 | 0.2600 | 289.500 | 289.5 | 10.4 | 58.93 | 0.9810 |
| 37 | 0.2700 | 288.000 | 288.0 | 10.8 | 58.62 | 0.9790 |
| 38 | 0.2800 | 288.100 | 288.1 | 11.2 | 58.64 | 0.9790 |
| 39 | 0.2900 | 286.200 | 286.2 | 11.6 | 58.26 | 0.9780 |
| 40 | 0.3000 | 288.000 | 288.0 | 12.0 | 58.62 | 0.9780 |
| 41 | 0.3200 | 289.000 | 289.0 | 12.8 | 58.83 | 0.9760 |
| 42 | 0.3400 | 286.700 | 286.7 | 13.6 | 58.36 | 0.9740 |
| 43 | 0.3600 | 287.700 | 287.7 | 14.4 | 58.56 | 0.9730 |
| 44 | 0.3800 | 281.300 | 281.3 | 15.2 | 57.26 | 0.9700 |
| 45 | 0.4000 | 280.700 | 280.7 | 16.0 | 57.14 | 0.9670 |
| 46 | 0.4200 | 281.400 | 281.4 | 16.8 | 57.28 | 0.9650 |
| 47 | 0.4400 | 285.000 | 285.0 | 17.6 | 58.01 | 0.9630 |
| 48 | 0.4600 | 288.700 | 288.7 | 18.4 | 58.77 | 0.9610 |
| 49 | 0.4800 | 292.400 | 292.4 | 19.2 | 59.52 | 0.9580 |
| 50 | 0.5000 | 302.500 | 302.5 | 20.0 | 61.58 | 0.9550 |

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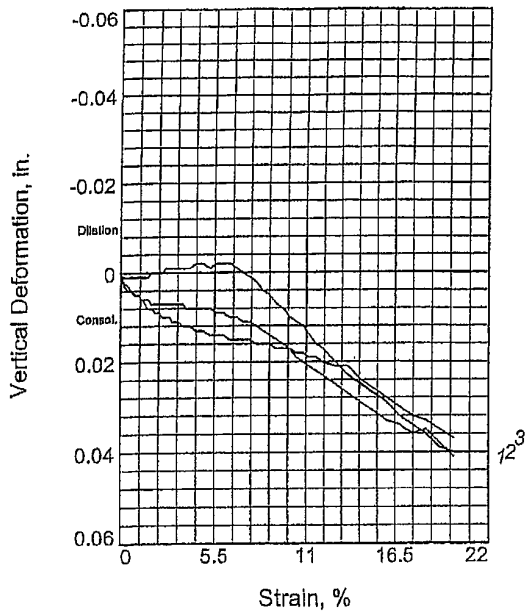


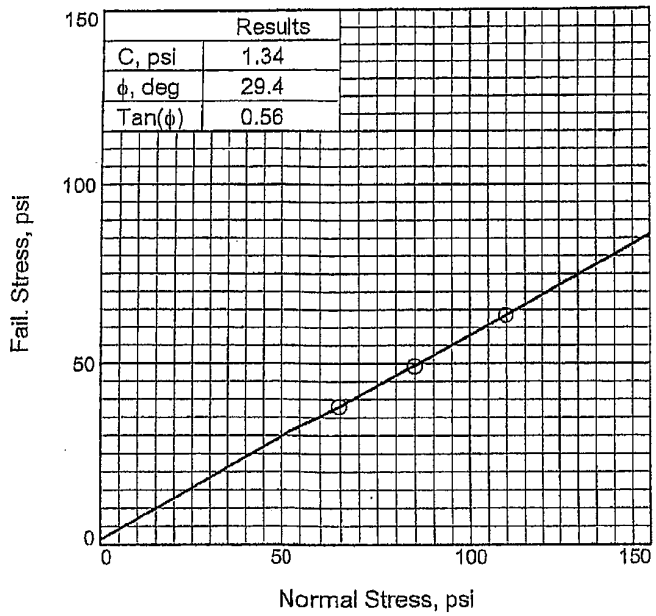


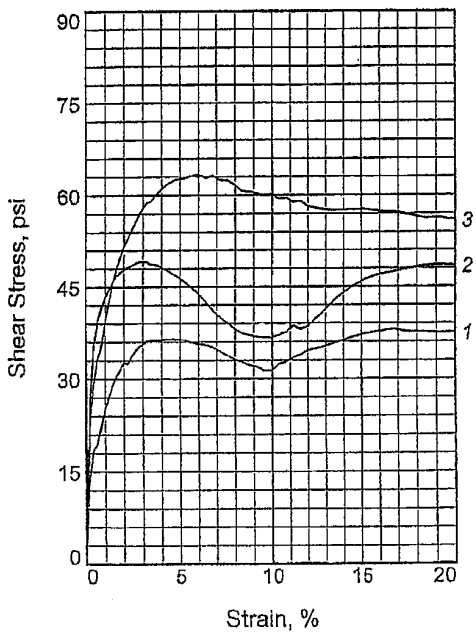


| | Sample No. | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 21.2 | 23.2 | 23.0 |
| | Dry Density, pcf | 102.8 | 101.4 | 101.8 |
| | Saturation, % | 89.3 | 94.4 | 94.8 |
| | Void Ratio | 0.6398 | 0.6629 | 0.6556 |
| | Diameter, in. | 2.50 | 2.50 | 2.50 |
| | Height, in. | 0.93 | 0.93 | 0.93 |
| At Test | Water Content, % | 21.1 | 22.7 | 20.2 |
| | Dry Density, pcf | 104.8 | 102.0 | 109.8 |
| | Saturation, % | | | |
| | Void Ratio | | NA | |
| | Diameter, in. | | | |
| | Height, in. | | | |
| | Normal Stress, psi | 64.80 | 85.00 | 109.90 |
| | Fail. Stress, psi | 38.00 | 49.18 | 63.45 |
| | Strain, % | 16.8 | 3.2 | 6.0 |
| | Ult. Stress, psi | | | |
| | Strain, % | | | |
| | Strain rate, in./min. | 0.01 | 0.01 | 0.01 |

**Sample Type:** Undisturbed
**Description:** Light Gray Silty Sand (SM)

**LL=** 17 **PL=** 14 **PI=** 3
**Assumed Specific Gravity=** 2.70
**Remarks:** ASTM D3080-04
Direct Shear Machine-Soil Test Model D-120-B

Figure MH 5-5-09

**Client:** Bechtel

**Project:** Exelon Texas COL Project - Supplemental Investigation, including UHS
**Location:** B-3234 UD
**Sample Number:** UD-15 **Depth:** 260.0'-262.5'
Proj. No.: 6468-07-1777 **Date Sampled:** 2-7-09

DIRECT SHEAR TEST REPORT

MACTEC Engineering and Consulting, Inc.

**Tested By:** J Alexander **Checked By:** D Kopitsky

# DIRECT SHEAR TEST

5/5/2009

| | |
|---|---|
| **Date:** | 2-7-09 |
| **Client:** | Bechtel |
| **Project:** | Exelon Texas COL Project - Supplemental Investigation, including UHS |
| **Project No.:** | 6468-07-1777 |
| **Location:** | B-3234 UD |
| **Depth:** | 260.0'-262.5' **Sample Number:** UD-15 |
| **Description:** | Light Gray Silty Sand (SM) |
| **Remarks:** | ASTM D3080-04 |
| | Direct Shear Machine-Soil Test Model D-120-B |
| **Type of Sample:** | Undisturbed |

**Assumed Specific Gravity=**2.70 **LL=**17 **PL=**14 **PI=**3

**Parameters for Specimen No. 1**

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 77.340 | | 145.320 |
| Moisture content: Dry soil+tare, gms. | 65.000 | | 121.160 |
| Moisture content: Tare, gms. | 6.700 | | 6.690 |
| Moisture, % | 21.2 | 21.1 | 21.1 |
| Moist specimen weight, gms. | 150.0 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.02 | |
| Wet Density, pcf | 124.5 | 126.9 | |
| Dry density, pcf | 102.8 | 104.8 | |
| Void ratio | 0.6398 | | |
| Saturation, % | 89.3 | | |

**Test Readings for Specimen No. 1**

**Normal stress =** 64.8 psi

**Strain rate, in./min. =** 0.01

**Fail. Stress =** 38.00 psi **at reading no.** 46

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4770 |
| 1 | 0.0050 | 64.400 | 64.4 | 0.2 | 13.11 | 0.4740 |
| 2 | 0.0100 | 90.500 | 90.5 | 0.4 | 18.42 | 0.4730 |
| 3 | 0.0150 | 95.800 | 95.8 | 0.6 | 19.50 | 0.4730 |
| 4 | 0.0200 | 109.800 | 109.8 | 0.8 | 22.35 | 0.4720 |
| 5 | 0.0250 | 122.500 | 122.5 | 1.0 | 24.94 | 0.4720 |
| 6 | 0.0300 | 133.200 | 133.2 | 1.2 | 27.11 | 0.4710 |
| 7 | 0.0350 | 141.600 | 141.6 | 1.4 | 28.82 | 0.4710 |
| 8 | 0.0400 | 148.200 | 148.2 | 1.6 | 30.17 | 0.4710 |
| 9 | 0.0450 | 154.200 | 154.2 | 1.8 | 31.39 | 0.4700 |
| 10 | 0.0500 | 159.700 | 159.7 | 2.0 | 32.51 | 0.4700 |
| 11 | 0.0550 | 159.300 | 159.3 | 2.2 | 32.43 | 0.4700 |
| 12 | 0.0600 | 165.200 | 165.2 | 2.4 | 33.63 | 0.4700 |
| 13 | 0.0650 | 169.500 | 169.5 | 2.6 | 34.50 | 0.4700 |

MACTEC Engineering and Consulting, Inc.

MH 5-5-09

## Test Readings for Specimen No. 1

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 14 | 0.0700 | 172.700 | 172.7 | 2.8 | 35.15 | 0.4700 |
| 15 | 0.0750 | 174.600 | 174.6 | 3.0 | 35.54 | 0.4700 |
| 16 | 0.0800 | 176.900 | 176.9 | 3.2 | 36.01 | 0.4700 |
| 17 | 0.0850 | 178.400 | 178.4 | 3.4 | 36.31 | 0.4700 |
| 18 | 0.0900 | 178.300 | 178.3 | 3.6 | 36.29 | 0.4700 |
| 19 | 0.0950 | 178.000 | 178.0 | 3.8 | 36.23 | 0.4690 |
| 20 | 0.1000 | 178.300 | 178.3 | 4.0 | 36.29 | 0.4690 |
| 21 | 0.1100 | 178.900 | 178.9 | 4.4 | 36.42 | 0.4690 |
| 22 | 0.1200 | 178.700 | 178.7 | 4.8 | 36.38 | 0.4690 |
| 23 | 0.1300 | 178.600 | 178.6 | 5.2 | 36.36 | 0.4690 |
| 24 | 0.1400 | 176.600 | 176.6 | 5.6 | 35.95 | 0.4680 |
| 25 | 0.1500 | 175.200 | 175.2 | 6.0 | 35.66 | 0.4680 |
| 26 | 0.1600 | 174.700 | 174.7 | 6.4 | 35.56 | 0.4670 |
| 27 | 0.1700 | 172.400 | 172.4 | 6.8 | 35.09 | 0.4670 |
| 28 | 0.1800 | 169.100 | 169.1 | 7.2 | 34.42 | 0.4660 |
| 29 | 0.1900 | 165.700 | 165.7 | 7.6 | 33.73 | 0.4660 |
| 30 | 0.2000 | 162.900 | 162.9 | 8.0 | 33.16 | 0.4650 |
| 31 | 0.2100 | 160.800 | 160.8 | 8.4 | 32.73 | 0.4640 |
| 32 | 0.2200 | 158.000 | 158.0 | 8.8 | 32.16 | 0.4630 |
| 33 | 0.2300 | 156.800 | 156.8 | 9.2 | 31.92 | 0.4620 |
| 34 | 0.2400 | 153.800 | 153.8 | 9.6 | 31.31 | 0.4610 |
| 35 | 0.2500 | 153.800 | 153.8 | 10.0 | 31.31 | 0.4600 |
| 36 | 0.2600 | 158.400 | 158.4 | 10.4 | 32.24 | 0.4580 |
| 37 | 0.2700 | 160.800 | 160.8 | 10.8 | 32.73 | 0.4570 |
| 38 | 0.2800 | 163.900 | 163.9 | 11.2 | 33.36 | 0.4560 |
| 39 | 0.2900 | 166.400 | 166.4 | 11.6 | 33.87 | 0.4550 |
| 40 | 0.3000 | 169.500 | 169.5 | 12.0 | 34.50 | 0.4540 |
| 41 | 0.3200 | 172.400 | 172.4 | 12.8 | 35.09 | 0.4520 |
| 42 | 0.3400 | 175.900 | 175.9 | 13.6 | 35.81 | 0.4500 |
| 43 | 0.3600 | 179.900 | 179.9 | 14.4 | 36.62 | 0.4480 |
| 44 | 0.3800 | 182.900 | 182.9 | 15.2 | 37.23 | 0.4460 |
| 45 | 0.4000 | 184.800 | 184.8 | 16.0 | 37.62 | 0.4440 |
| 46 | 0.4200 | 186.700 | 186.7 | 16.8 | 38.00 | 0.4430 |
| 47 | 0.4400 | 184.700 | 184.7 | 17.6 | 37.60 | 0.4410 |
| 48 | 0.4600 | 184.600 | 184.6 | 18.4 | 37.58 | 0.4420 |
| 49 | 0.4800 | 183.800 | 183.8 | 19.2 | 37.41 | 0.4390 |
| 50 | 0.5000 | 184.400 | 184.4 | 20.0 | 37.54 | 0.4360 |

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## Parameters for Specimen No. 2

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 146.330 | | 138.380 |
| Moisture content: Dry soil+tare, gms. | 120.040 | | 115.320 |
| Moisture content: Tare, gms. | 6.660 | | 13.730 |
| Moisture, % | 23.2 | 22.7 | 22.7 |
| Moist specimen weight, gms. | 150.4 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.01 | |
| Wet Density, pcf | 124.9 | 125.2 | |
| Dry density, pcf | 101.4 | 102.0 | |
| Void ratio | 0.6629 | | |
| Saturation, % | 94.4 | | |

## Test Readings for Specimen No. 2

**Normal stress =** 85.0 psi

**Strain rate, in./min. =** 0.01

**Fail. Stress =** 49.18 psi **at reading no.** 16

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4890 |
| 1 | 0.0050 | 125.600 | 125.6 | 0.2 | 25.57 | 0.4880 |
| 2 | 0.0100 | 171.800 | 171.8 | 0.4 | 34.97 | 0.4880 |
| 3 | 0.0150 | 192.500 | 192.5 | 0.6 | 39.18 | 0.4880 |
| 4 | 0.0200 | 204.200 | 204.2 | 0.8 | 41.57 | 0.4880 |
| 5 | 0.0250 | 212.700 | 212.7 | 1.0 | 43.30 | 0.4880 |
| 6 | 0.0300 | 218.800 | 218.8 | 1.2 | 44.54 | 0.4880 |
| 7 | 0.0350 | 224.800 | 224.8 | 1.4 | 45.76 | 0.4880 |
| 8 | 0.0400 | 229.000 | 229.0 | 1.6 | 46.61 | 0.4880 |
| 9 | 0.0450 | 232.300 | 232.3 | 1.8 | 47.29 | 0.4890 |
| 10 | 0.0500 | 234.800 | 234.8 | 2.0 | 47.79 | 0.4890 |
| 11 | 0.0550 | 236.800 | 236.8 | 2.2 | 48.20 | 0.4890 |
| 12 | 0.0600 | 238.000 | 238.0 | 2.4 | 48.45 | 0.4890 |
| 13 | 0.0650 | 239.700 | 239.7 | 2.6 | 48.79 | 0.4900 |
| 14 | 0.0700 | 241.000 | 241.0 | 2.8 | 49.06 | 0.4900 |
| 15 | 0.0750 | 241.500 | 241.5 | 3.0 | 49.16 | 0.4900 |
| 16 | 0.0800 | 241.600 | 241.6 | 3.2 | 49.18 | 0.4900 |
| 17 | 0.0850 | 239.400 | 239.4 | 3.4 | 48.73 | 0.4900 |
| 18 | 0.0900 | 239.100 | 239.1 | 3.6 | 48.67 | 0.4900 |
| 19 | 0.0950 | 238.200 | 238.2 | 3.8 | 48.49 | 0.4900 |
| 20 | 0.1000 | 236.700 | 236.7 | 4.0 | 48.18 | 0.4900 |
| 21 | 0.1100 | 233.500 | 233.5 | 4.4 | 47.53 | 0.4910 |
| 22 | 0.1200 | 229.600 | 229.6 | 4.8 | 46.74 | 0.4910 |
| 23 | 0.1300 | 225.600 | 225.6 | 5.2 | 45.92 | 0.4900 |
| 24 | 0.1400 | 220.700 | 220.7 | 5.6 | 44.92 | 0.4910 |
| 25 | 0.1500 | 215.100 | 215.1 | 6.0 | 43.78 | 0.4910 |
| 26 | 0.1600 | 208.600 | 208.6 | 6.4 | 42.46 | 0.4910 |
| 27 | 0.1700 | 201.800 | 201.8 | 6.8 | 41.08 | 0.4900 |
| 28 | 0.1800 | 196.400 | 196.4 | 7.2 | 39.98 | 0.4890 |

MACTEC Engineering and Consulting, Inc. MK 5-5-09

## Test Readings for Specimen No. 2

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 191.900 | 191.9 | 7.6 | 39.06 | 0.4880 |
| 30 | 0.2000 | 187.000 | 187.0 | 8.0 | 38.06 | 0.4870 |
| 31 | 0.2100 | 183.600 | 183.6 | 8.4 | 37.37 | 0.4850 |
| 32 | 0.2200 | 182.200 | 182.2 | 8.8 | 37.09 | 0.4840 |
| 33 | 0.2300 | 180.600 | 180.6 | 9.2 | 36.76 | 0.4820 |
| 34 | 0.2400 | 180.400 | 180.4 | 9.6 | 36.72 | 0.4810 |
| 35 | 0.2500 | 180.200 | 180.2 | 10.0 | 36.68 | 0.4790 |
| 36 | 0.2600 | 182.100 | 182.1 | 10.4 | 37.07 | 0.4780 |
| 37 | 0.2700 | 184.400 | 184.4 | 10.8 | 37.54 | 0.4770 |
| 38 | 0.2800 | 189.900 | 189.9 | 11.2 | 38.66 | 0.4750 |
| 39 | 0.2900 | 186.500 | 186.5 | 11.6 | 37.96 | 0.4730 |
| 40 | 0.3000 | 188.800 | 188.8 | 12.0 | 38.43 | 0.4720 |
| 41 | 0.3200 | 199.600 | 199.6 | 12.8 | 40.63 | 0.4690 |
| 42 | 0.3400 | 211.500 | 211.5 | 13.6 | 43.05 | 0.4660 |
| 43 | 0.3600 | 220.100 | 220.1 | 14.4 | 44.80 | 0.4640 |
| 44 | 0.3800 | 226.500 | 226.5 | 15.2 | 46.11 | 0.4620 |
| 45 | 0.4000 | 230.600 | 230.6 | 16.0 | 46.94 | 0.4600 |
| 46 | 0.4200 | 232.900 | 232.9 | 16.8 | 47.41 | 0.4570 |
| 47 | 0.4400 | 235.400 | 235.4 | 17.6 | 47.92 | 0.4550 |
| 48 | 0.4600 | 237.500 | 237.5 | 18.4 | 48.34 | 0.4530 |
| 49 | 0.4800 | 238.500 | 238.5 | 19.2 | 48.55 | 0.4500 |
| 50 | 0.5000 | 238.100 | 238.1 | 20.0 | 48.47 | 0.4490 |

MACTEC Engineering and Consulting, Inc. MH 5-5-01

## Parameters for Specimen No. 3

| Specimen Parameter | Initial | Consolidated | Final |
|---|---|---|---|
| Moisture content: Moist soil+tare, gms. | 160.830 | | 139.300 |
| Moisture content: Dry soil+tare, gms. | 131.980 | | 117.000 |
| Moisture content: Tare, gms. | 6.710 | | 6.720 |
| Moisture, % | 23.0 | 20.2 | 20.2 |
| Moist specimen weight, gms. | 150.9 | | |
| Diameter, in. | 2.50 | | |
| Area, in.$^2$ | 4.91 | | |
| Height, in. | 0.93 | | |
| Net decrease in height, in. | | 0.07 | |
| Wet Density, pcf | 125.3 | 132.0 | |
| Dry density, pcf | 101.8 | 109.8 | |
| Void ratio | 0.6556 | | |
| Saturation, % | 94.8 | | |

## Test Readings for Specimen No. 3

Normal stress = 109.9 psi

Strain rate, in./min. = 0.01

Fail. Stress = 63.45 psi at reading no. 25

| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 0 | 0.0000 | 0.000 | 0.0 | 0.0 | 0.00 | 0.4250 |
| 1 | 0.0050 | 104.600 | 104.6 | 0.2 | 21.29 | 0.4230 |
| 2 | 0.0100 | 142.800 | 142.8 | 0.4 | 29.07 | 0.4220 |
| 3 | 0.0150 | 162.400 | 162.4 | 0.6 | 33.06 | 0.4210 |
| 4 | 0.0200 | 173.000 | 173.0 | 0.8 | 35.22 | 0.4200 |
| 5 | 0.0250 | 192.500 | 192.5 | 1.0 | 39.18 | 0.4200 |
| 6 | 0.0300 | 208.200 | 208.2 | 1.2 | 42.38 | 0.4190 |
| 7 | 0.0350 | 222.400 | 222.4 | 1.4 | 45.27 | 0.4180 |
| 8 | 0.0400 | 233.900 | 233.9 | 1.6 | 47.61 | 0.4170 |
| 9 | 0.0450 | 244.100 | 244.1 | 1.8 | 49.69 | 0.4170 |
| 10 | 0.0500 | 252.800 | 252.8 | 2.0 | 51.46 | 0.4160 |
| 11 | 0.0550 | 260.500 | 260.5 | 2.2 | 53.03 | 0.4160 |
| 12 | 0.0600 | 267.200 | 267.2 | 2.4 | 54.39 | 0.4150 |
| 13 | 0.0650 | 273.500 | 273.5 | 2.6 | 55.67 | 0.4150 |
| 14 | 0.0700 | 279.300 | 279.3 | 2.8 | 56.85 | 0.4150 |
| 15 | 0.0750 | 284.100 | 284.1 | 3.0 | 57.83 | 0.4140 |
| 16 | 0.0800 | 288.400 | 288.4 | 3.2 | 58.71 | 0.4140 |
| 17 | 0.0850 | 289.600 | 289.6 | 3.4 | 58.95 | 0.4140 |
| 18 | 0.0900 | 293.100 | 293.1 | 3.6 | 59.66 | 0.4130 |
| 19 | 0.0950 | 296.600 | 296.6 | 3.8 | 60.37 | 0.4130 |
| 20 | 0.1000 | 299.600 | 299.6 | 4.0 | 60.99 | 0.4130 |
| 21 | 0.1100 | 304.200 | 304.2 | 4.4 | 61.92 | 0.4120 |
| 22 | 0.1200 | 307.500 | 307.5 | 4.8 | 62.59 | 0.4120 |
| 23 | 0.1300 | 308.100 | 308.1 | 5.2 | 62.72 | 0.4110 |
| 24 | 0.1400 | 310.200 | 310.2 | 5.6 | 63.14 | 0.4110 |
| 25 | 0.1500 | 311.700 | 311.7 | 6.0 | 63.45 | 0.4110 |
| 26 | 0.1600 | 308.600 | 308.6 | 6.4 | 62.82 | 0.4100 |
| 27 | 0.1700 | 310.600 | 310.6 | 6.8 | 63.22 | 0.4100 |
| 28 | 0.1800 | 307.100 | 307.1 | 7.2 | 62.51 | 0.4100 |

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## Test Readings for Specimen No. 3

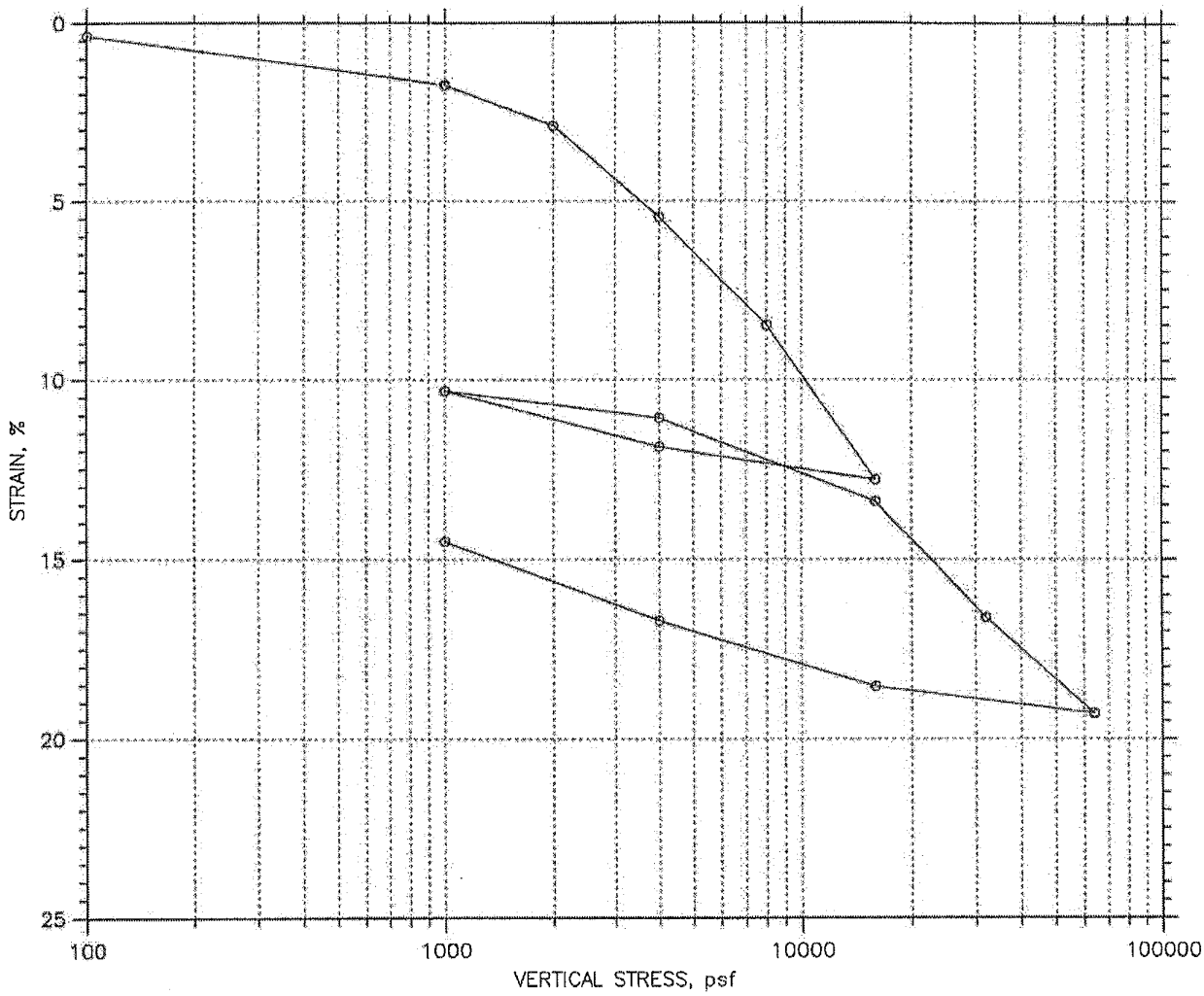
| No. | Horizontal Def. Dial in. | Load Dial | Load lbs. | Strain % | Shear Stress psi | Vertical Def. Dial in. |
|---|---|---|---|---|---|---|
| 29 | 0.1900 | 306.900 | 306.9 | 7.6 | 62.47 | 0.4100 |
| 30 | 0.2000 | 302.900 | 302.9 | 8.0 | 61.66 | 0.4090 |
| 31 | 0.2100 | 298.400 | 298.4 | 8.4 | 60.74 | 0.4090 |
| 32 | 0.2200 | 297.900 | 297.9 | 8.8 | 60.64 | 0.4090 |
| 33 | 0.2300 | 296.300 | 296.3 | 9.2 | 60.31 | 0.4080 |
| 34 | 0.2400 | 294.500 | 294.5 | 9.6 | 59.95 | 0.4080 |
| 35 | 0.2500 | 295.800 | 295.8 | 10.0 | 60.21 | 0.4080 |
| 36 | 0.2600 | 291.800 | 291.8 | 10.4 | 59.40 | 0.4070 |
| 37 | 0.2700 | 292.600 | 292.6 | 10.8 | 59.56 | 0.4070 |
| 38 | 0.2800 | 289.200 | 289.2 | 11.2 | 58.87 | 0.4060 |
| 39 | 0.2900 | 290.000 | 290.0 | 11.6 | 59.03 | 0.4060 |
| 40 | 0.3000 | 286.000 | 286.0 | 12.0 | 58.22 | 0.4050 |
| 41 | 0.3200 | 283.600 | 283.6 | 12.8 | 57.73 | 0.4040 |
| 42 | 0.3400 | 282.600 | 282.6 | 13.6 | 57.52 | 0.4040 |
| 43 | 0.3600 | 283.100 | 283.1 | 14.4 | 57.63 | 0.4010 |
| 44 | 0.3800 | 283.400 | 283.4 | 15.2 | 57.69 | 0.3990 |
| 45 | 0.4000 | 281.400 | 281.4 | 16.0 | 57.28 | 0.3970 |
| 46 | 0.4200 | 280.900 | 280.9 | 16.8 | 57.18 | 0.3950 |
| 47 | 0.4400 | 279.100 | 279.1 | 17.6 | 56.81 | 0.3930 |
| 48 | 0.4600 | 276.300 | 276.3 | 18.4 | 56.24 | 0.3920 |
| 49 | 0.4800 | 276.500 | 276.5 | 19.2 | 56.28 | 0.3900 |
| 50 | 0.5000 | 274.600 | 274.6 | 20.0 | 55.90 | 0.3880 |

MACTEC Engineering and Consulting, Inc. MK 5-5-09

# Consolidation (Load Controlled) Tests

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1130 psf | | | | Water Content, % | 18.65 | 15.63 |
| Preconsolidation Pressure: 3030 psf | | | | Dry Unit Weight, pcf | 101.6 | 118.8 |
| Compression Index: 0.216 | | | | Saturation, % | 75.98 | 99.99 |
| Diameter: 2.5 in | | Height: 1.003 in | | Void Ratio | 0.67 | 0.42 |
| LL: 38 | PL: 16 | PI: 22 | GS: 2.71 | | | |

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3101UD UD-1 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JGJ 5/5/09 |
| | Sample No.: UD-1 | Test Date: 4/16/09 | Depth: 8.0-10.0' |
| | Test No.: 9568 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.044 |

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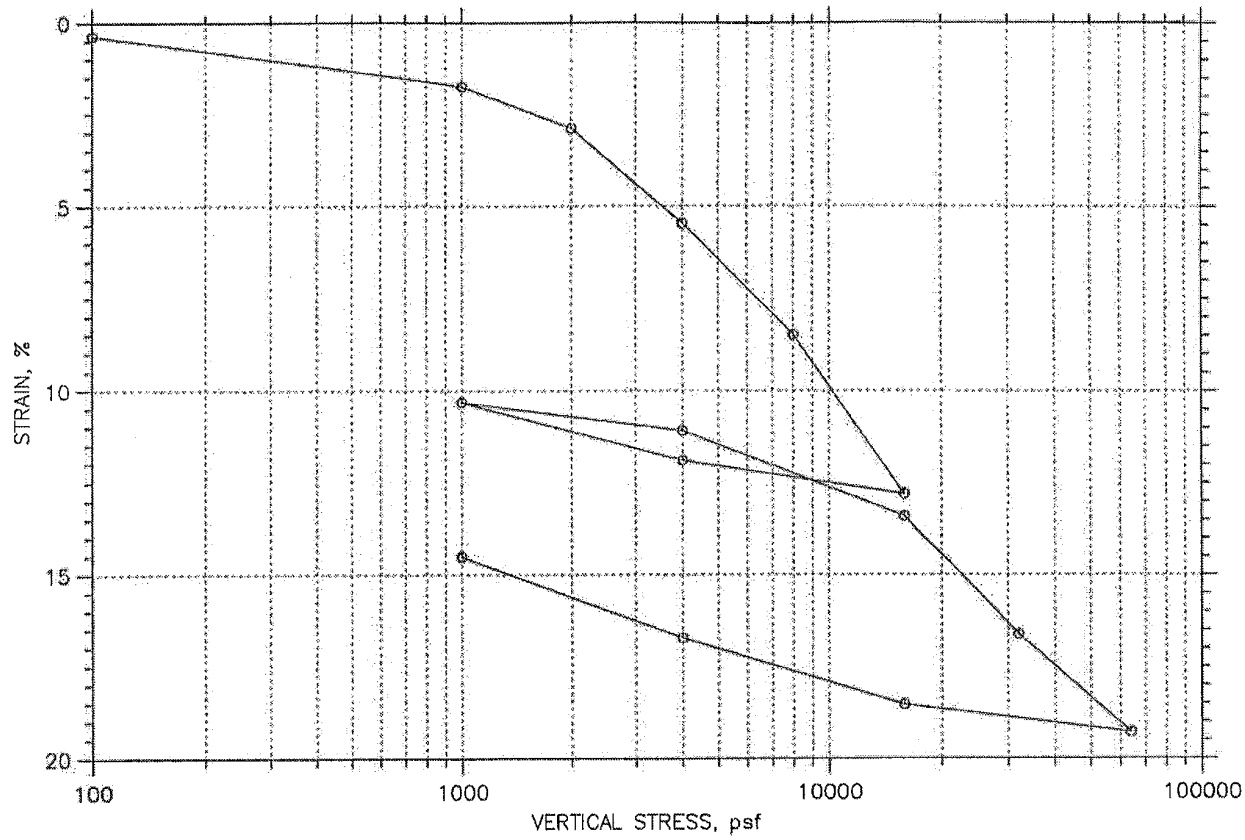
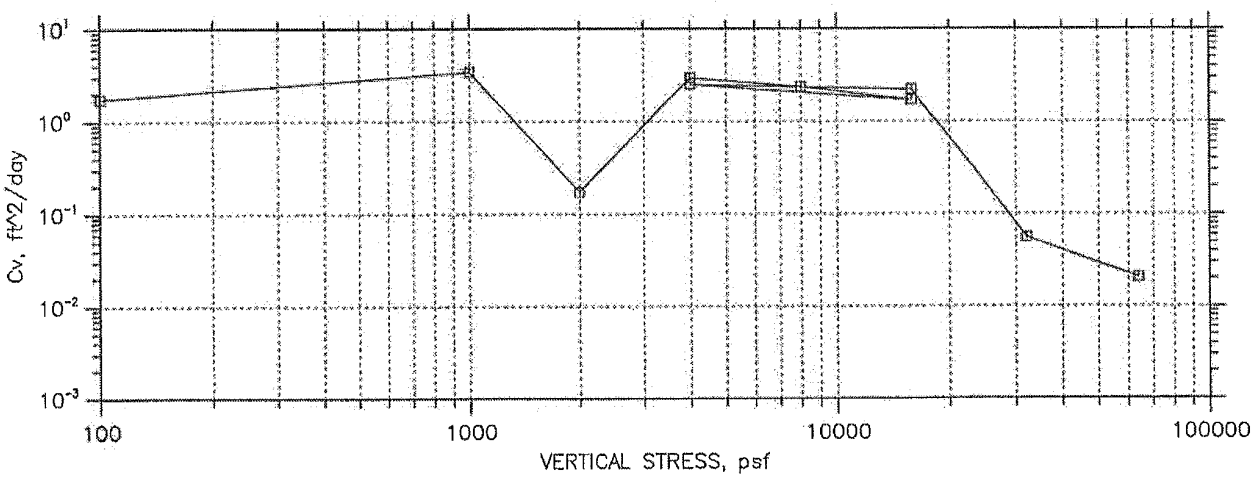
# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3101UD UD-1 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JEJ 5/5/09 |
| | Sample No.: UD-1 | Test Date: 4/16/09 | Depth: 8.0-10.0' |
| | Test No.: 9568 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.044 |

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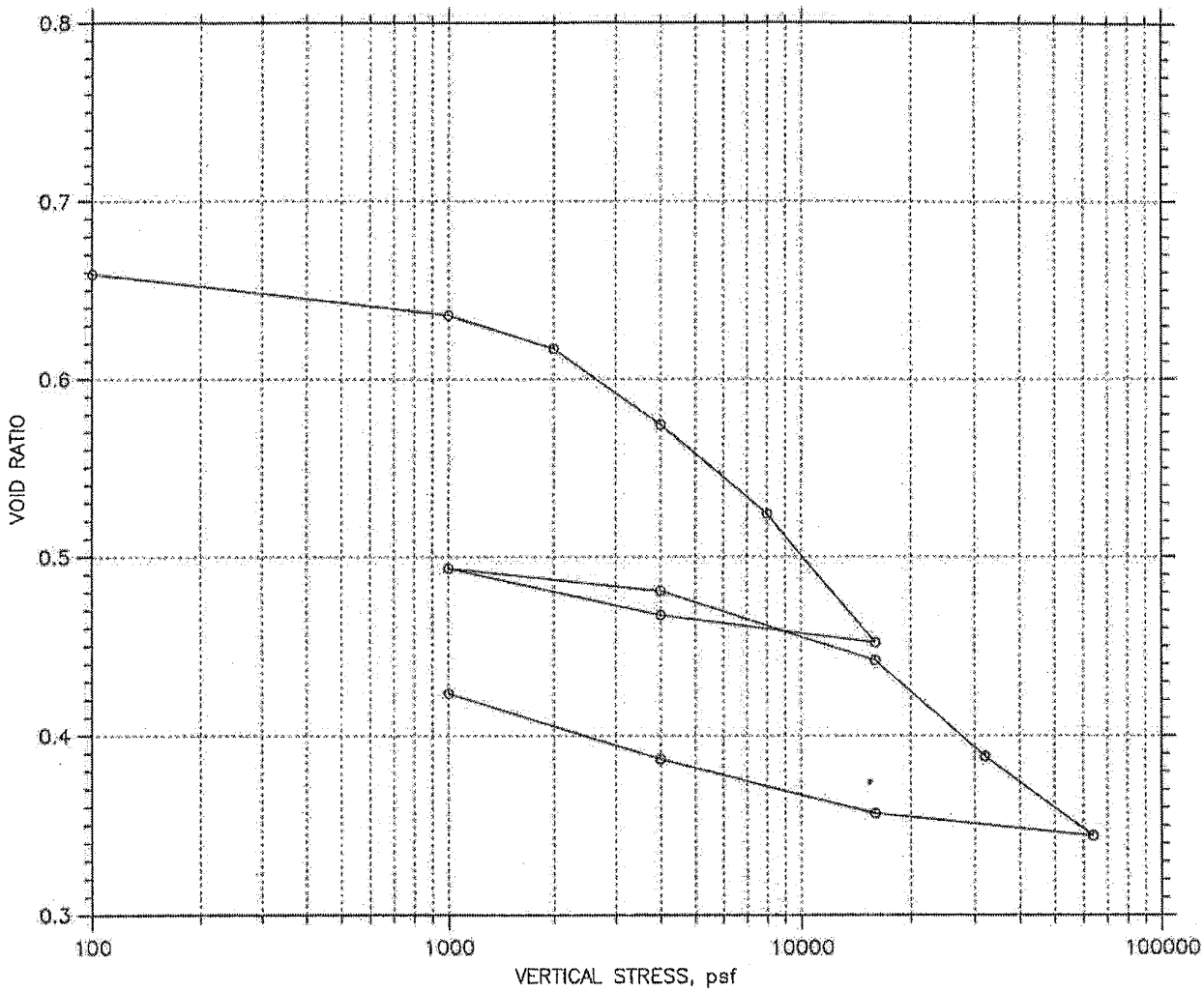
# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1130 psf | | | | Water Content, % | 18.65 | 15.63 |
| Preconsolidation Pressure: 3030 psf | | | | Dry Unit Weight, pcf | 101.6 | 118.8 |
| Compression Index: 0.216 | | | | Saturation, % | 75.98 | 99.99 |
| Diameter: 2.5 in | | Height: 1.003 in | | Void Ratio | 0.67 | 0.42 |
| LL: 38 | PL: 16 | PI: 22 | GS: 2.71 | | | |

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3101UD UD-1 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JGZ 5/5/09 |
| | Sample No.: UD-1 | Test Date: 4/16/09 | Depth: 8.0-10.0' |
| | Test No.: 9568 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.044 |

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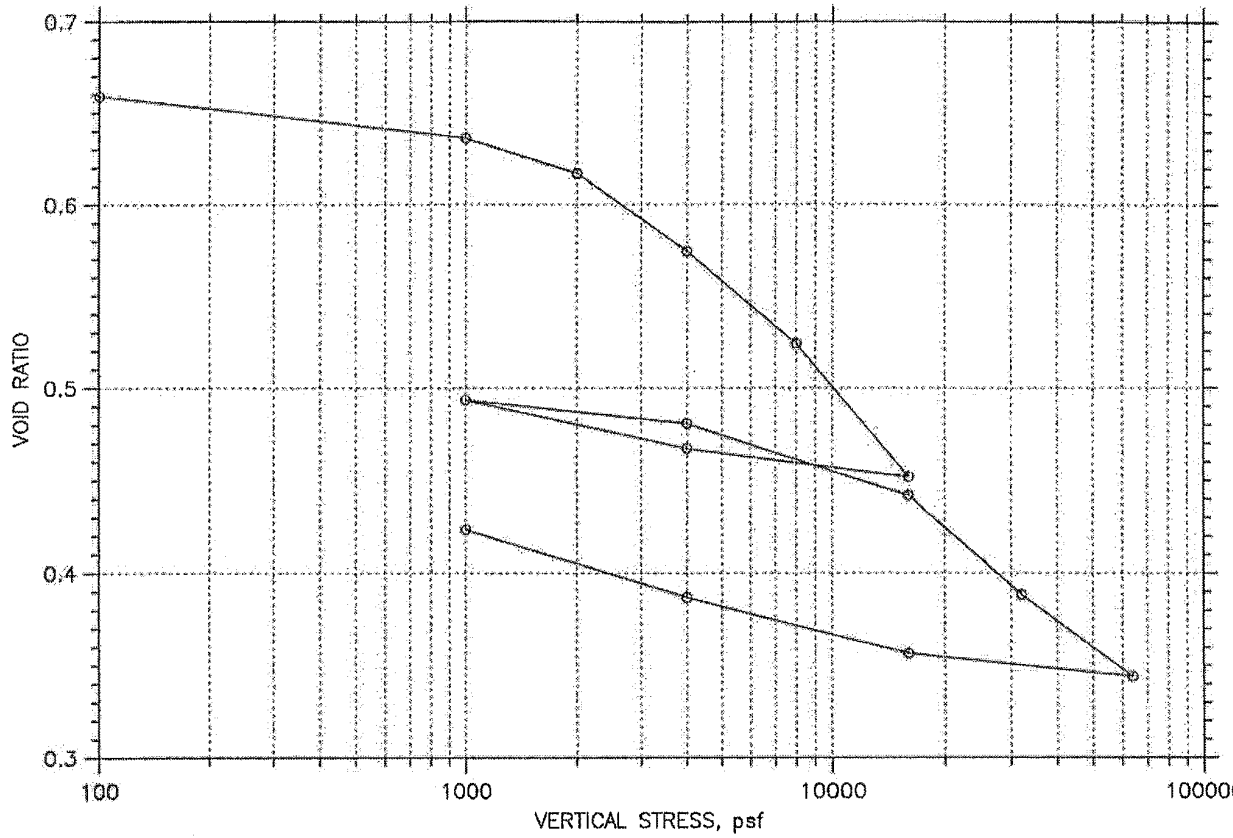
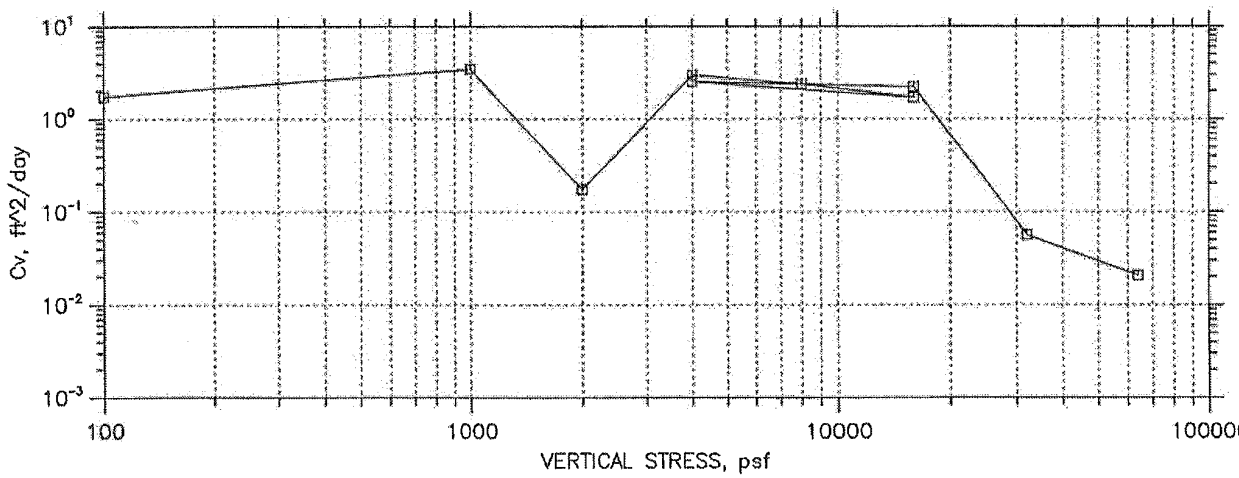
# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3101UD UD-1 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JGL 5/5/09 |
| | Sample No.: UD-1 | Test Date: 4/16/09 | Depth: 8.0-10.0' |
| | Test No.: 9568 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.044 |

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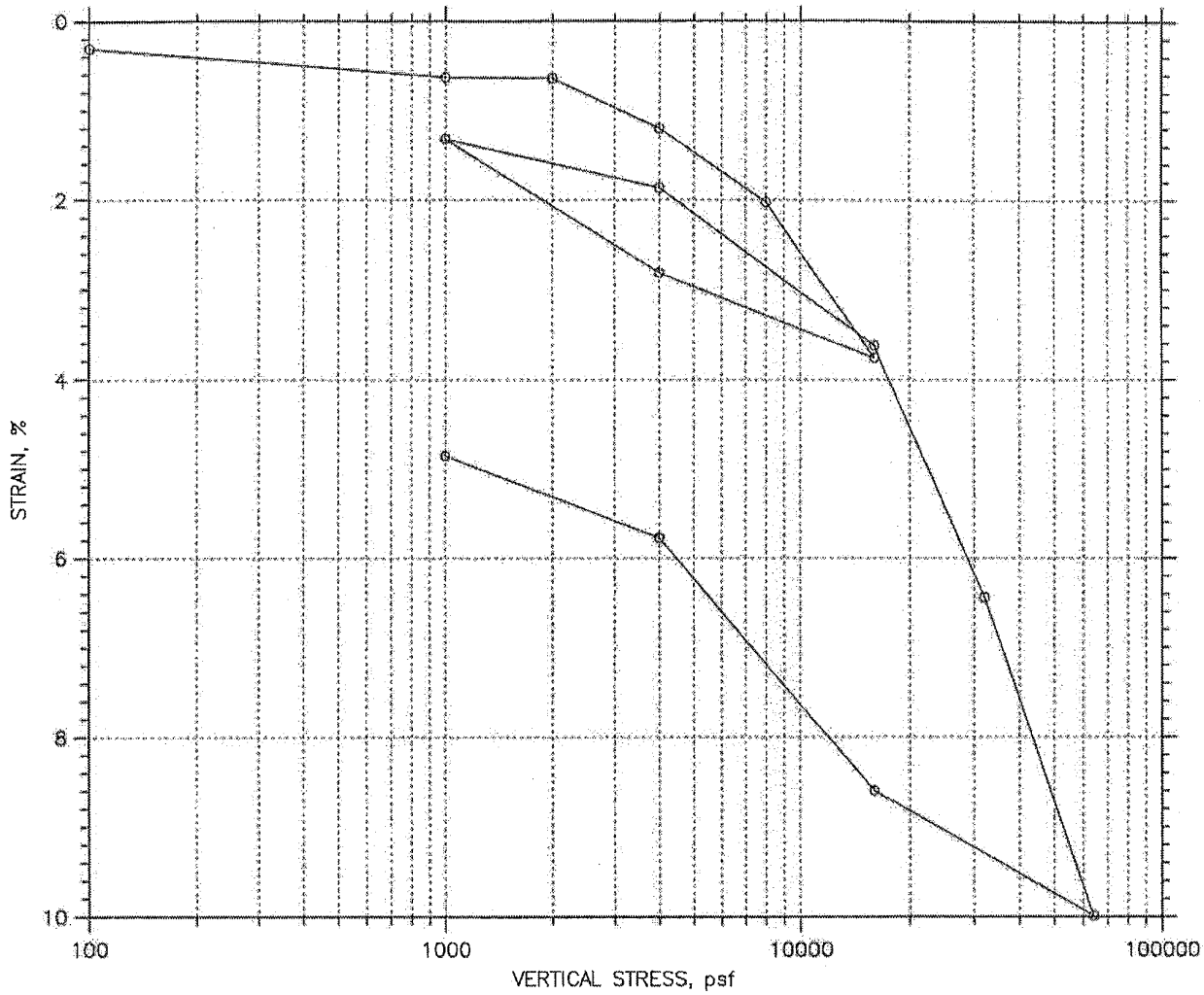
# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.04e+004 psf | | | | Water Content, % | 18.62 | 16.49 |
| Preconsolidation Pressure: 1.292e+004 psf | | | | Dry Unit Weight, pcf | 111.9 | 117.6 |
| Compression Index: 0.184 | | | | Saturation, % | 97.82 | 101.00 |
| Diameter: 2.499 in | | Height: 1.008 in | | Void Ratio | 0.52 | 0.44 |
| LL: 50 | PL: 18 | PI: 32 | GS: 2.72 | | | |

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-7 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JCT 5/5/09 |
| | Sample No.: UD-7 | Test Date: 4/16/09 | Depth: 115.0-117.5 |
| | Test No.: 9569 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Light Yellowish Brown Fat CLAY with Sand (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

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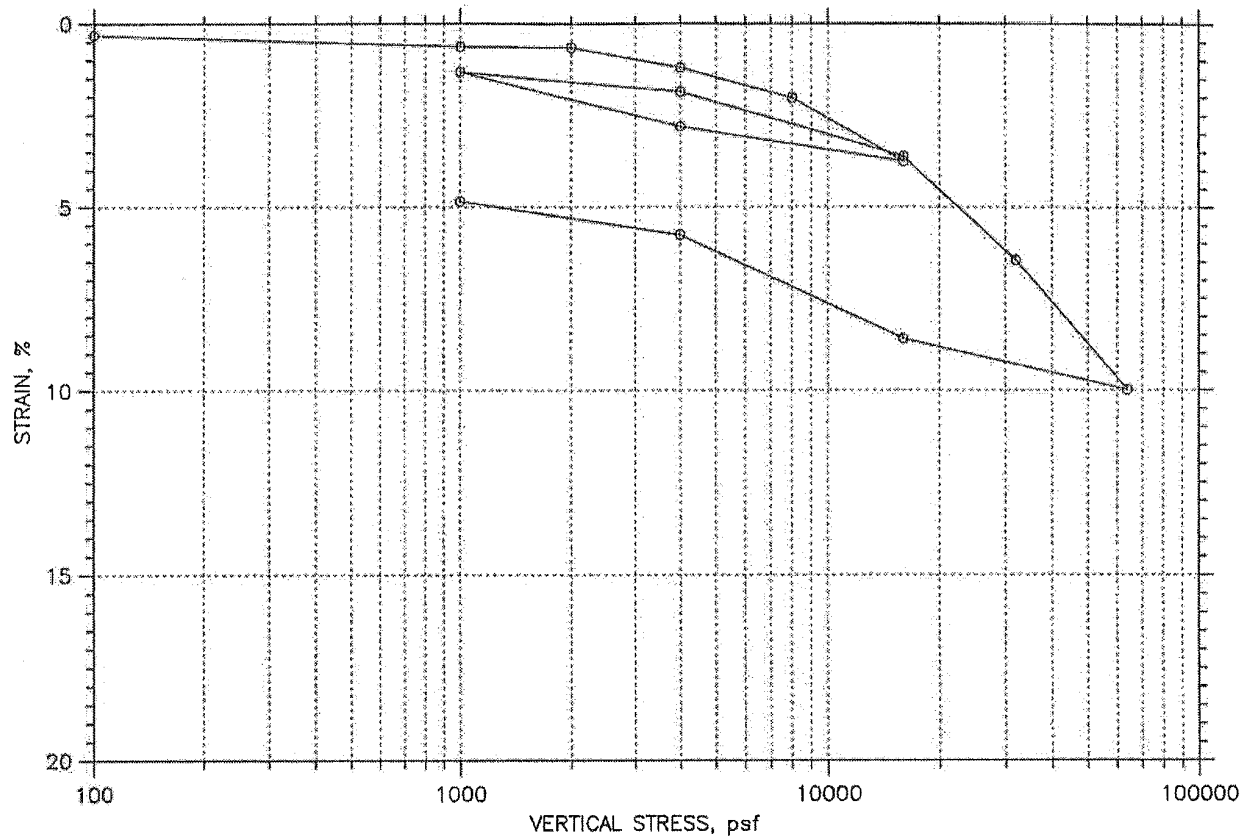
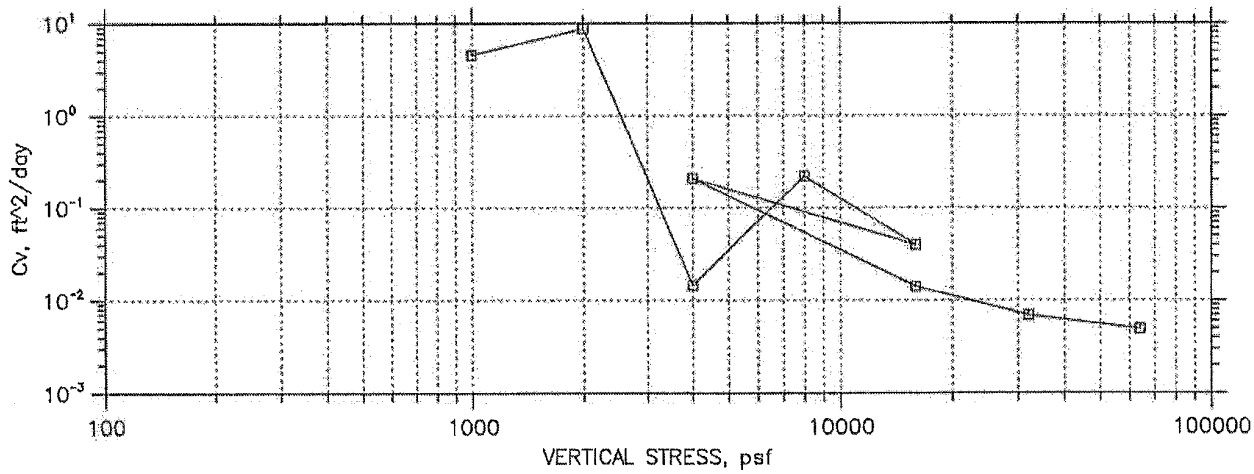
DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



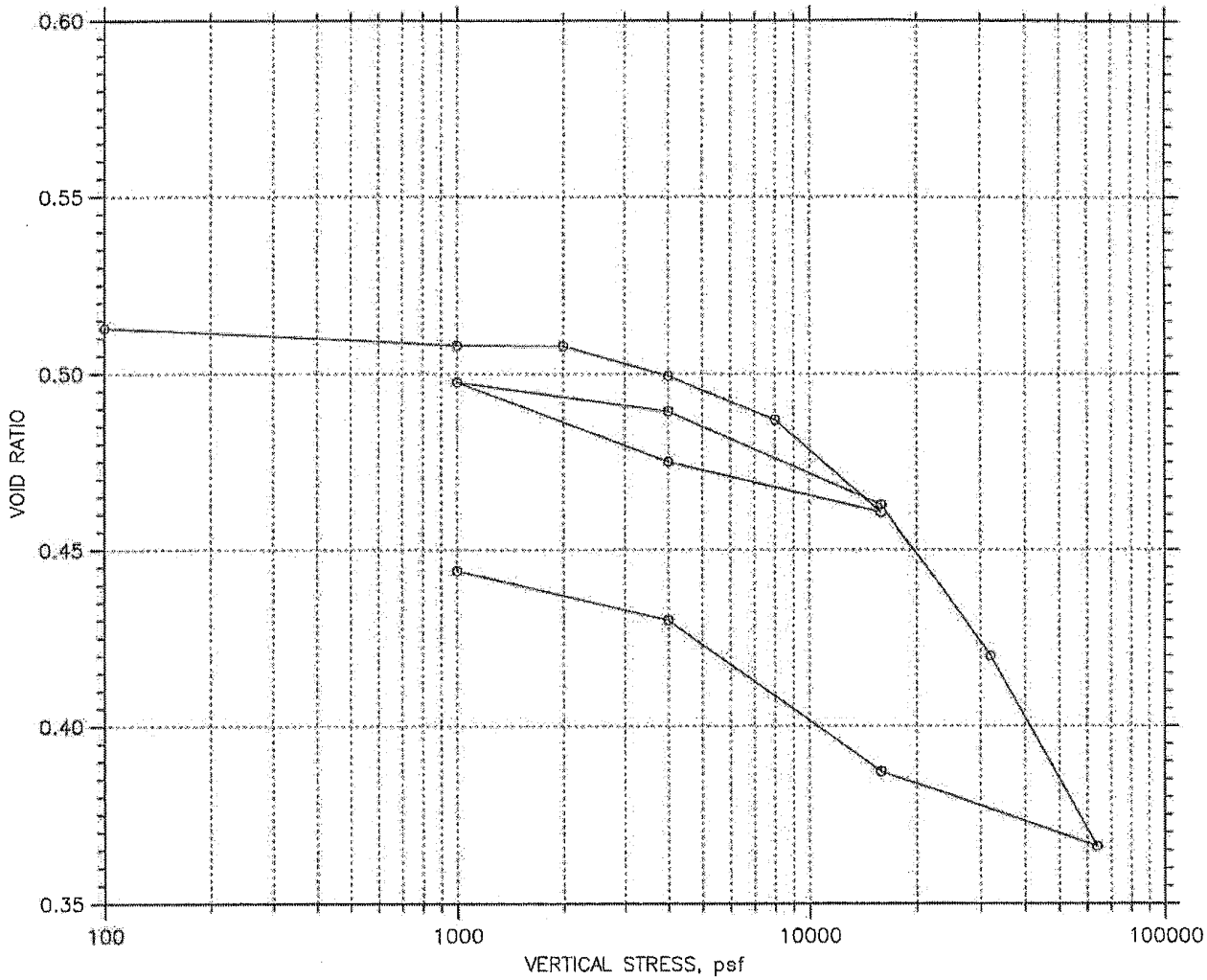




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-7 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JGT 5/5/09 |
| | Sample No.: UD-7 | Test Date: 4/16/09 | Depth: 115.0-117.5 |
| | Test No.: 9569 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Light Yellowish Brown Fat CLAY with Sand (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 13:59:59

# CONSOLIDATION TEST DATA

SUMMARY REPORT



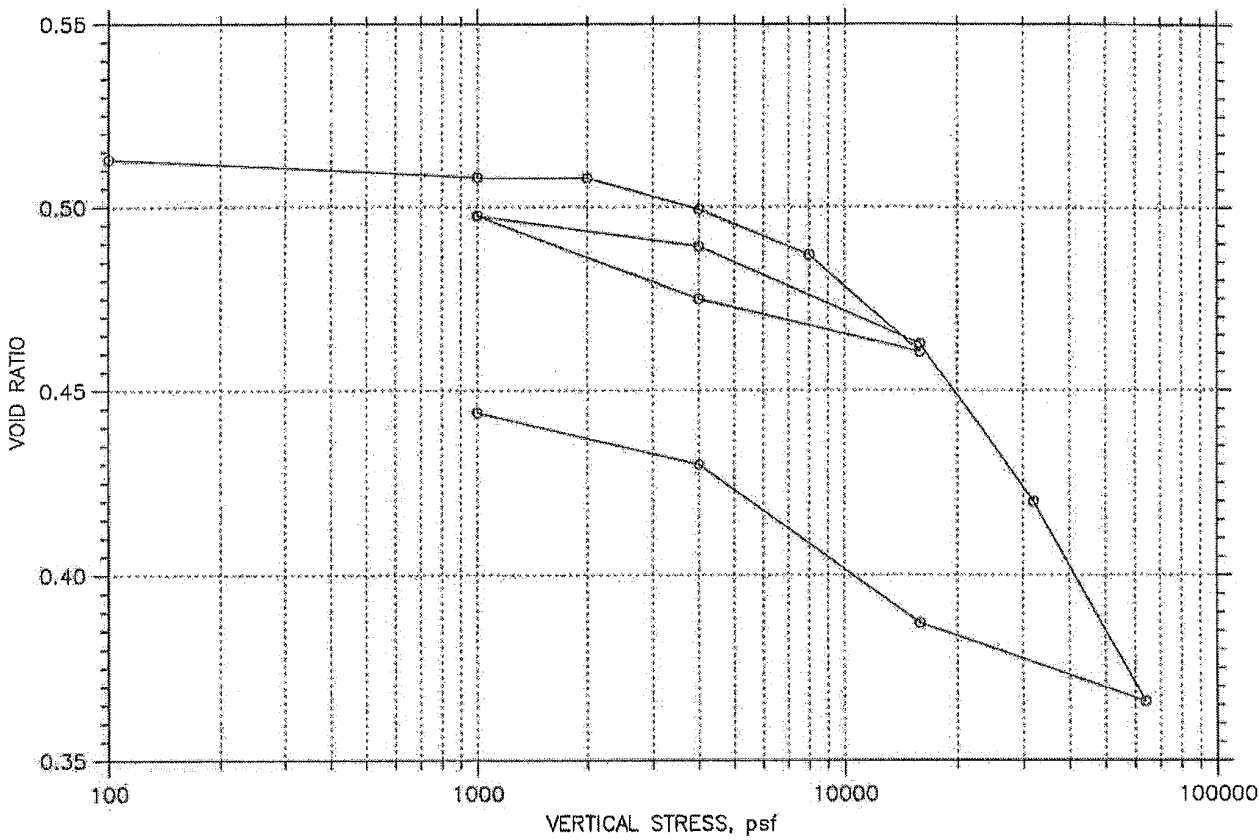

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.04e+004 psf | | | | Water Content, % | 18.62 | 16.49 |
| Preconsolidation Pressure: 1.292e+004 psf | | | | Dry Unit Weight, pcf | 111.9 | 117.6 |
| Compression Index: 0.184 | | | | Saturation, % | 97.82 | 101.00 |
| Diameter: 2.499 in | | Height: 1.008 in | | Void Ratio | 0.52 | 0.44 |
| LL: 50 | PL: 18 | PI: 32 | GS: 2.72 | | | |

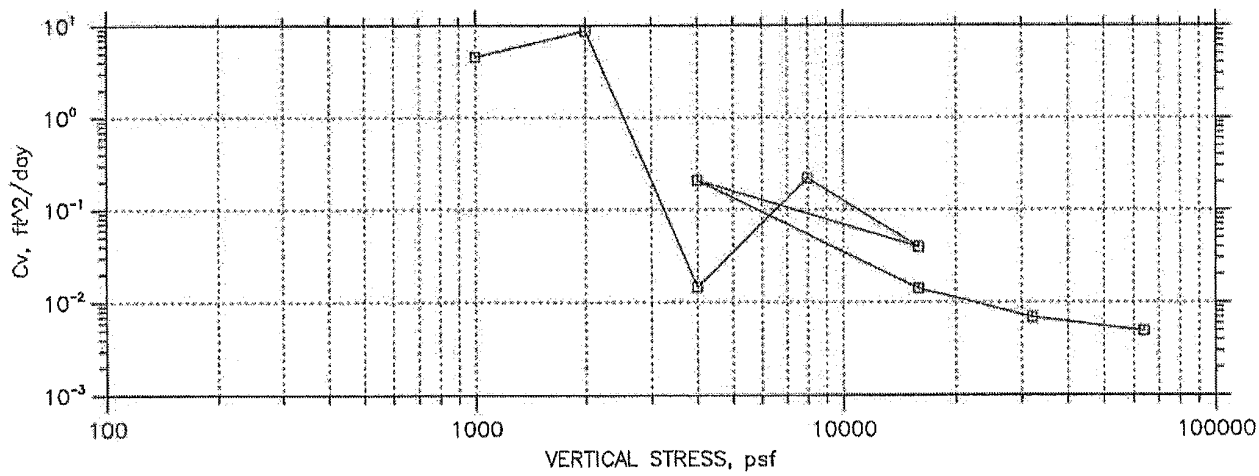
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-7 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JEJ 5/5/09 |
| | Sample No.: UD-7 | Test Date: 4/16/09 | Depth: 115.0-117.5 |
| | Test No.: 9569 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Light Yellowish Brown Fat CLAY with Sand (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 14:00:08

# CONSOLIDATION TEST DATA

SUMMARY REPORT



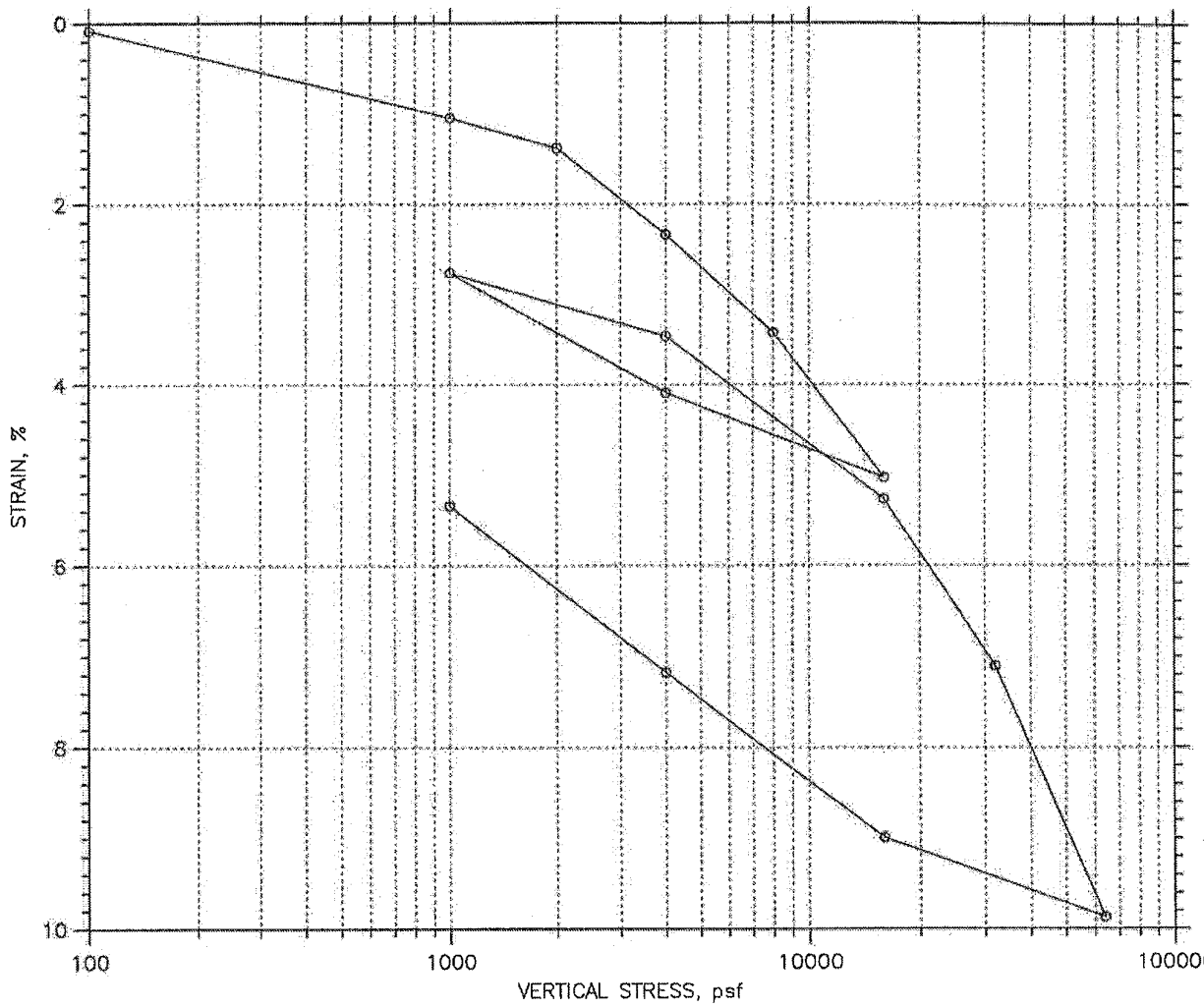




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-7 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JKZ 5/5/09 |
| | Sample No.: UD-7 | Test Date: 4/16/09 | Depth: 115.0-117.5 |
| | Test No.: 9569 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Light Yellowish Brown Fat CLAY with Sand (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 14:00:08

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.315e+004 psf | | | | Water Content, % | 18.84 | 16.51 |
| Preconsolidation Pressure: 8190 psf | | | | Dry Unit Weight, pcf | 111.2 | 117.5 |
| Compression Index: 0.137 | | | | Saturation, % | 97.92 | 101.65 |
| Diameter: 2.498 in | | Height: 1.004 in | | Void Ratio | 0.52 | 0.44 |
| LL: 45 | PL: 18 | PI: 27 | GS: 2.71 | | | |

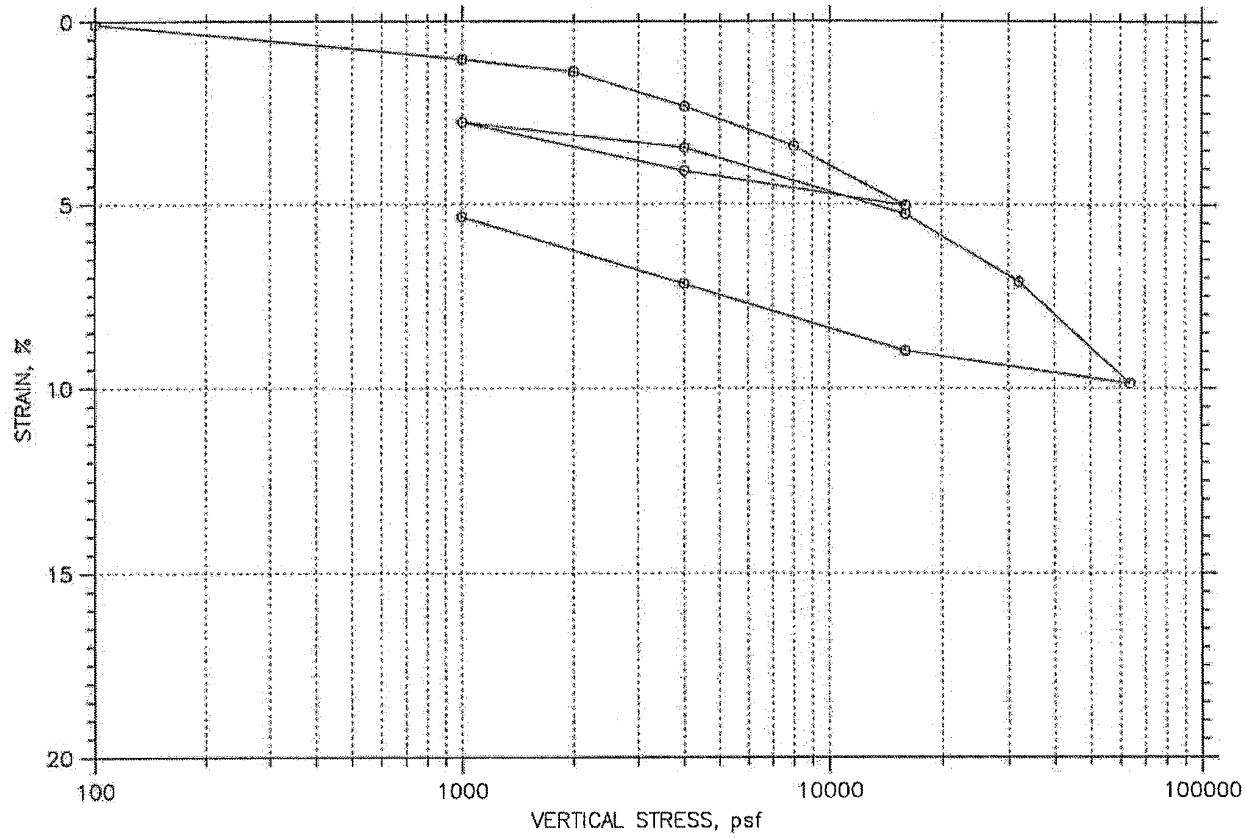
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-13 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JeF 5/5/09 |
| | Sample No.: UD-13 | Test Date: 4/17/09 | Depth: 159.0-161.5 |
| | Test No.: 9572 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

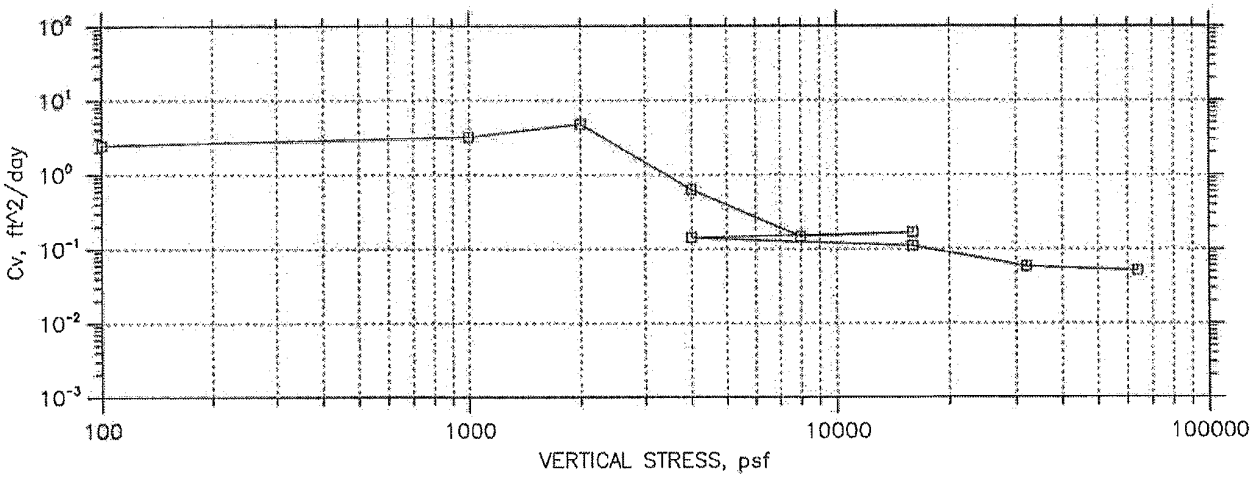
Tue, 05-MAY-2009 14:01:10

DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



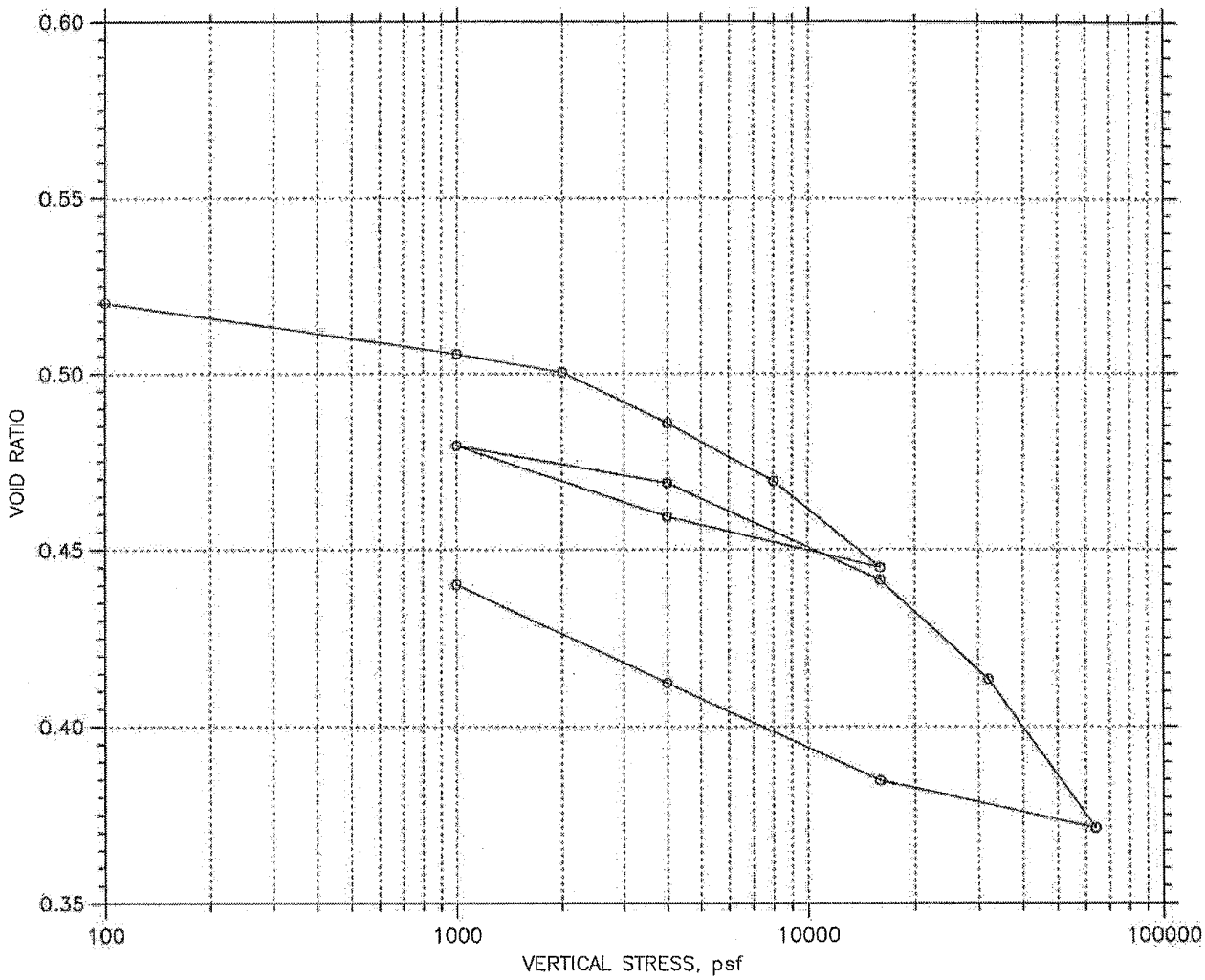




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-13 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JEF 5/5/09 |
| | Sample No.: UD-13 | Test Date: 4/17/09 | Depth: 159.0-161.5 |
| | Test No.: 9572 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 14:01:10

# CONSOLIDATION TEST DATA

SUMMARY REPORT



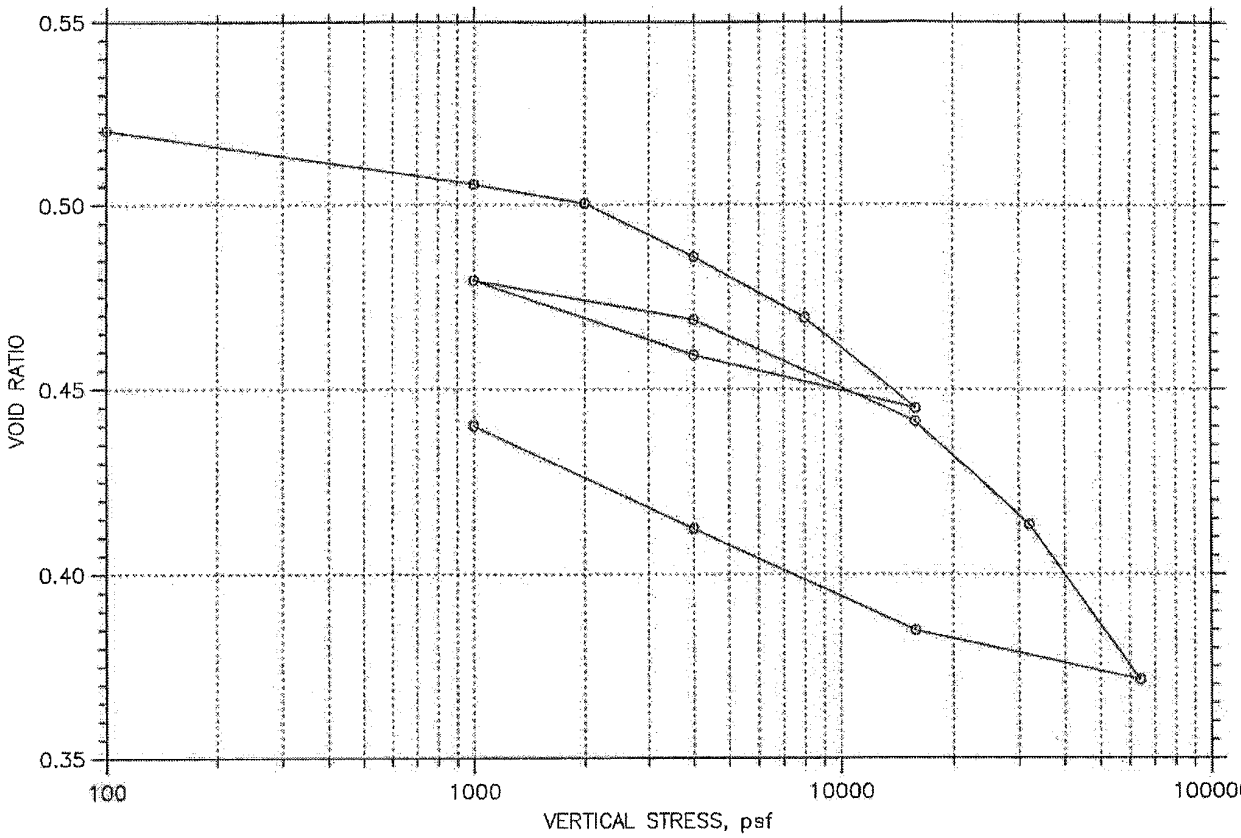

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.315e+004 psf | | | | Water Content, % | 18.84 | 16.51 |
| Preconsolidation Pressure: 8190 psf | | | | Dry Unit Weight, pcf | 111.2 | 117.5 |
| Compression Index: 0.137 | | | | Saturation, % | 97.92 | 101.65 |
| Diameter: 2.498 in | | Height: 1.004 in | | Void Ratio | 0.52 | 0.44 |
| LL: 45 | PL: 18 | PI: 27 | GS: 2.71 | | | |

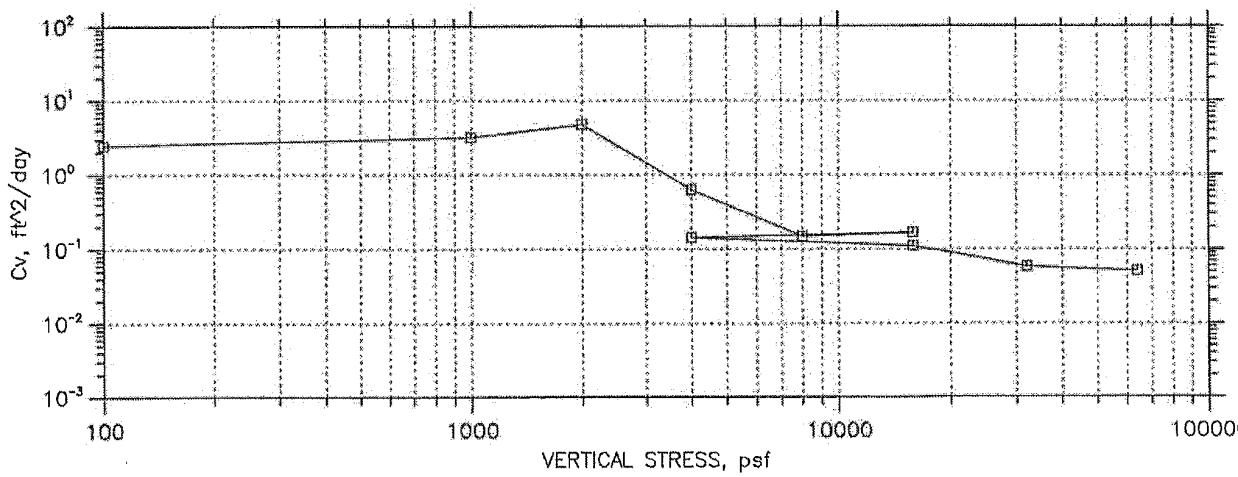
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-13 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JEF 5/5/09 |
| | Sample No.: UD-13 | Test Date: 4/17/09 | Depth: 159.0-161.5 |
| | Test No.: 9572 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 14:01:18

# CONSOLIDATION TEST DATA

SUMMARY REPORT



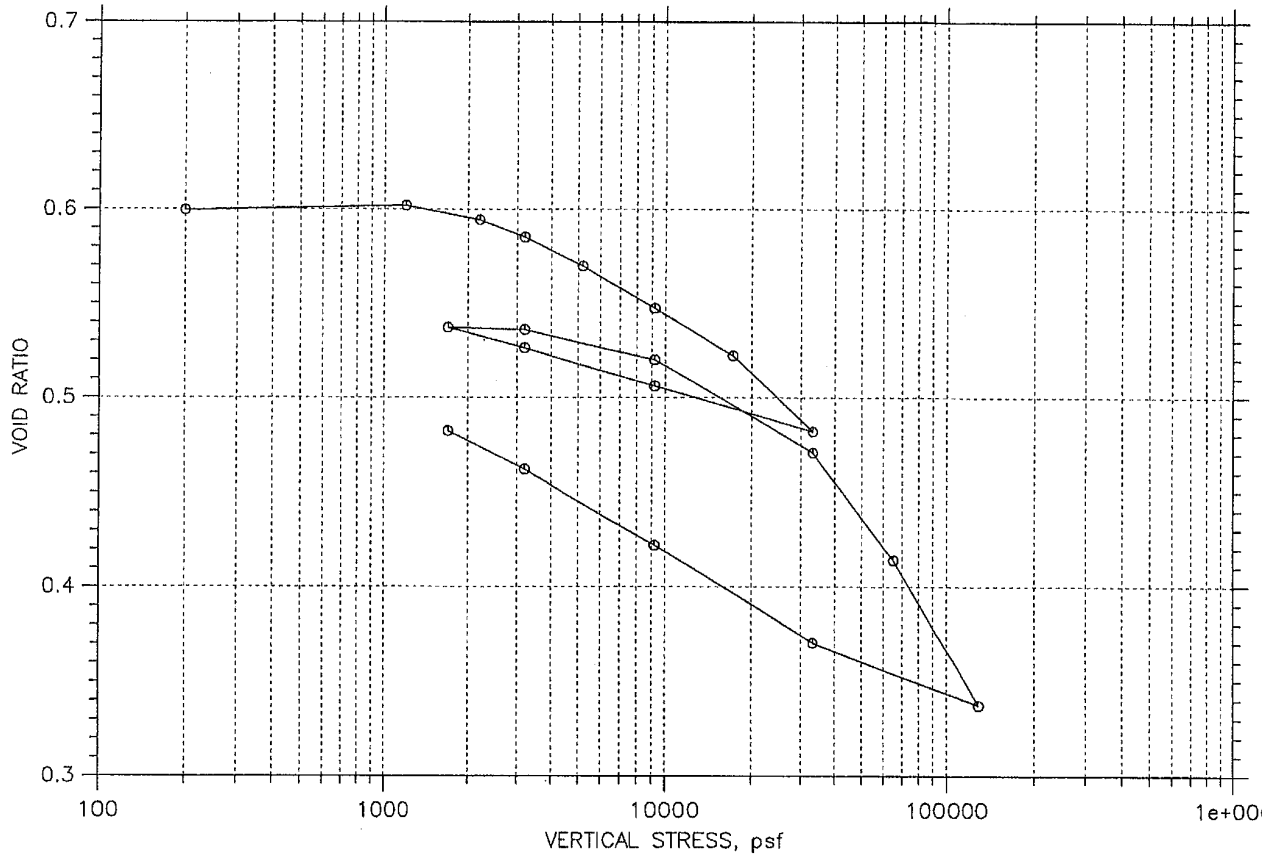



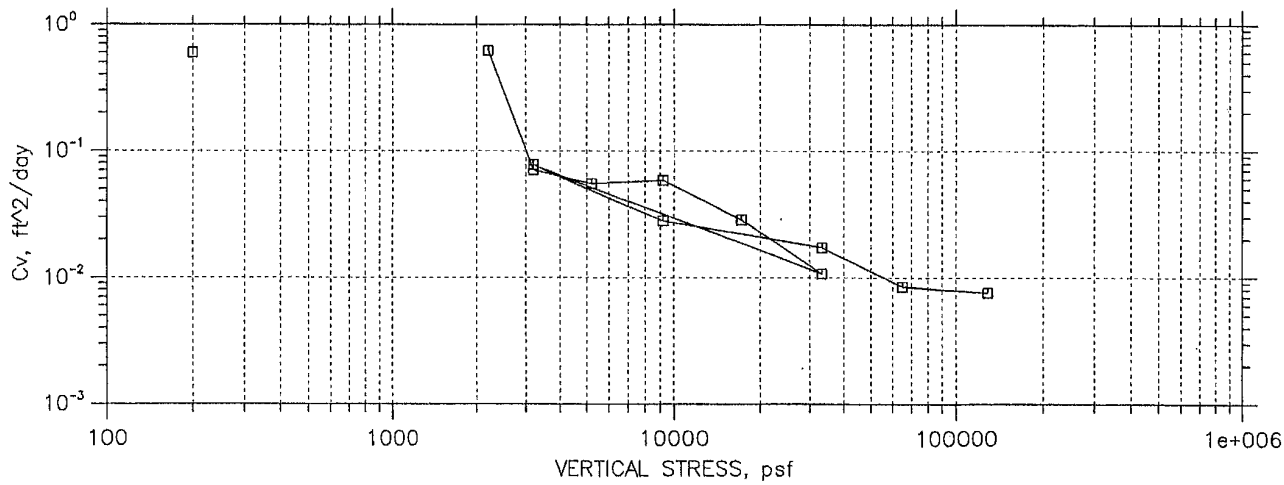

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-13 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JGJ 5/5/09 |
| | Sample No.: UD-13 | Test Date: 4/17/09 | Depth: 159.0-161.5 |
| | Test No.: 9572 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 14:01:17

# CONSOLIDATION TEST DATA

SUMMARY REPORT



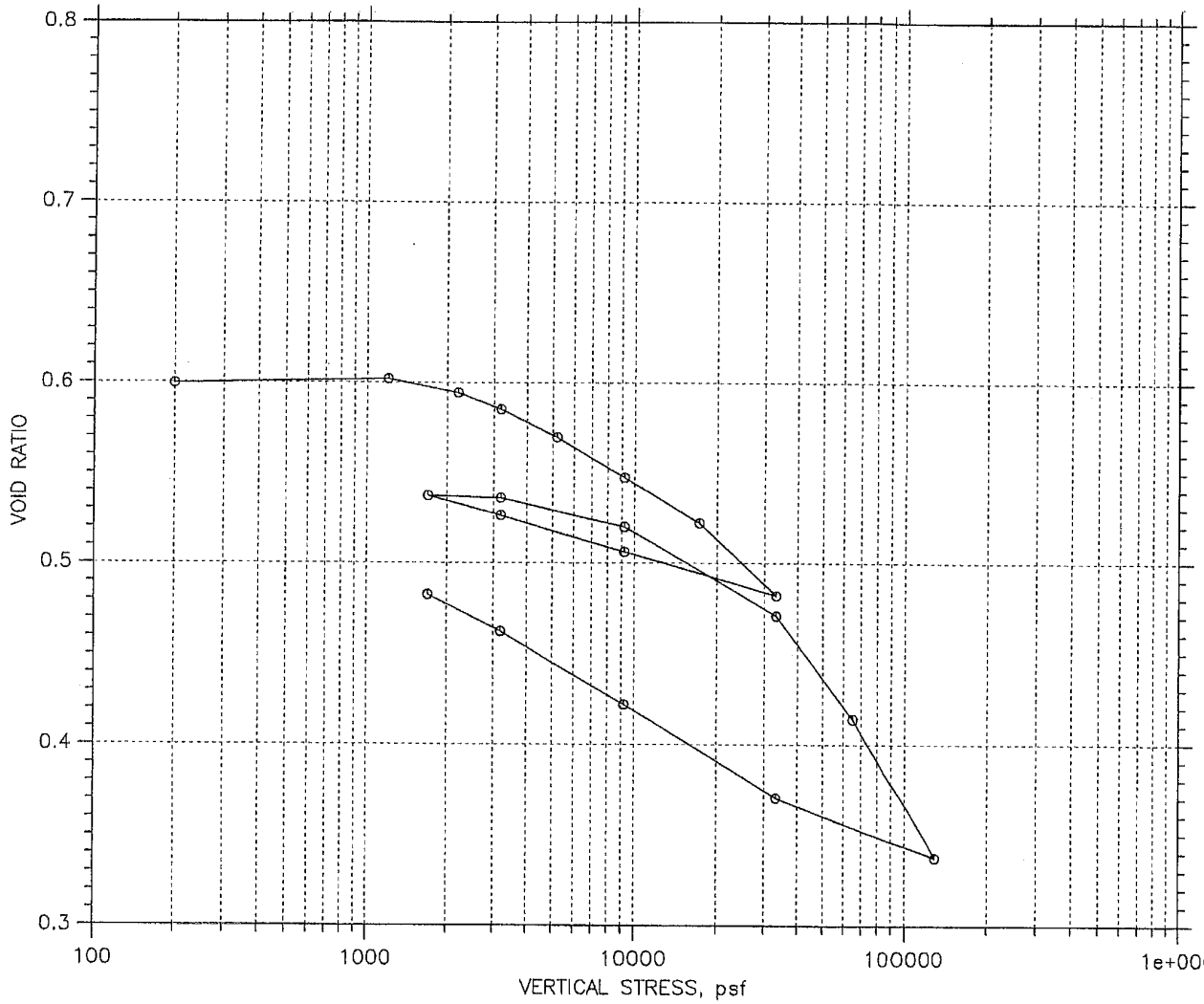

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-15 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JGT |
| | Sample No.: UD-15 | Test Date: 7/16/09 | Depth: 229.0-231.5 |
| | Test No.: 9574a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY with SAND (CH). Cr=0.043. Sw. Pre.=1200psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

KAW 8/10/09

Mon, 10-AUG-2009 11:01:22

# CONSOLIDATION TEST DATA

SUMMARY REPORT



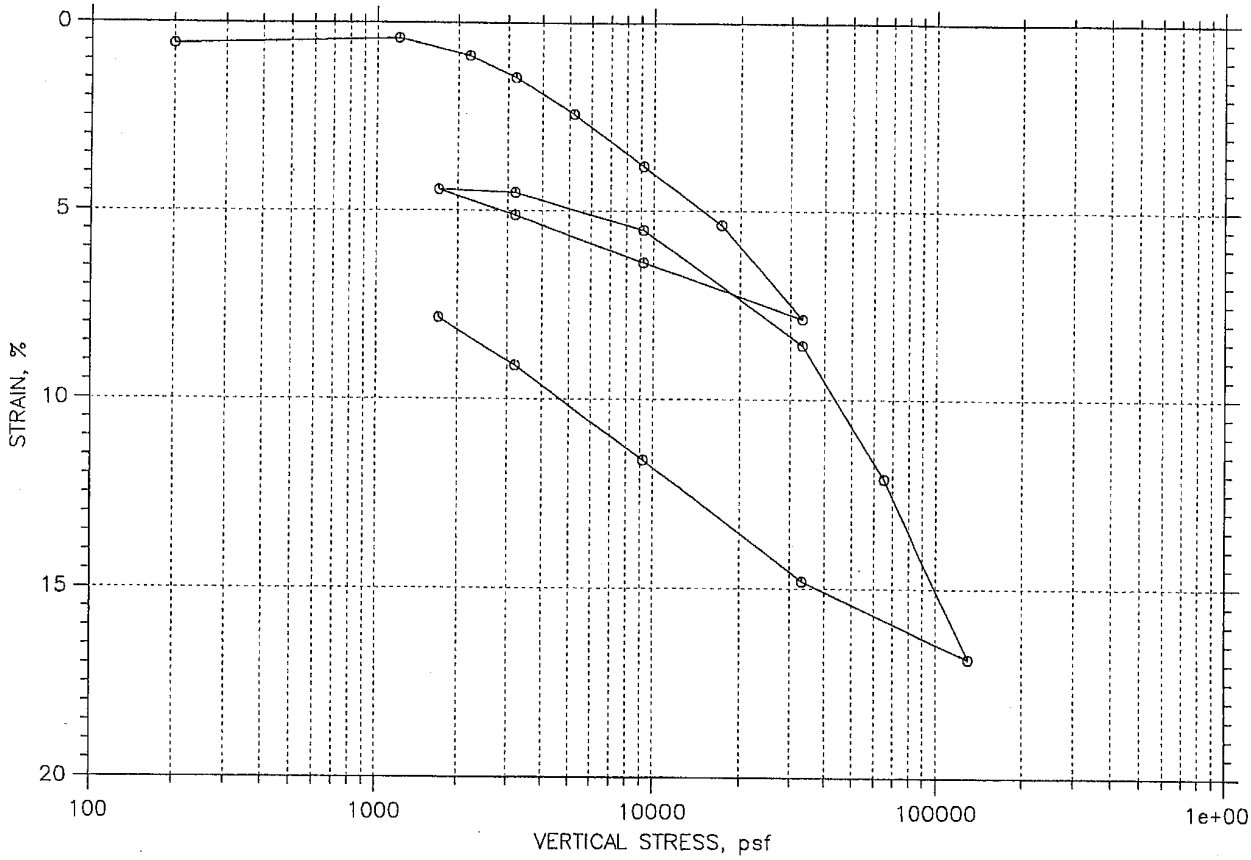

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.754e+004 psf | | | | Water Content, % | 22.43 | 17.91 |
| Preconsolidation Pressure: 1.5e+004 psf | | | | Dry Unit Weight, pcf | 104. | 112.9 |
| Compression Index: 0.254 | | | | Saturation, % | 98.75 | 99.53 |
| Diameter: 2.499 in | | Height: 1.001 in | | Void Ratio | 0.61 | 0.48 |
| LL: 58 | PL: 21 | PI: 37 | GS: 2.68 | | | |

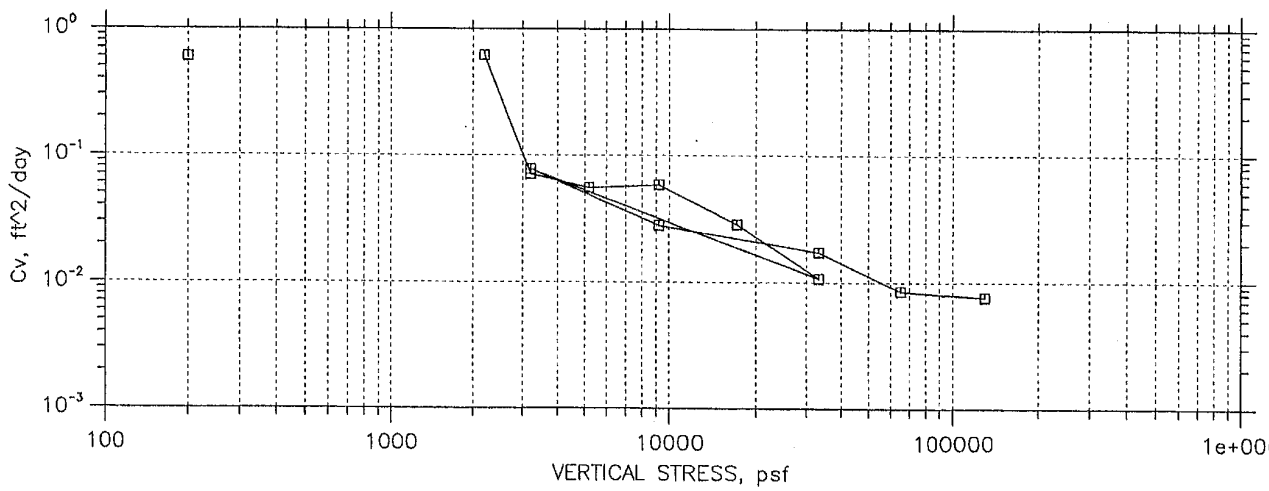
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-15 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: DEF |
| | Sample No.: UD-15 | Test Date: 7/16/09 | Depth: 229.0-231.5 |
| | Test No.: 9574a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY with SAND (CH). Cr=0.043. Sw. Pre.=1200psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

Mon, 10-AUG-2009 11:01:22

# CONSOLIDATION TEST DATA

SUMMARY REPORT



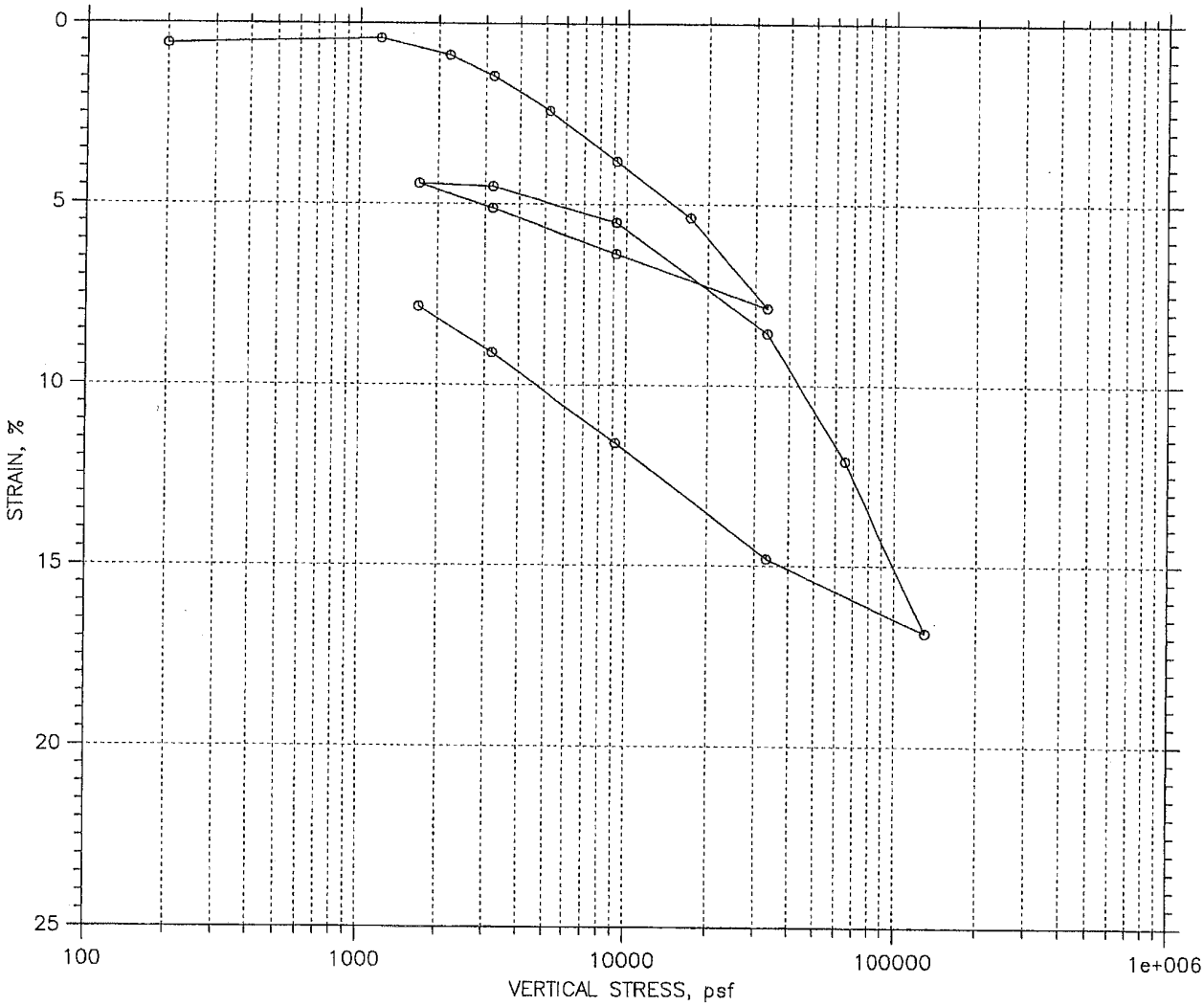




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-15 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JEJ |
| | Sample No.: UD-15 | Test Date: 7/16/09 | Depth: 229.0-231.5 |
| | Test No.: 9574a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY with SAND (CH). Cr=0.043. Sw. Pre.=1200psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

Mon, 10-AUG-2009 11:00:54

# CONSOLIDATION TEST DATA

SUMMARY REPORT



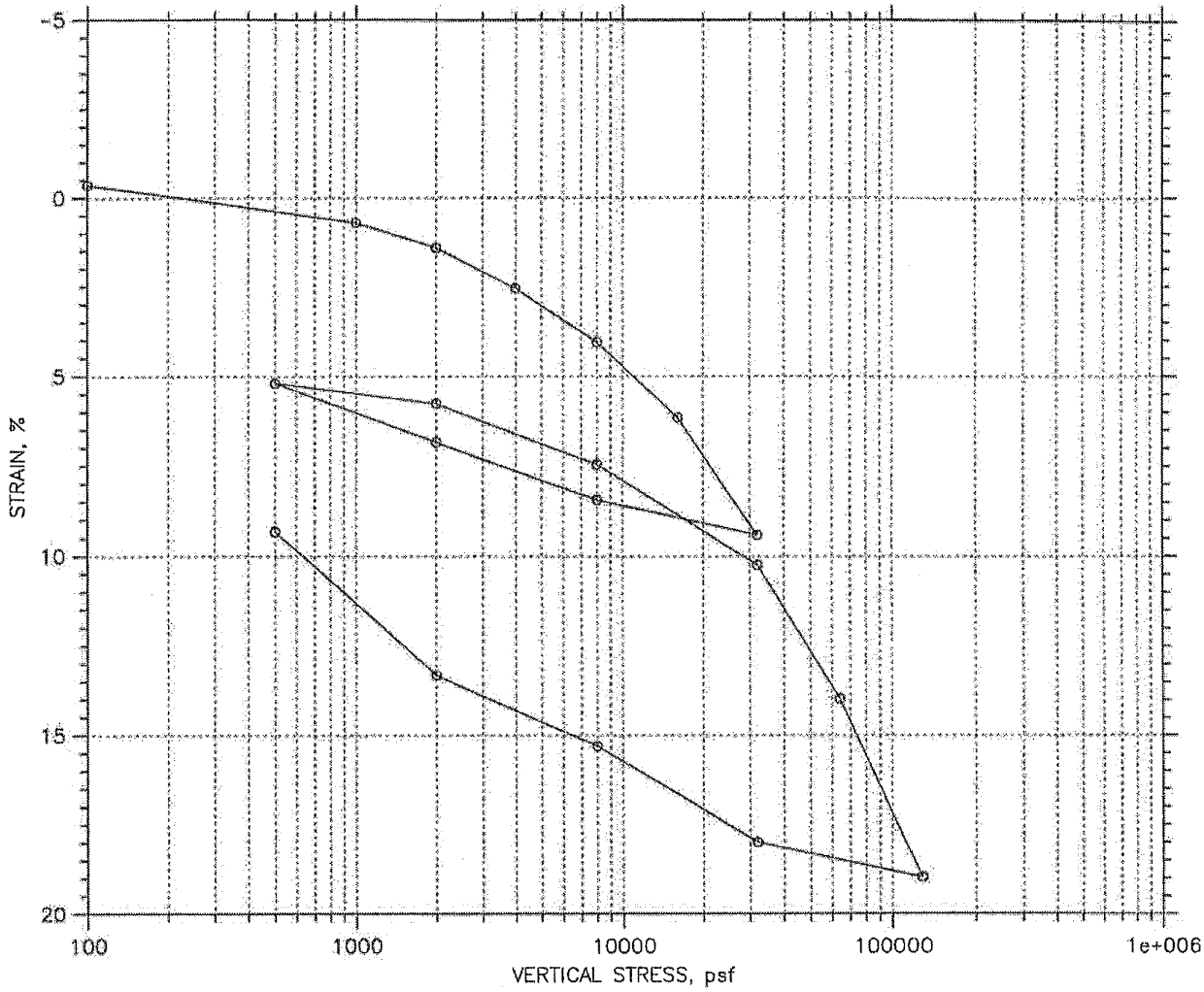

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.754e+004 psf | | | | Water Content, % | 22.43 | 17.91 |
| Preconsolidation Pressure: 1.5e+004 psf | | | | Dry Unit Weight, pcf | 104. | 112.9 |
| Compression Index: 0.254 | | | | Saturation, % | 98.75 | 99.53 |
| Diameter: 2.499 in | | Height: 1.001 in | | Void Ratio | 0.61 | 0.48 |
| LL: 58 | PL: 21 | PI: 37 | GS: 2.68 | | | |

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3101UD UD-15 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JEJ |
| | Sample No.: UD-15 | Test Date: 7/16/09 | Depth: 229.0-231.5 |
| | Test No.: 9574a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY with SAND (CH). Cr=0.043. Sw. Pre.=1200psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

Mon, 10-AUG-2009 11:00:54

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 2.065e+004 psf | | | | Water Content, % | 23.49 | 20.05 |
| Preconsolidation Pressure: 1.714e+004 psf | | | | Dry Unit Weight, pcf | 97.89 | 108. |
| Compression Index: 0.276 | | | | Saturation, % | 90.22 | 99.78 |
| Diameter: 2.5 in | | Height: 1 in | | Void Ratio | 0.69 | 0.53 |
| LL: 48 | PL: 19 | PI: 29 | GS: 2.65 | | | |

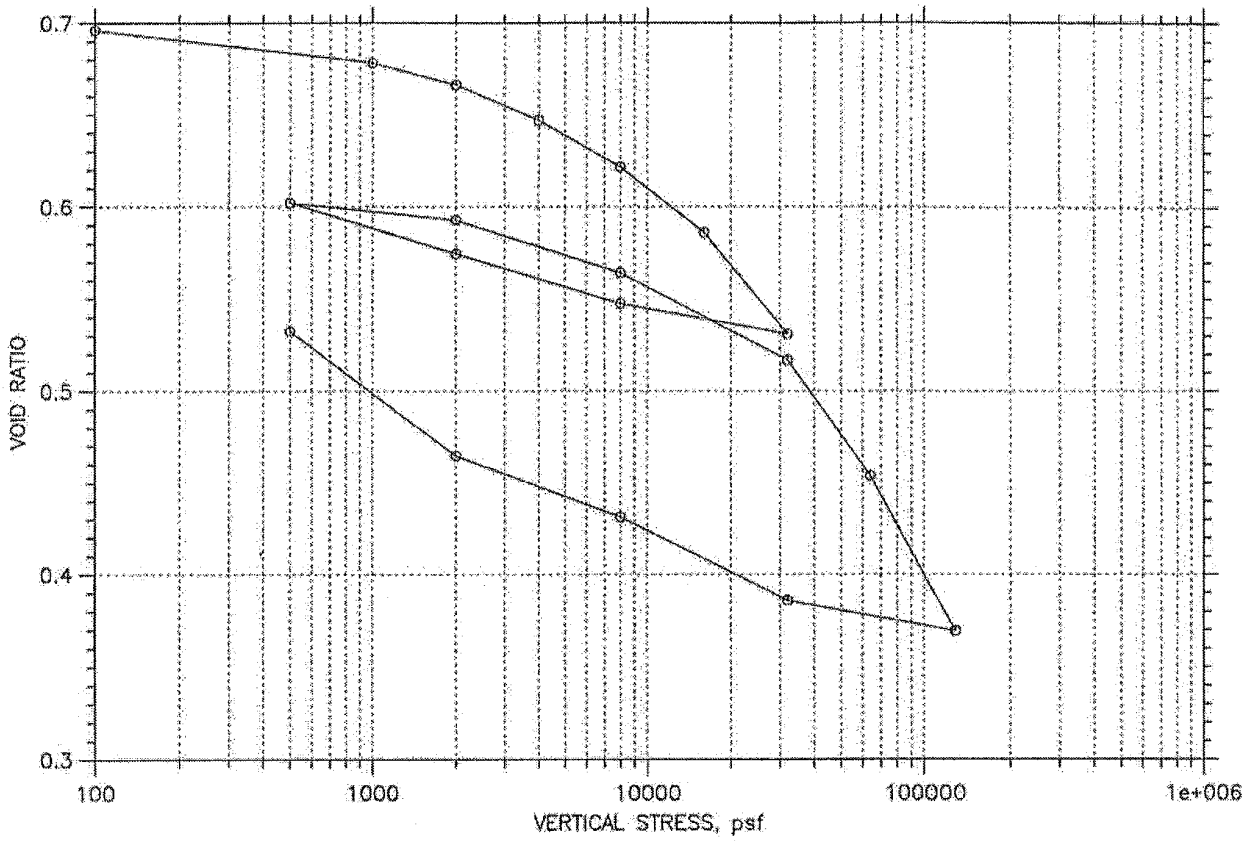
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Phase III COL | Location: B-3101UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JCJ 5/5/09 |
| | Sample No.: UD-16 | Test Date: 4/24/09 | Depth: 279.0-281.0 |
| | Test No.: 9575 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.048 |

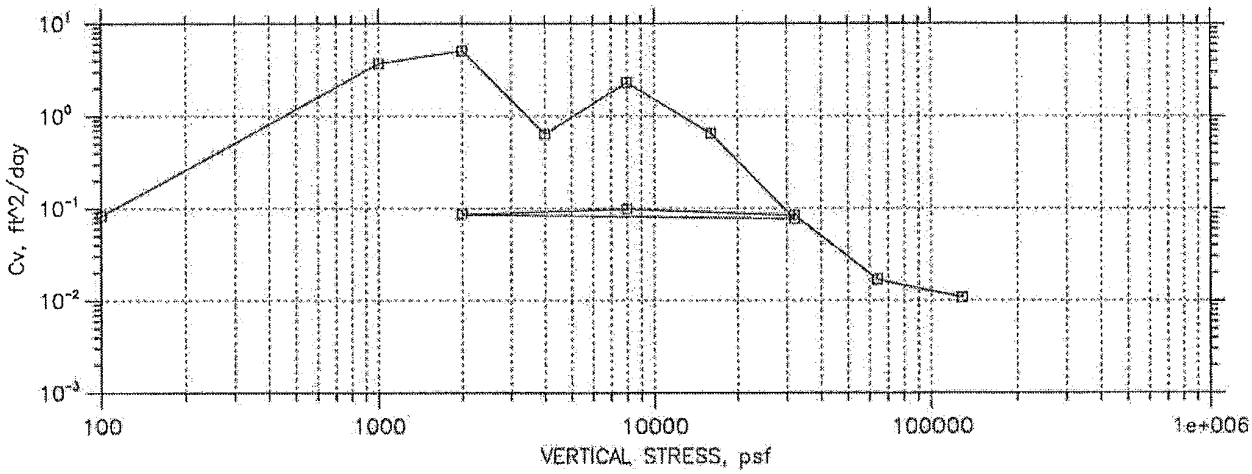
Tue, 05-MAY-2009 14:02:18

DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



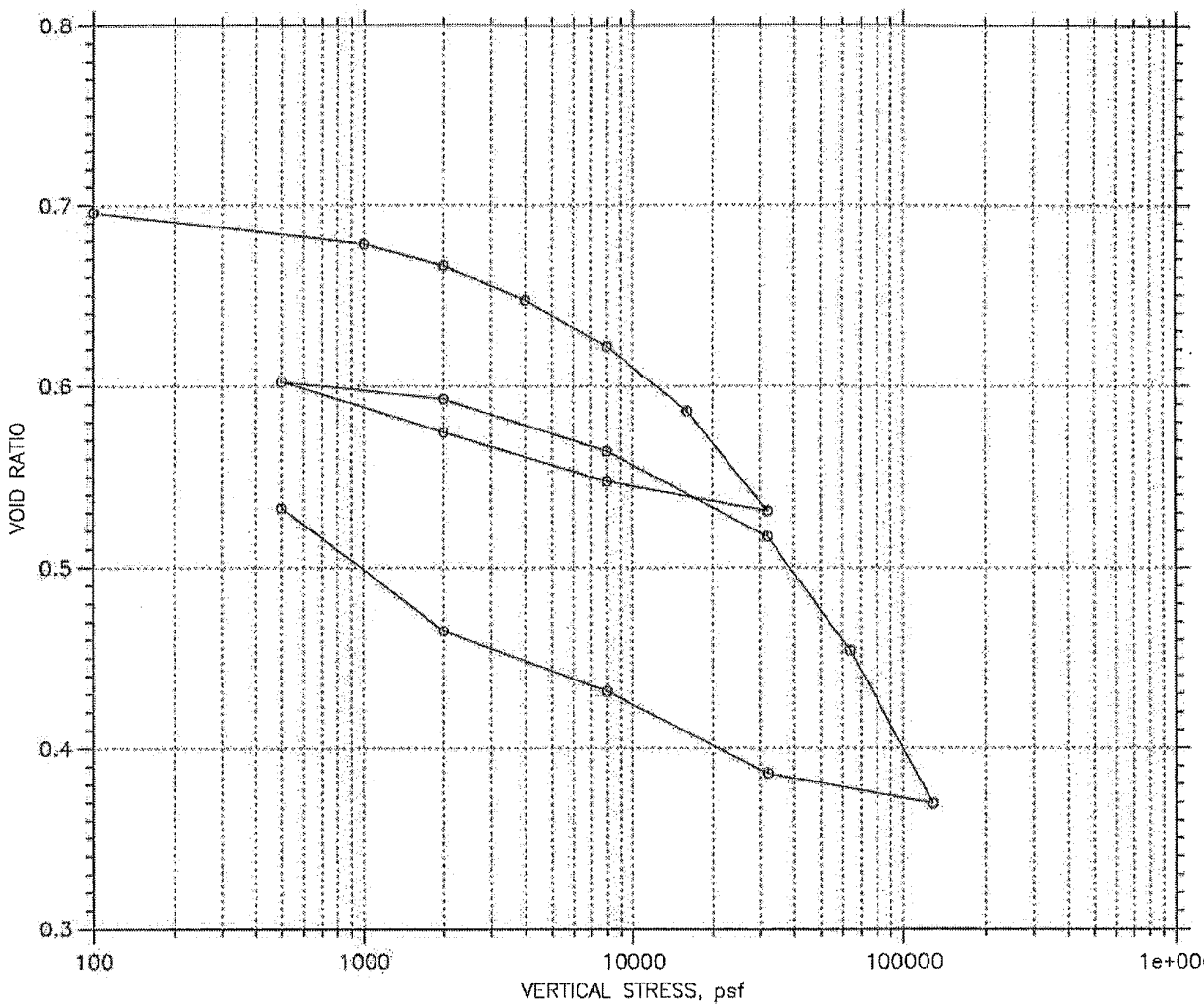




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Phase III COL | Location: B-3101UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JEF 5/5/09 |
| | Sample No.: UD-16 | Test Date: 4/24/09 | Depth: 279.0-281.0 |
| | Test No.: 9575 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.048 |

Tue, 05-MAY-2009 14:02:25

# CONSOLIDATION TEST DATA

SUMMARY REPORT



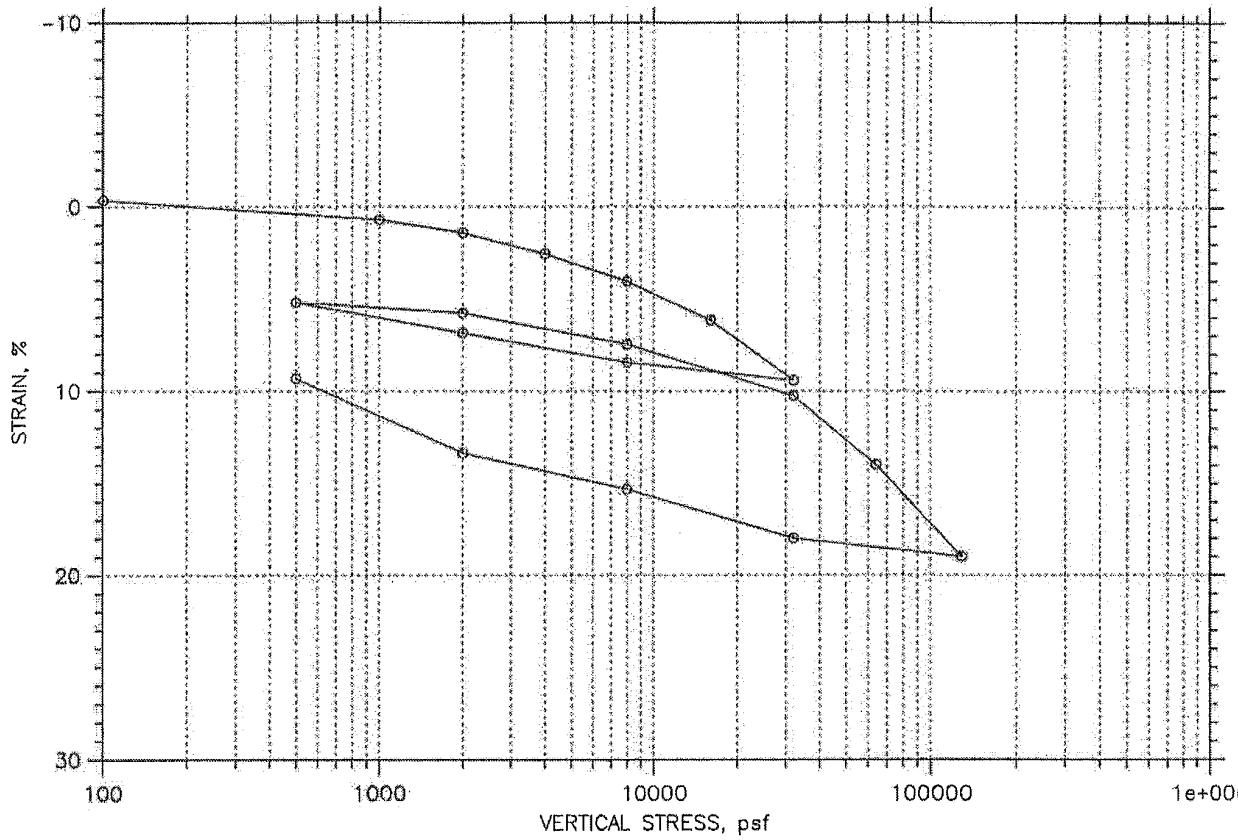

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 2.065e+004 psf | | | | Water Content, % | 23.49 | 20.05 |
| Preconsolidation Pressure: 1.714e+004 psf | | | | Dry Unit Weight, pcf | 97.89 | 108. |
| Compression Index: 0.276 | | | | Saturation, % | 90.22 | 99.78 |
| Diameter: 2.5 in | | Height: 1 in | | Void Ratio | 0.69 | 0.53 |
| LL: 48 | PL: 19 | PI: 29 | GS: 2.65 | | | |

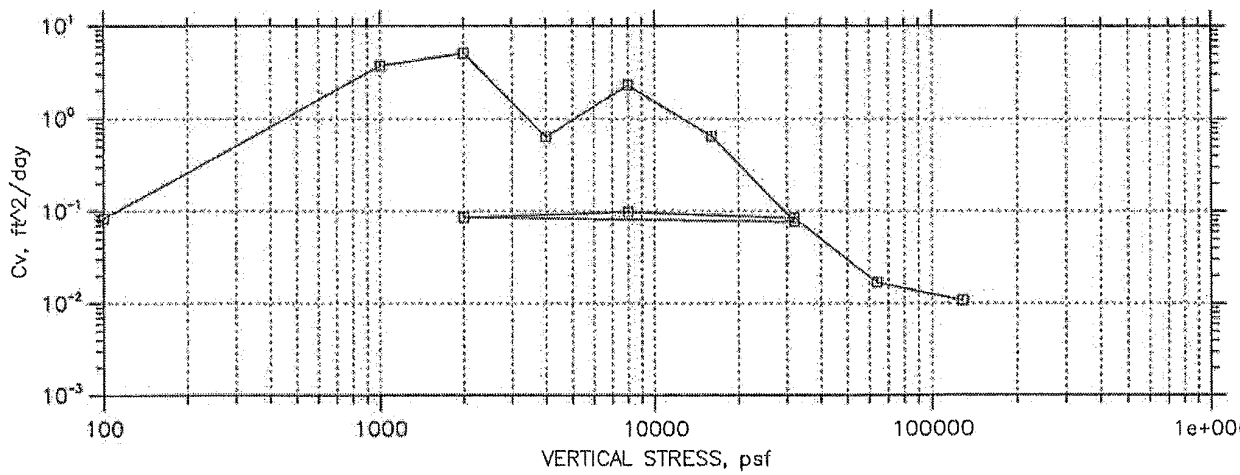
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Phase III COL | Location: B-3101UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: DGJ 5/5/09 |
| | Sample No.: UD-16 | Test Date: 4/24/09 | Depth: 279.0-281.0 |
| | Test No.: 9575 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.048 |

Tue, 05-MAY-2009 14:02:25

# CONSOLIDATION TEST DATA

SUMMARY REPORT



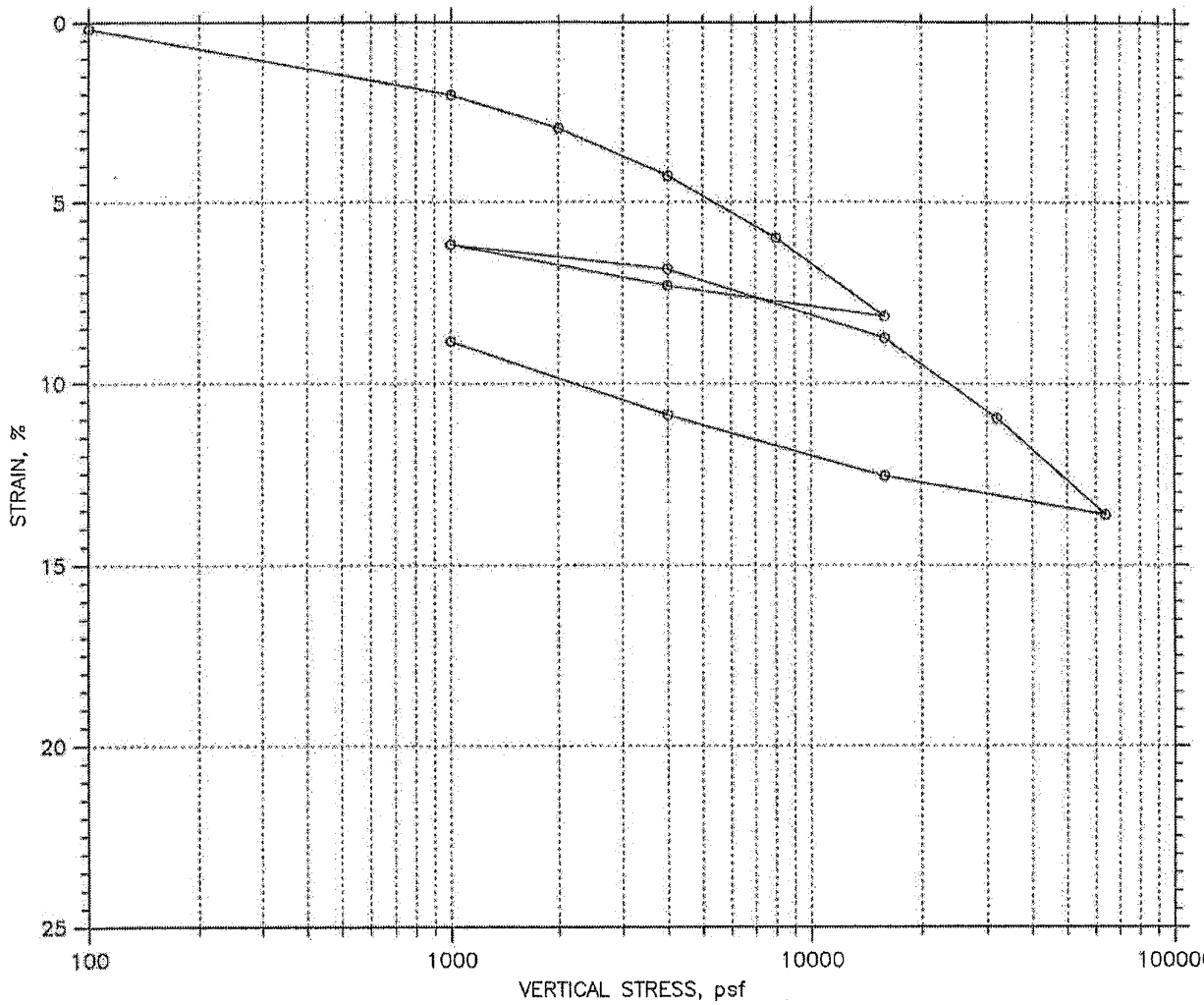




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Phase III COL | Location: B-3101UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3101UD | Tested By: JW | Checked By: JGJ 5/5/09 |
| | Sample No.: UD-16 | Test Date: 4/24/09 | Depth: 279.0-281.0 |
| | Test No.: 9575 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.048 |

Tue, 05-MAY-2009 14:02:18

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 4480 psf | | | | Water Content, % | 16.26 | 14.10 |
| Preconsolidation Pressure: 4440 psf | | | | Dry Unit Weight, pcf | 110.8 | 121.6 |
| Compression Index: 0.136 | | | | Saturation, % | 83.13 | 96.71 |
| Diameter: 2.499 in | | Height: 0.996 in | | Void Ratio | 0.53 | 0.40 |
| LL: 36 | PL: 15 | PI: 21 | GS: 2.72 | | | |

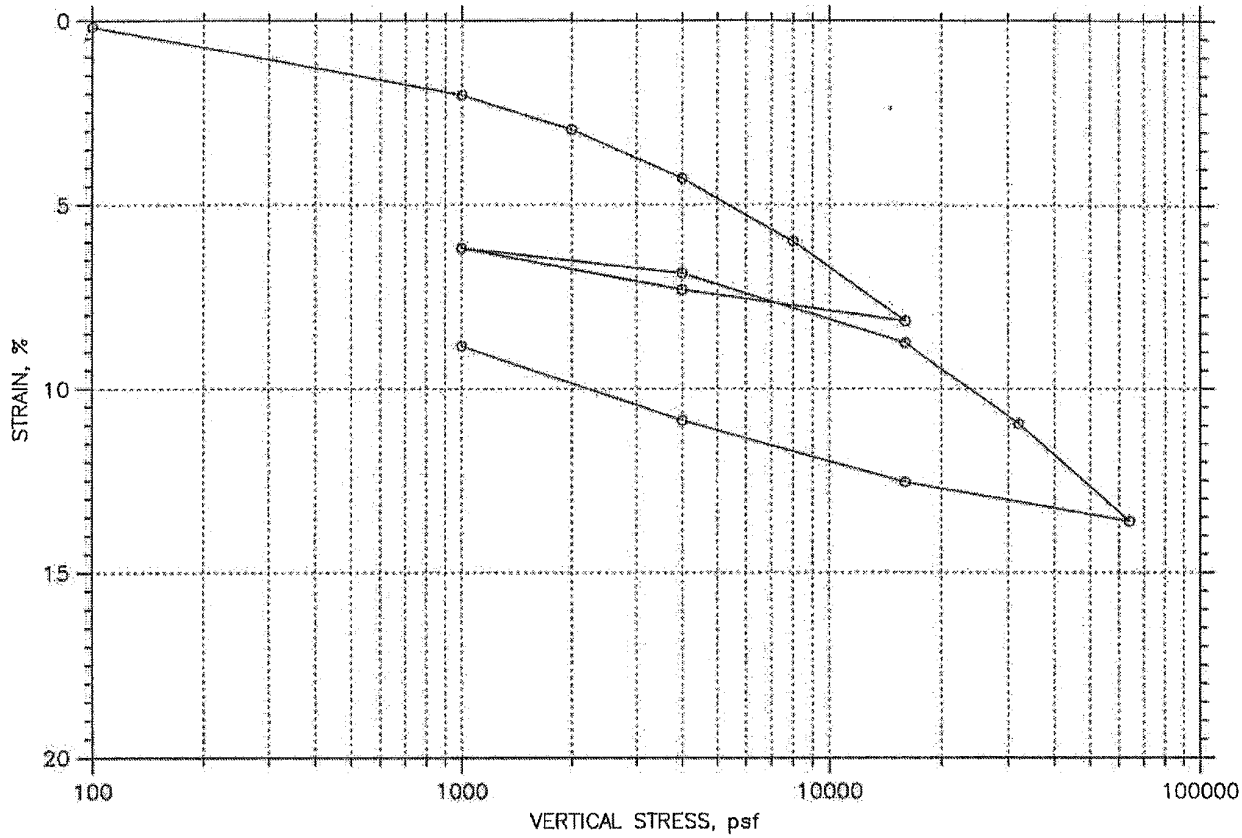
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-2 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEF 5/5/09 |
| | Sample No.: UD-2 | Test Date: 4/7/09 | Depth: 35.0-36.0' |
| | Test No.: 9561 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

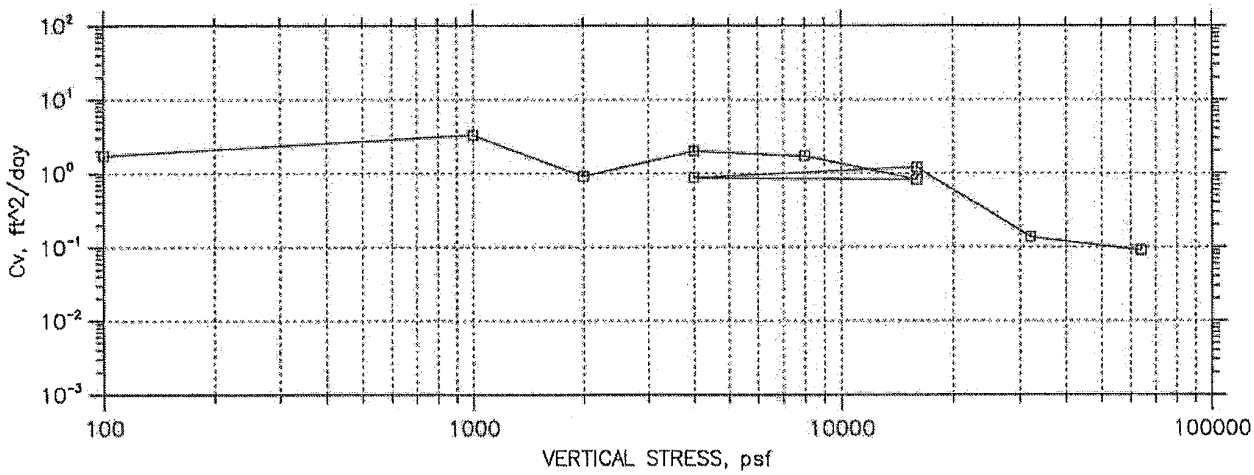
Tue, 05-MAY-2009 13:51:06

DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



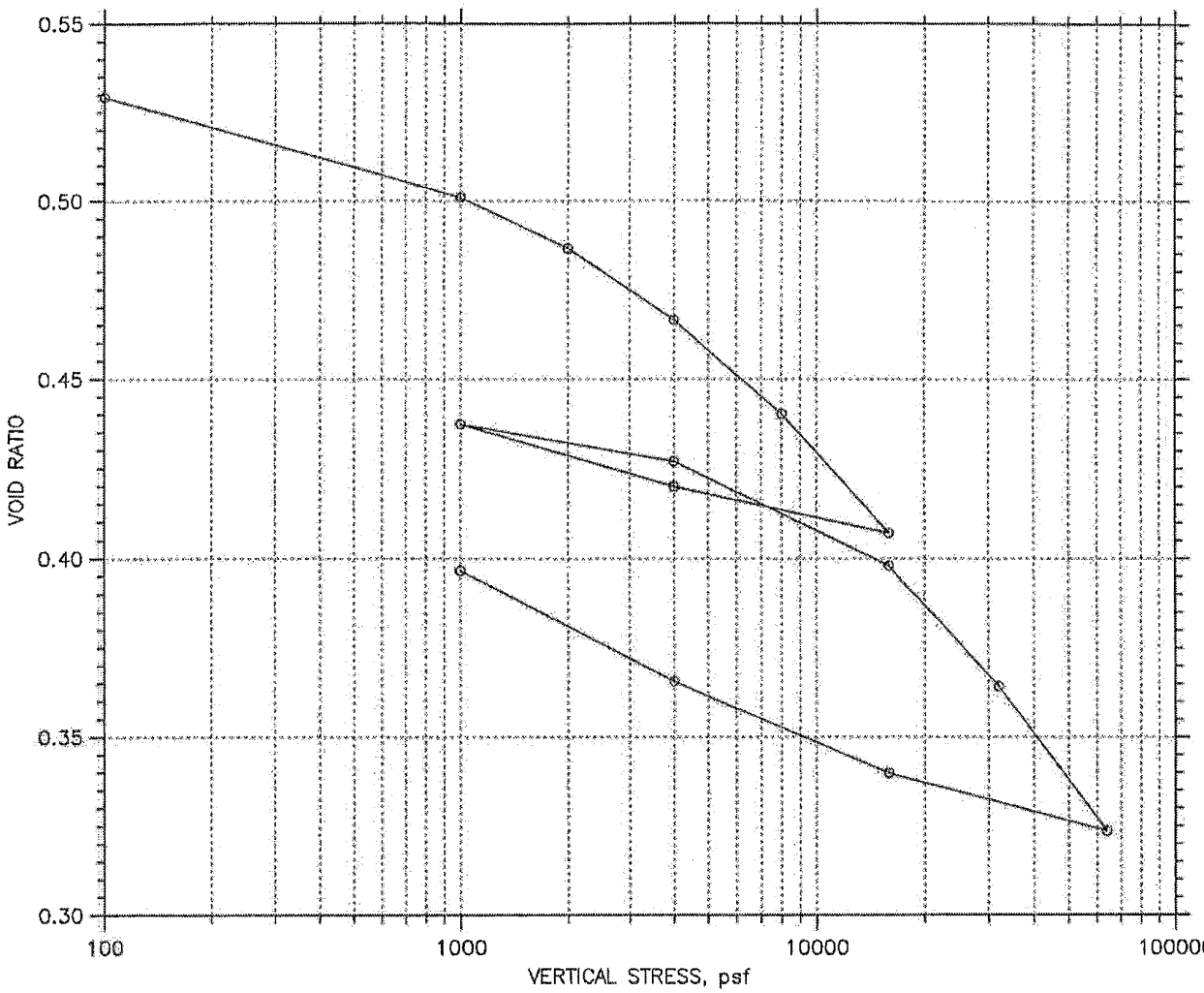




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-2 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JWJ 5/5/09 |
| | Sample No.: UD-2 | Test Date: 4/7/09 | Depth: 35.0-36.0' |
| | Test No.: 9561 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 13:51:06

# CONSOLIDATION TEST DATA

SUMMARY REPORT



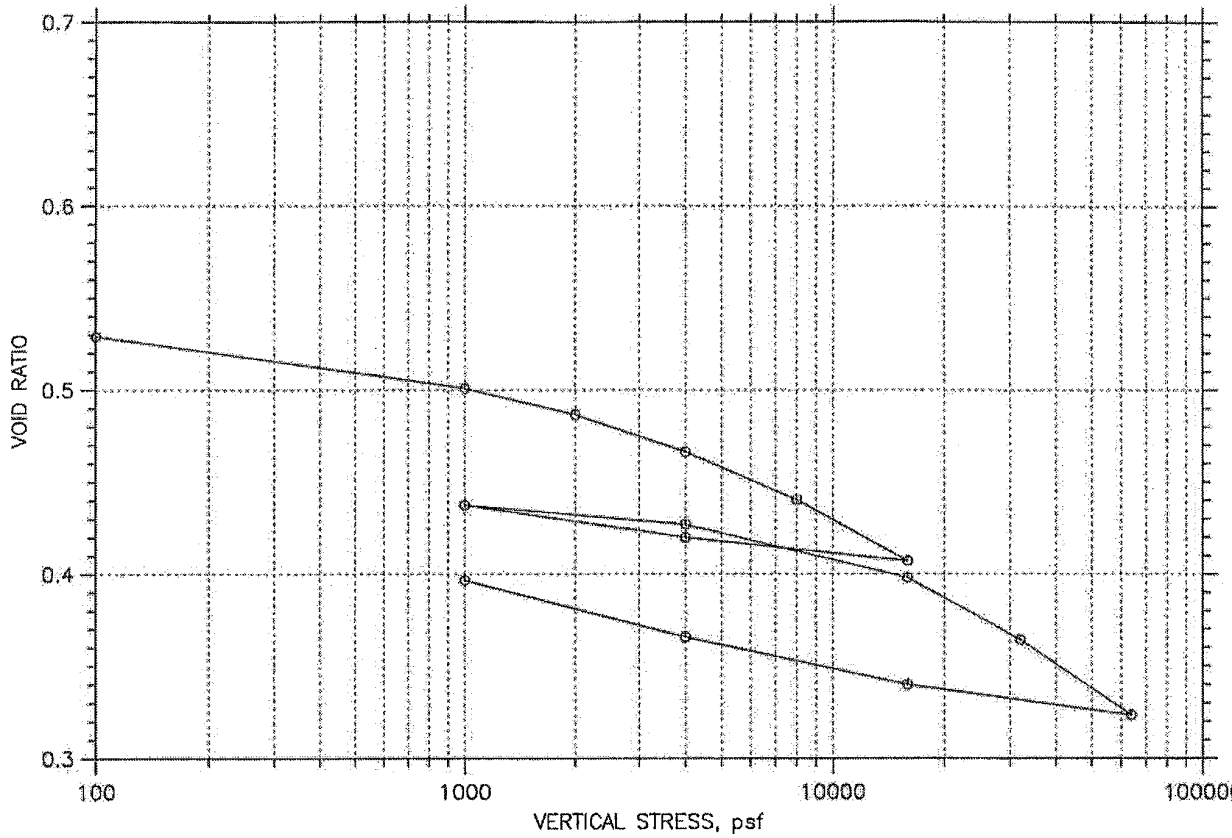

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 4480 psf | | | | Water Content, % | 16.26 | 14.10 |
| Preconsolidation Pressure: 4440 psf | | | | Dry Unit Weight, pcf | 110.8 | 121.6 |
| Compression Index: 0.136 | | | | Saturation, % | 83.13 | 96.71 |
| Diameter: 2.499 in | | Height: 0.996 in | | Void Ratio | 0.53 | 0.40 |
| LL: 36 | PL: 15 | PI: 21 | GS: 2.72 | | | |

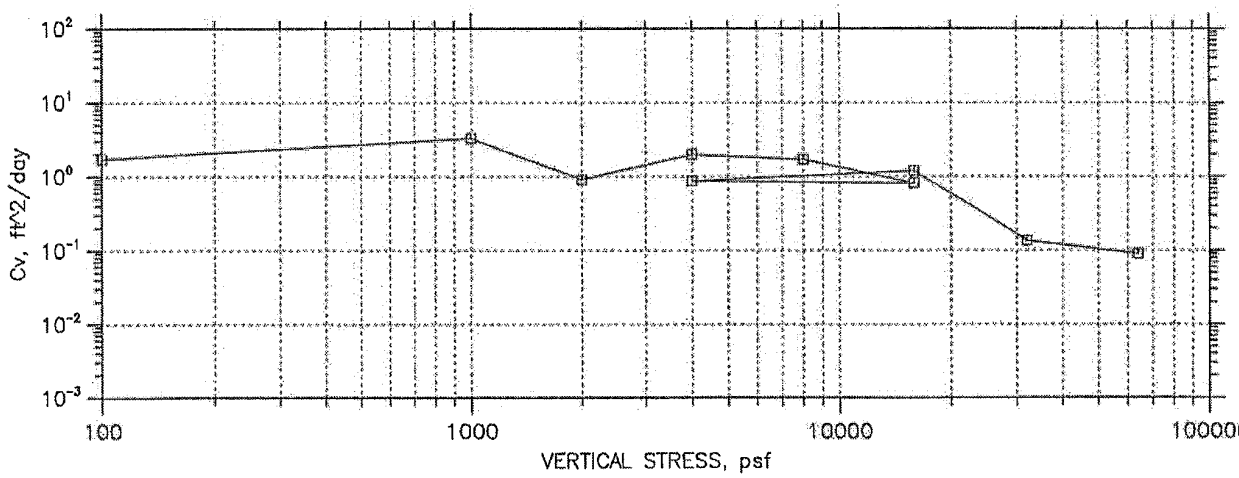
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-2 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGJ 5/5/09 |
| | Sample No.: UD-2 | Test Date: 4/7/09 | Depth: 35.0-36.0' |
| | Test No.: 9561 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 13:51:20

# CONSOLIDATION TEST DATA

SUMMARY REPORT



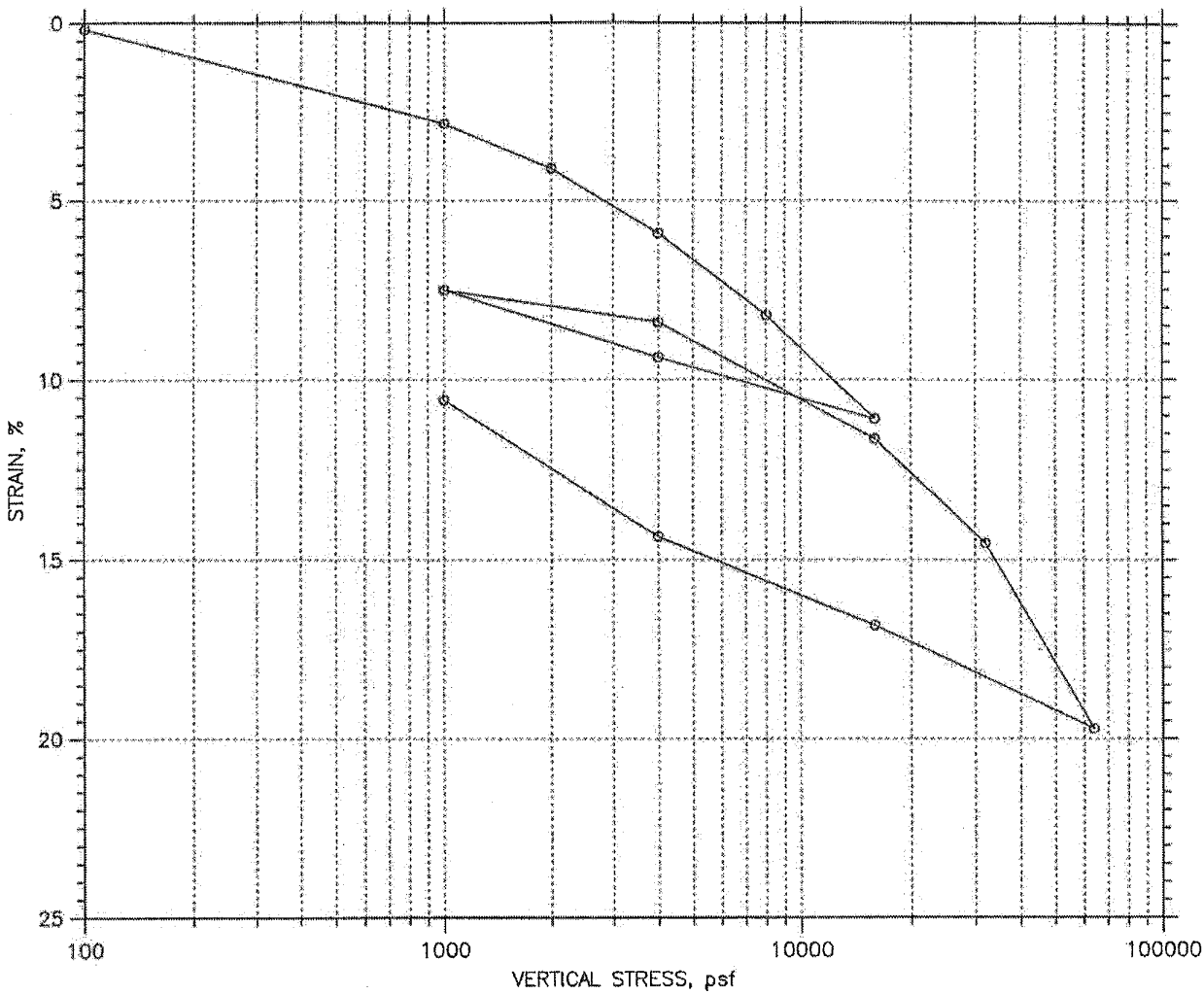




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-2 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEJ 5/5/09 |
| | Sample No.: UD-2 | Test Date: 4/7/09 | Depth: 35.0-36.0' |
| | Test No.: 9561 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown Sandy Lean CLAY (CL) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.030 |

Tue, 05-MAY-2009 13:51:20

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 6540 psf | | | | Water Content, % | 33.31 | 28.47 |
| Preconsolidation Pressure: 9730 psf | | | | Dry Unit Weight, pcf | 85.29 | 95.37 |
| Compression Index: 0.344 | | | | Saturation, % | 91.78 | 99.67 |
| Diameter: 2.5 in | | Height: 1.005 in | | Void Ratio | 0.98 | 0.77 |
| LL: 78 | PL: 26 | PI: 52 | GS: 2.71 | | | |

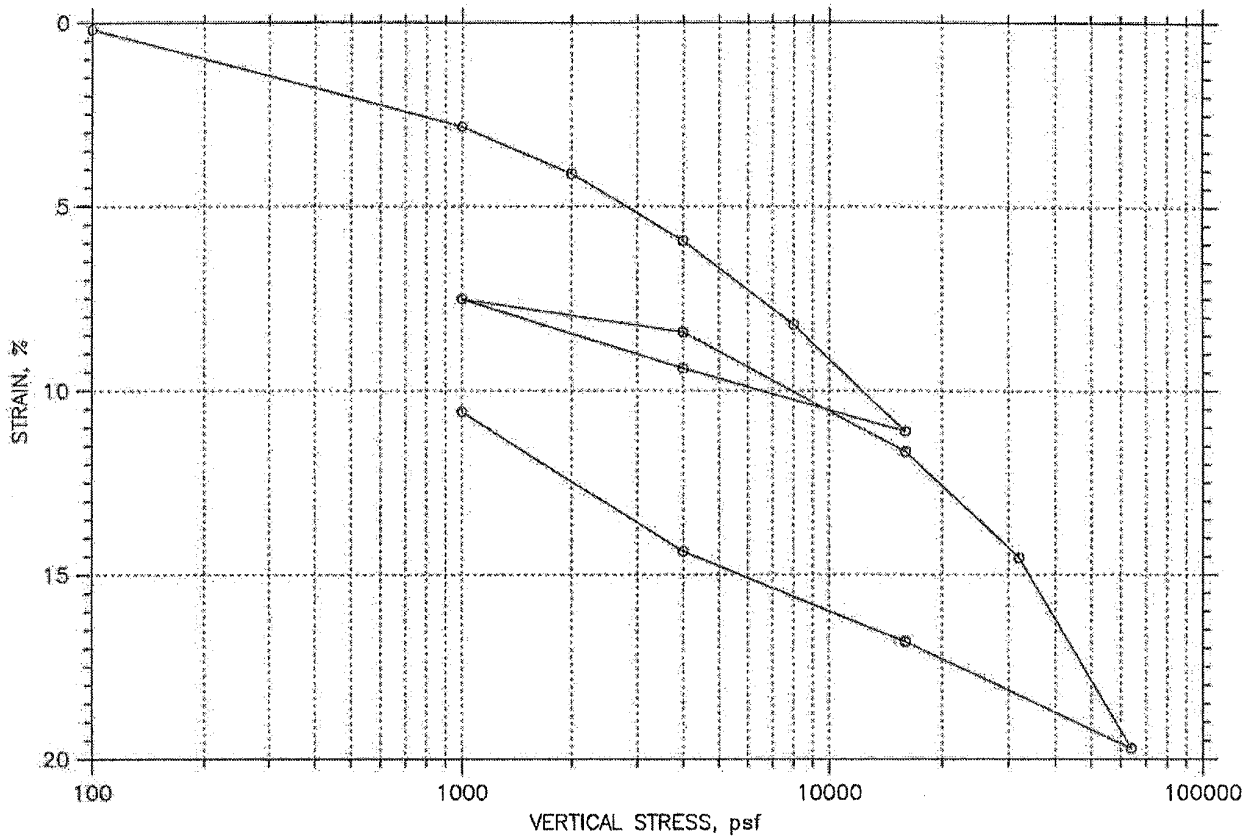
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-4 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEH 5/5/09 |
| | Sample No.: UD-4 | Test Date: 4/7/09 | Depth: 53.8-55.4' |
| | Test No.: 9562 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

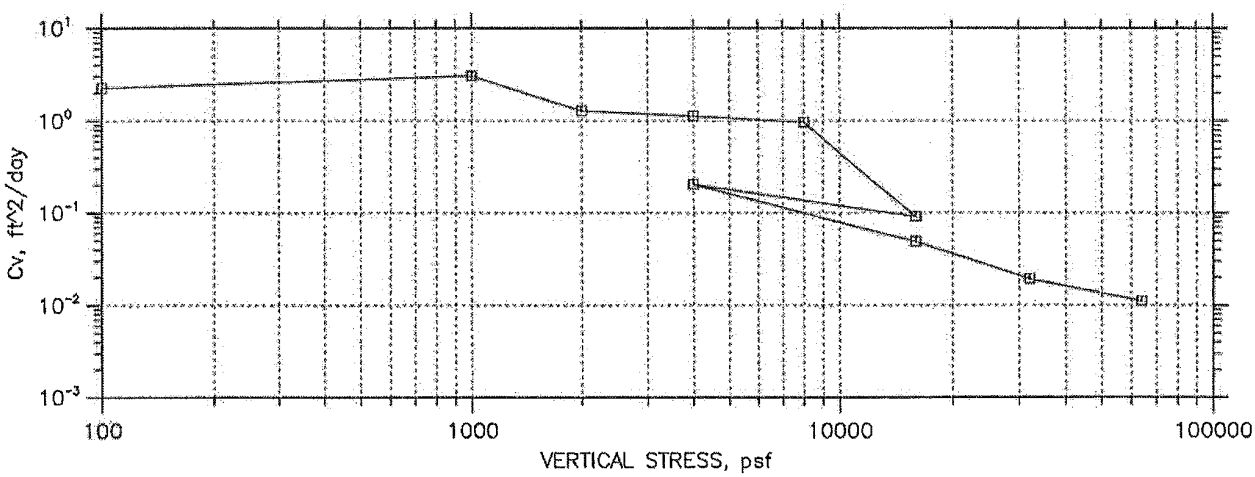
Tue, 05-MAY-2009 13:52:10

DJC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



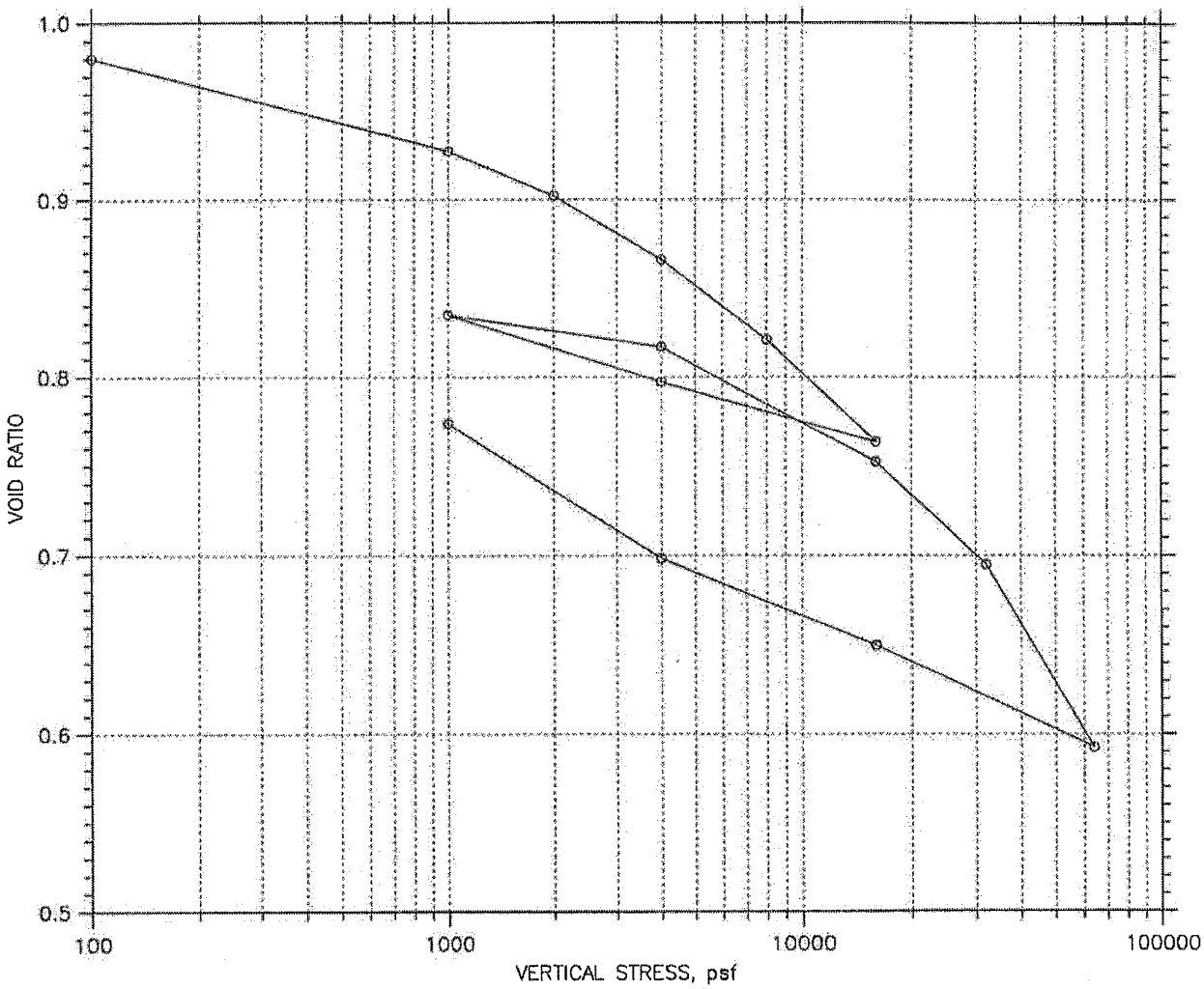




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-4 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEF 5/5/09 |
| | Sample No.: UD-4 | Test Date: 4/7/09 | Depth: 53.8-55.4' |
| | Test No.: 9562 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

Tue, 05-MAY-2009 13:52:10

# CONSOLIDATION TEST DATA

SUMMARY REPORT



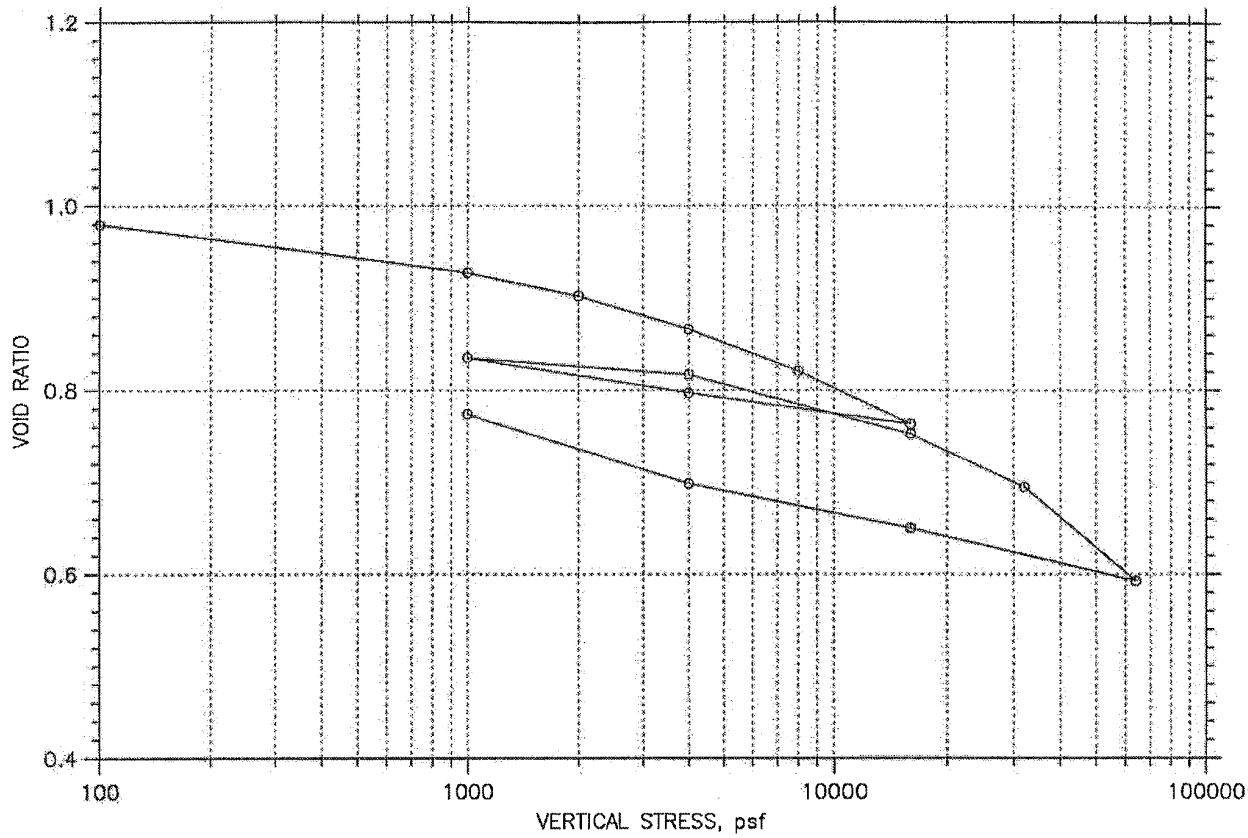

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 6540 psf | | | | Water Content, % | 33.31 | 28.47 |
| Preconsolidation Pressure: 9730 psf | | | | Dry Unit Weight, pcf | 85.29 | 95.37 |
| Compression Index: 0.344 | | | | Saturation, % | 91.78 | 99.67 |
| Diameter: 2.5 in | | Height: 1.005 in | | Void Ratio | 0.98 | 0.77 |
| LL: 78 | PL: 26 | PI: 52 | GS: 2.71 | | | |

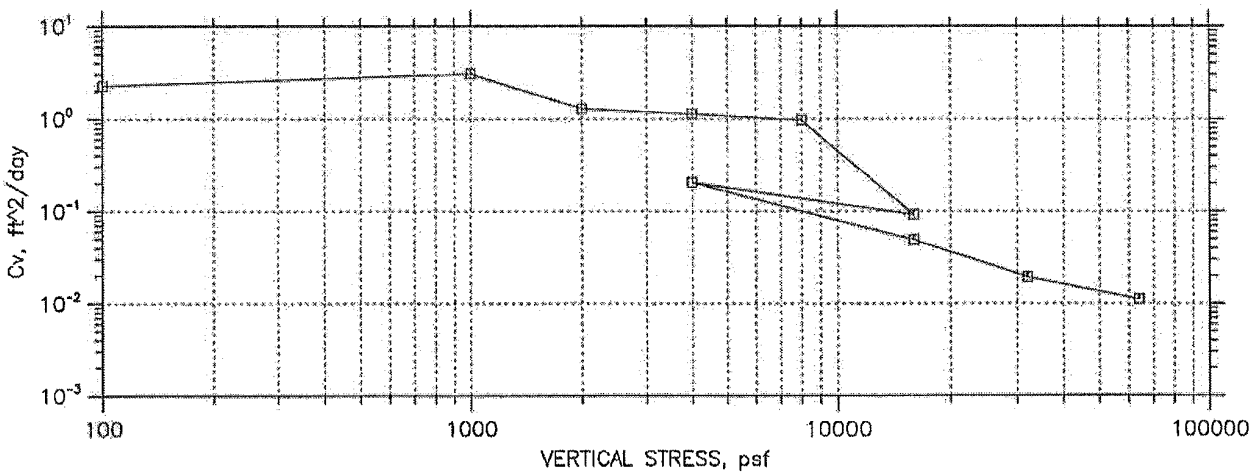
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-4 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGJ 5/5/09 |
| | Sample No.: UD-4 | Test Date: 4/7/09 | Depth: 53.8-55.4' |
| | Test No.: 9562 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

Tue, 05-MAY-2009 13:52:21

# CONSOLIDATION TEST DATA

SUMMARY REPORT



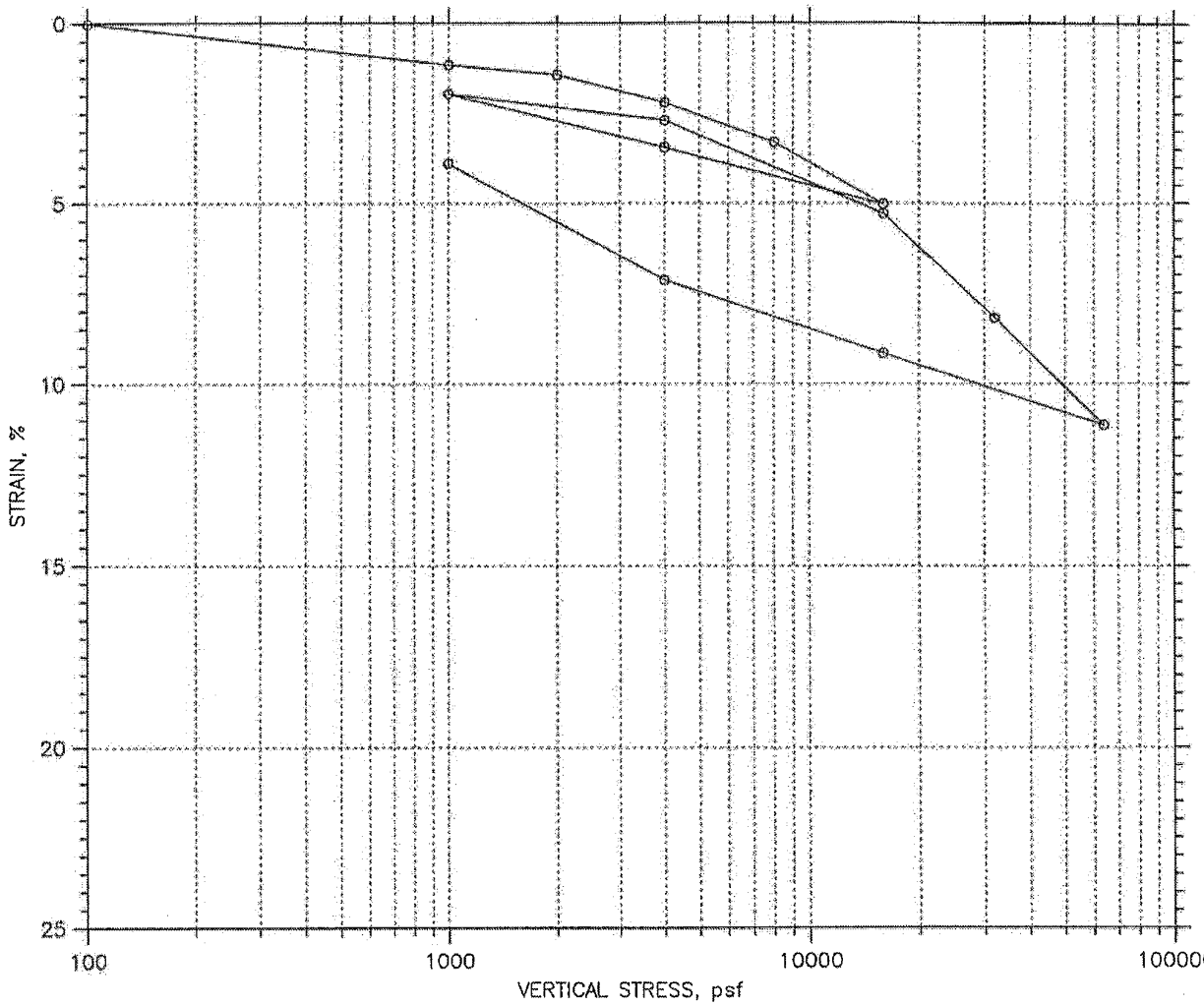




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-4 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEF 5/5/09 |
| | Sample No.: UD-4 | Test Date: 4/7/09 | Depth: 53.8-55.4' |
| | Test No.: 9562 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

Tue, 05-MAY-2009 13:52:21

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 7550 psf | | | | Water Content, % | 34.43 | 32.08 |
| Preconsolidation Pressure: 8420 psf | | | | Dry Unit Weight, pcf | 87.85 | 91.41 |
| Compression Index: 0.196 | | | | Saturation, % | 98.84 | 100.05 |
| Diameter: 2.5 in | | Height: 1.002 in | | Void Ratio | 0.96 | 0.88 |
| LL: 79 | PL: 31 | PI: 48 | GS: 2.76 | | | |

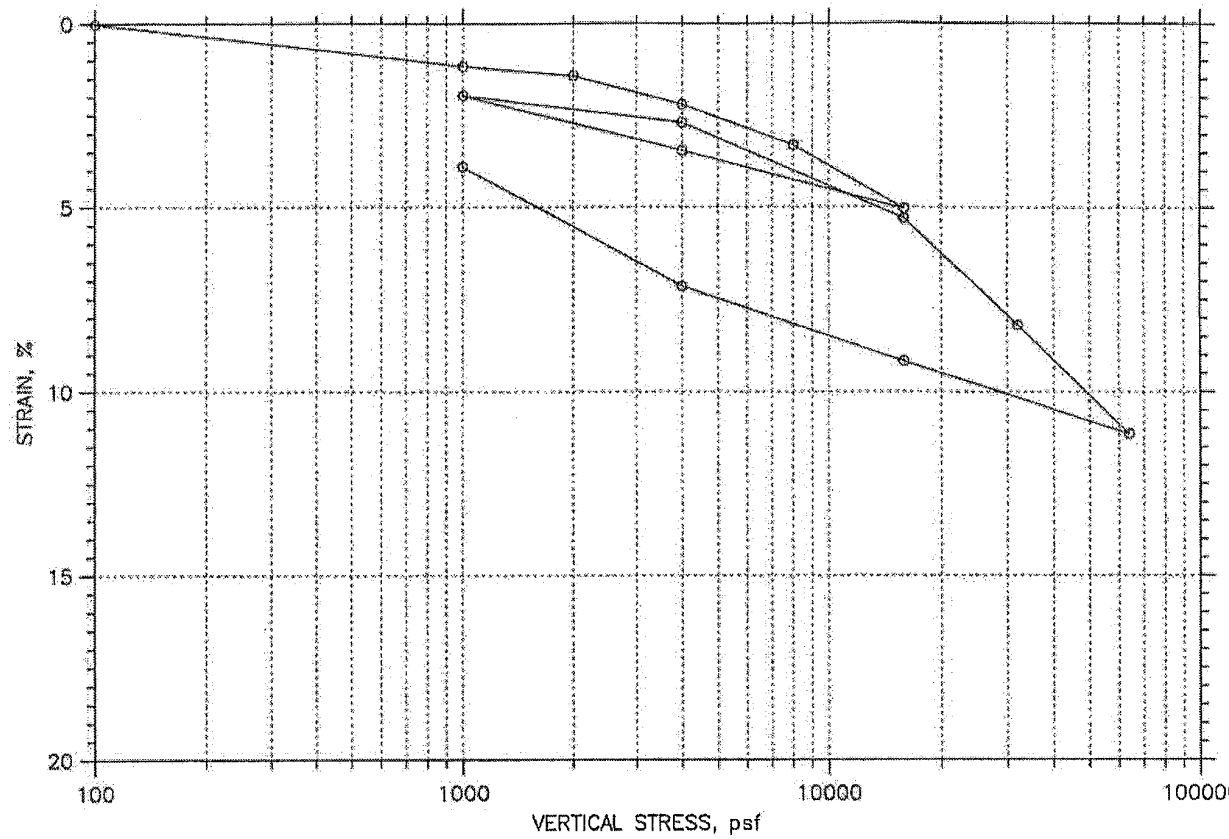
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3234UD UD-5 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGF 5/5/09 |
| | Sample No.: UD-5 | Test Date: 4/7/09 | Depth: 70.0-71.6' |
| | Test No.: 9563 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.052 |

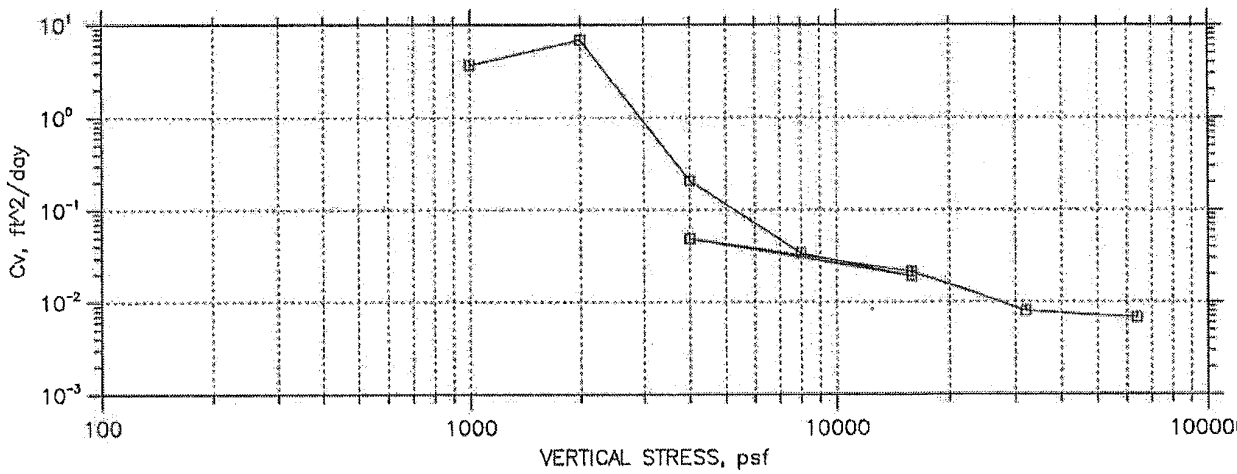
Tue, 05-MAY-2009 13:53:14

DJC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



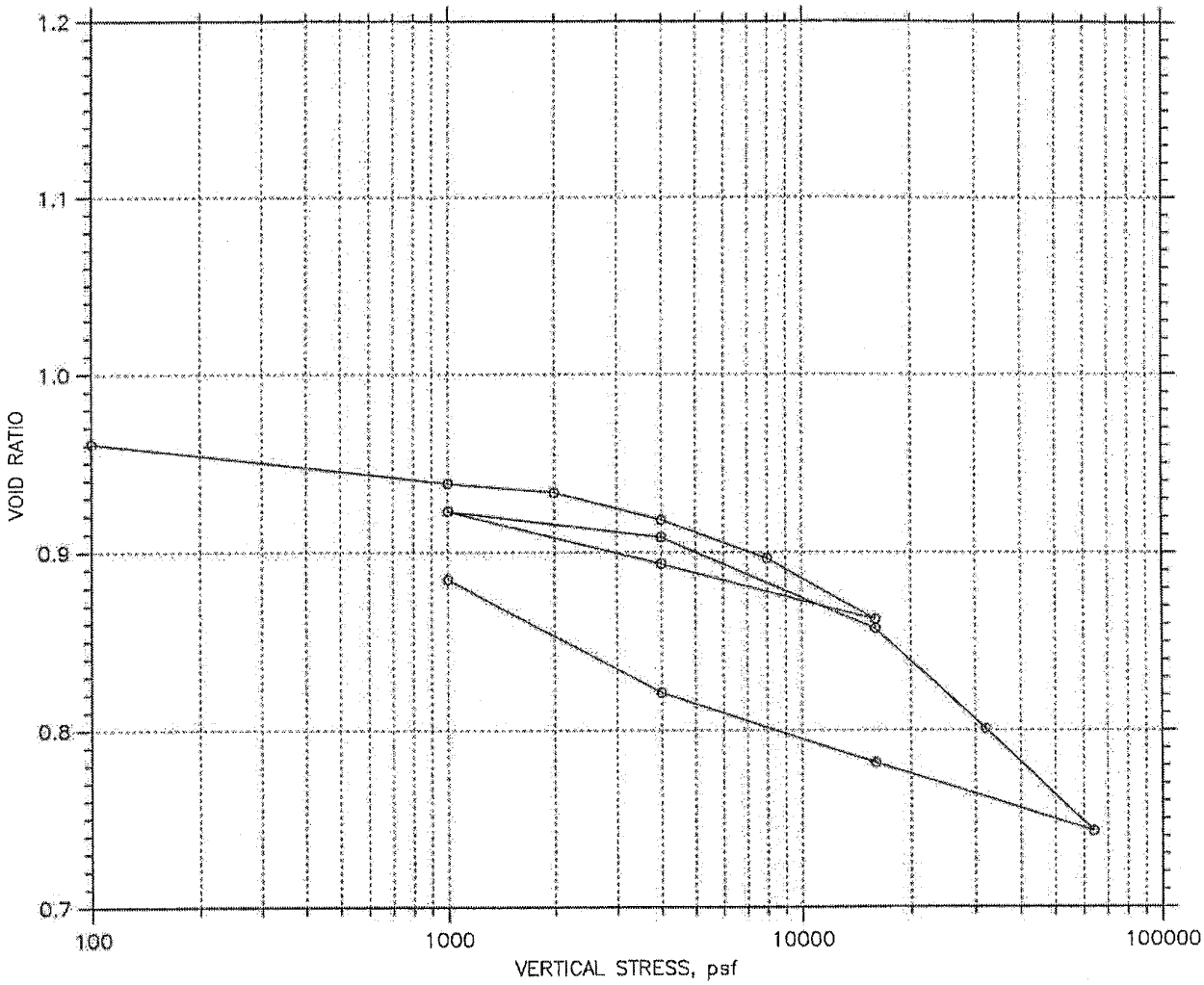




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3234UD UD-5 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGT 5/5/09 |
| | Sample No.: UD-5 | Test Date: 4/7/09 | Depth: 70.0-71.6' |
| | Test No.: 9563 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.052 |

Tue, 05-MAY-2009 13:53:14

# CONSOLIDATION TEST DATA

SUMMARY REPORT



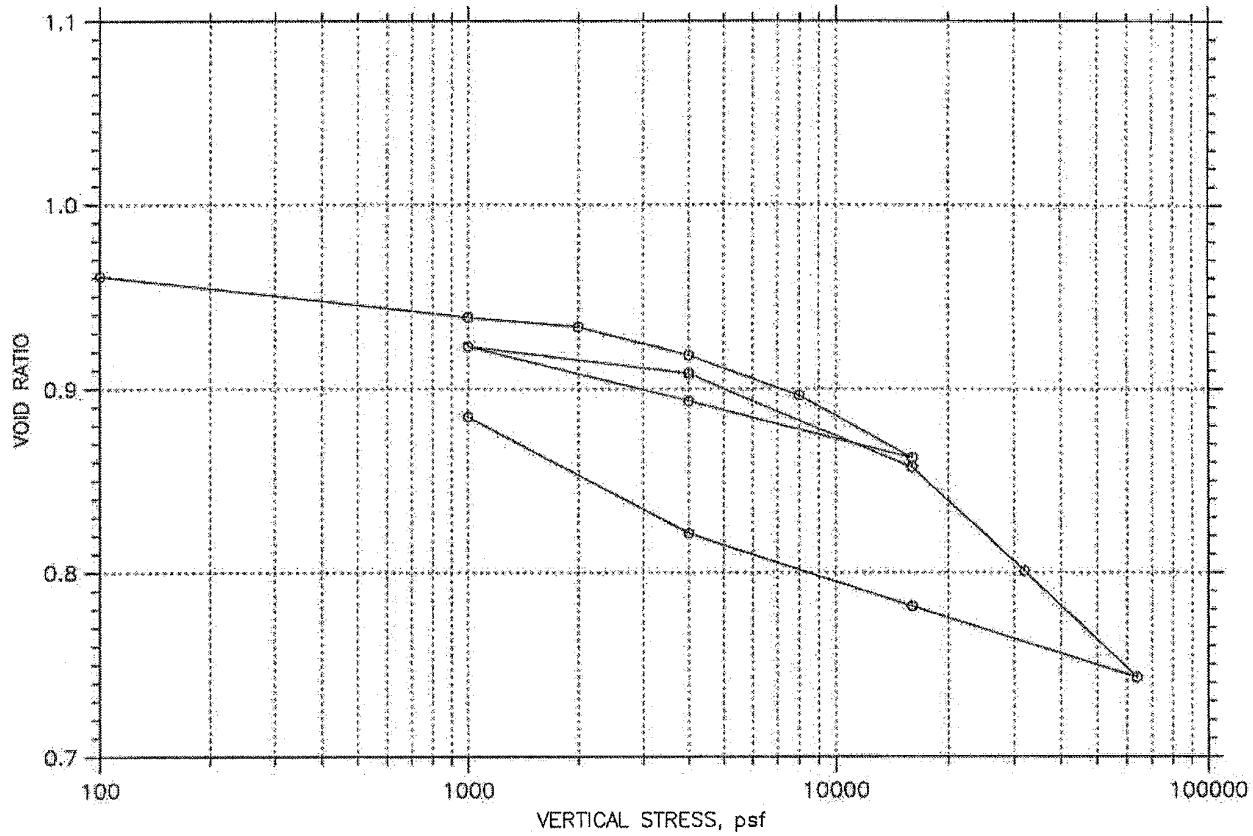

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 7550 psf | | | | Water Content, % | 34.43 | 32.08 |
| Preconsolidation Pressure: 8420 psf | | | | Dry Unit Weight, pcf | 87.85 | 91.41 |
| Compression Index: 0.196 | | | | Saturation, % | 98.84 | 100.05 |
| Diameter: 2.5 in | | Height: 1.002 in | | Void Ratio | 0.96 | 0.88 |
| LL: 79 | PL: 31 | PI: 48 | GS: 2.76 | | | |

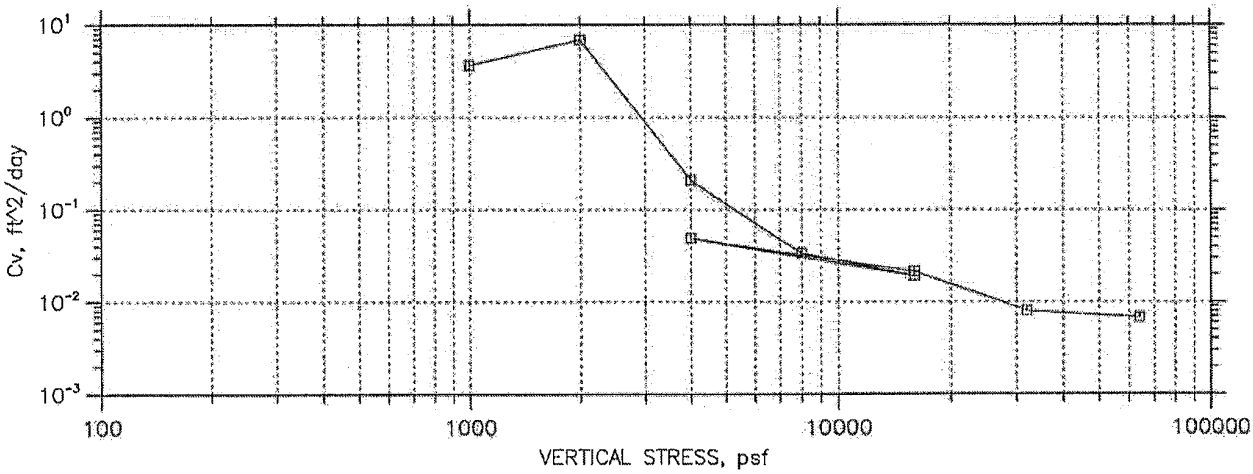
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3234UD UD-5 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JCB 5/5/09 |
| | Sample No.: UD-5 | Test Date: 4/7/09 | Depth: 70.0-71.6' |
| | Test No.: 9563 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.052 |

Tue, 05-MAY-2009 13:53:23

# CONSOLIDATION TEST DATA

SUMMARY REPORT



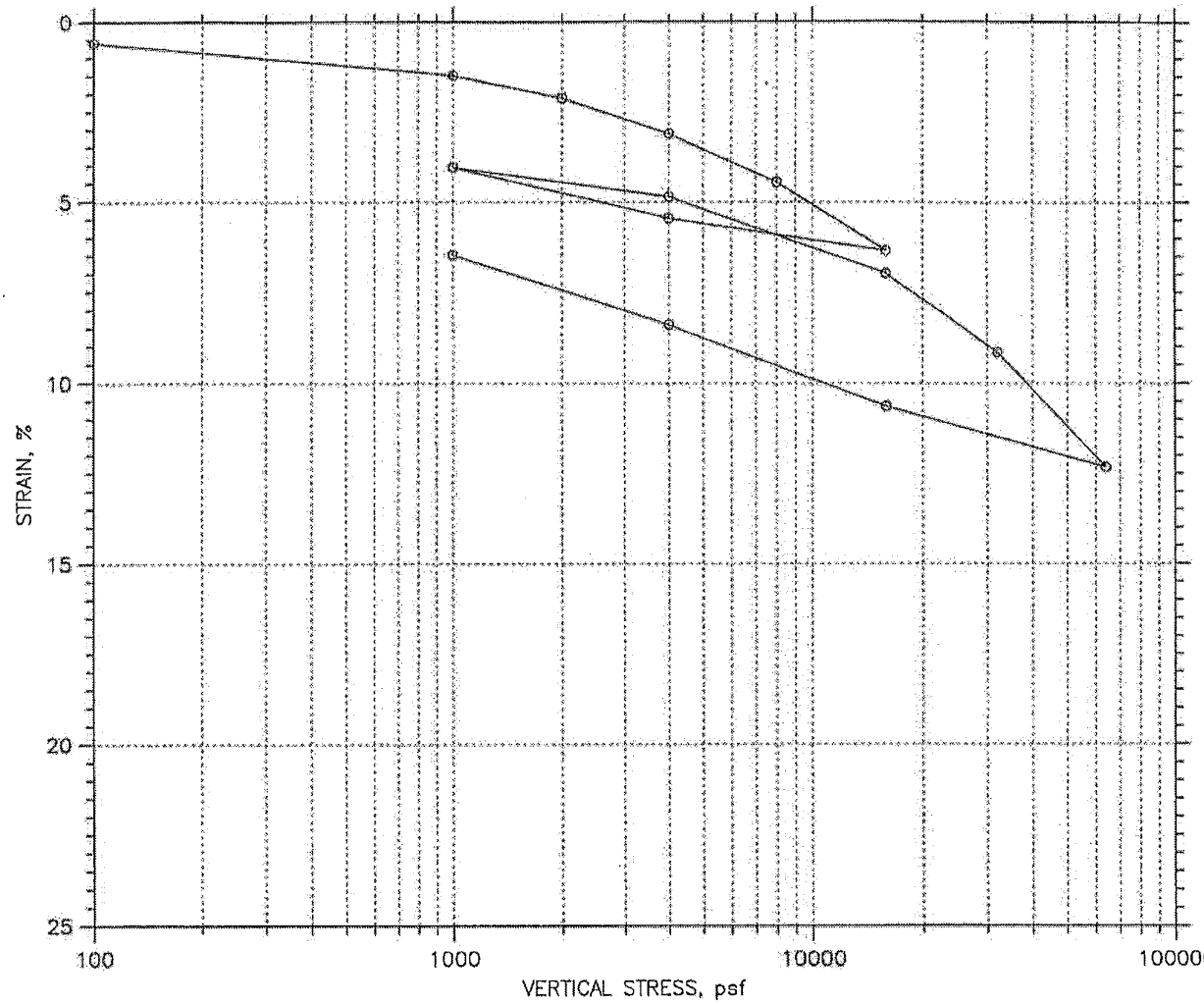




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B3234UD UD-5 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JCB 5/5/09 |
| | Sample No.: UD-5 | Test Date: 4/7/09 | Depth: 70.0-71.6' |
| | Test No.: 9563 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.052 |

Tue, 05-MAY-2009 13:53:23

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.1e+004 psf | | | | Water Content, % | 20.14 | 17.35 |
| Preconsolidation Pressure: 8000 psf | | | | Dry Unit Weight, pcf | 107.8 | 115.2 |
| Compression Index: 0.166 | | | | Saturation, % | 95.76 | 100.38 |
| Diameter: 2.499 in | | Height: 1.007 in | | Void Ratio | 0.57 | 0.47 |
| LL: 56 | PL: 18 | PI: 38 | GS: 2.71 | | | |

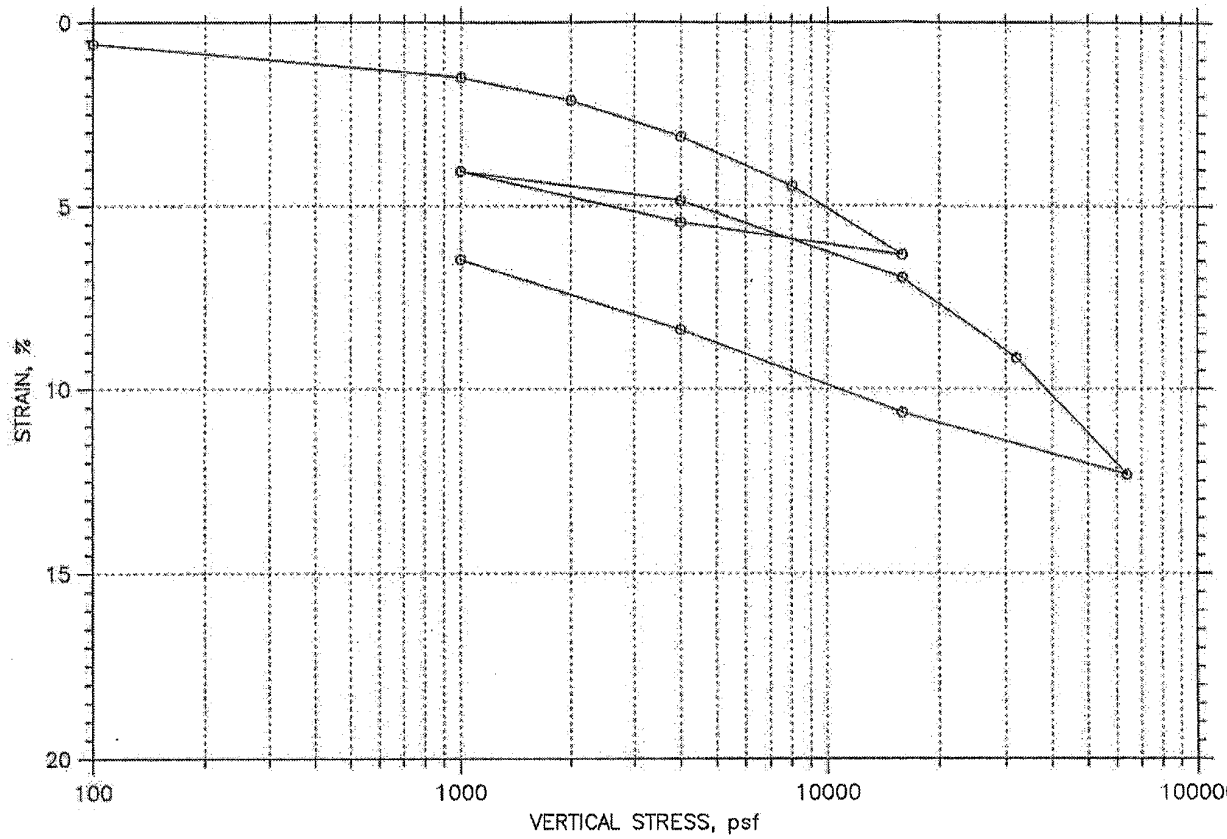
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-8 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JCF 5/5/09 |
| | Sample No.: UD-8 | Test Date: 4/7/09 | Depth: 125.0-126.6 |
| | Test No.: 9564 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.034 |

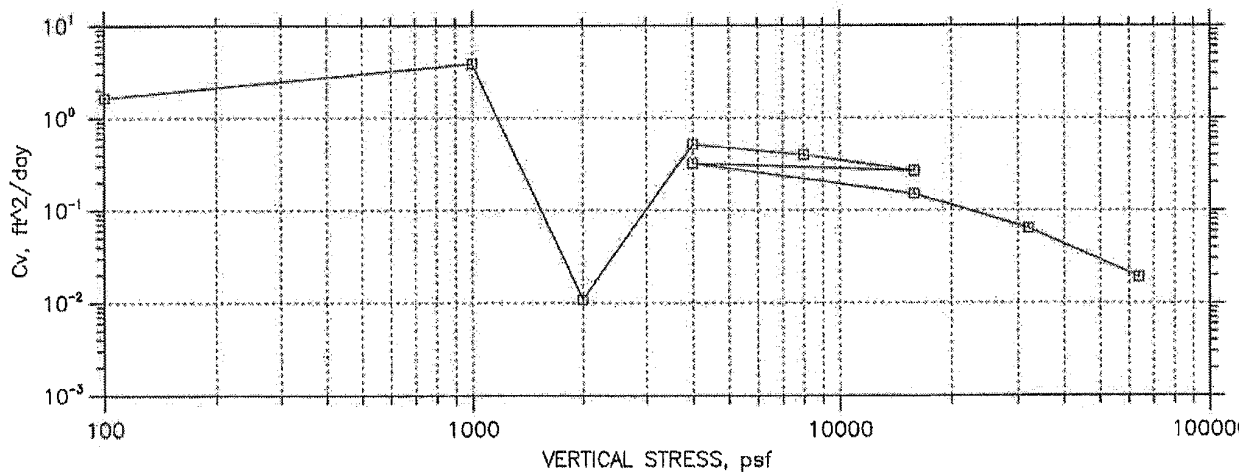
Tue, 05-MAY-2009 13:54:30

DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



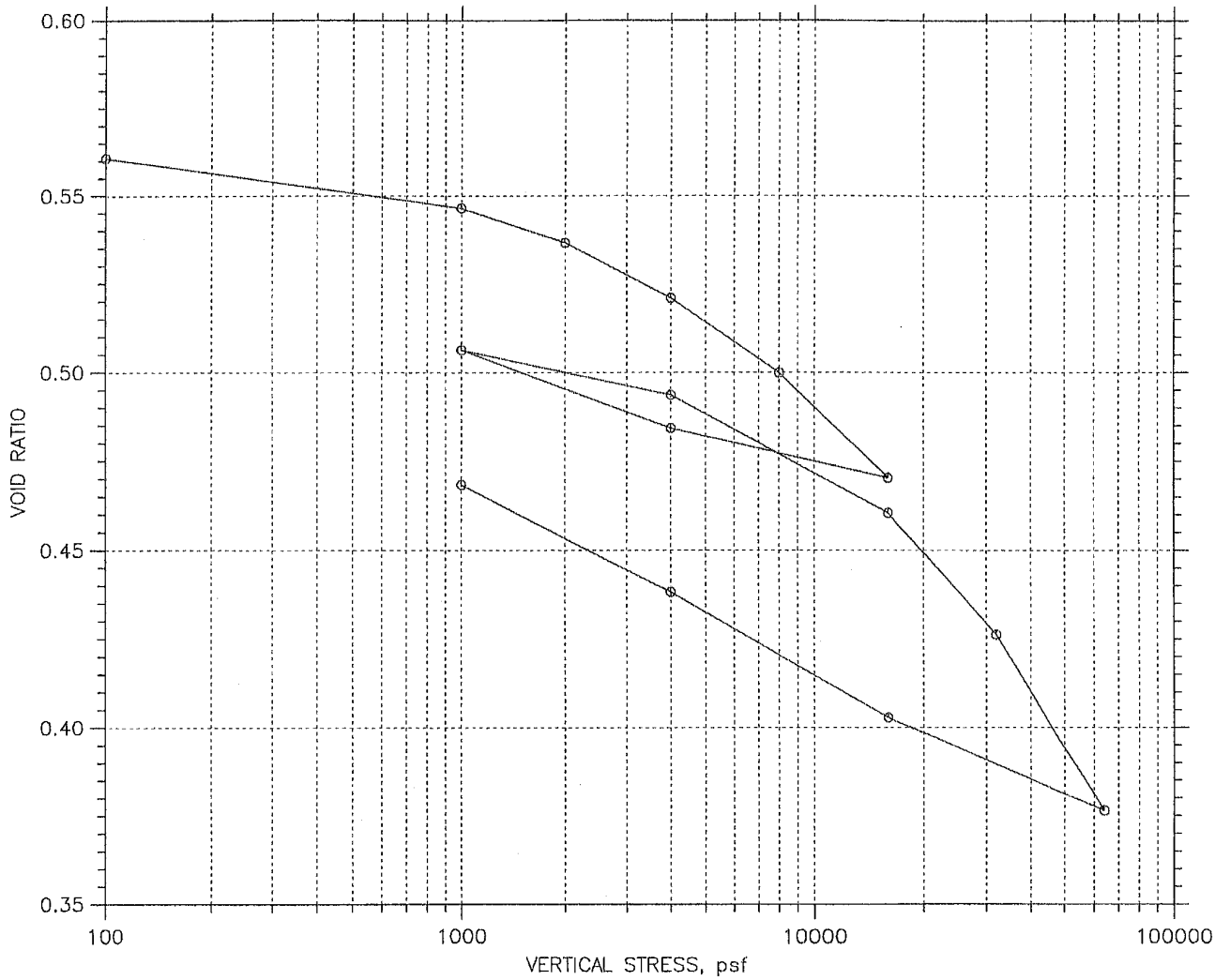




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-8 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGF 5/5/09 |
| | Sample No.: UD-8 | Test Date: 4/7/09 | Depth: 125.0-126.6 |
| | Test No.: 9564 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.034 |

Tue, 05-MAY-2009 13:54:30

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | Before Test | After Test |
|---|---|---|---|---|---|
| Overburden Pressure: ~~0~~ psf 1.1e+004 | | | | Water Content, % | 20.14 | 17.35 |
| Preconsolidation Pressure: ~~0~~ psf 8000 | | | | Dry Unit Weight, pcf | 107.8 | 115.2 |
| Compression Index: ~~0~~ 0.166 | | | | Saturation, % | 95.76 | 100.38 |
| Diameter: 2.499 in | | Height: 1.007 in | | Void Ratio | 0.57 | 0.47 |
| LL: ~~54~~ 56 | PL: 18 | PI: ~~36~~ 38 | GS: 2.71 | | | |

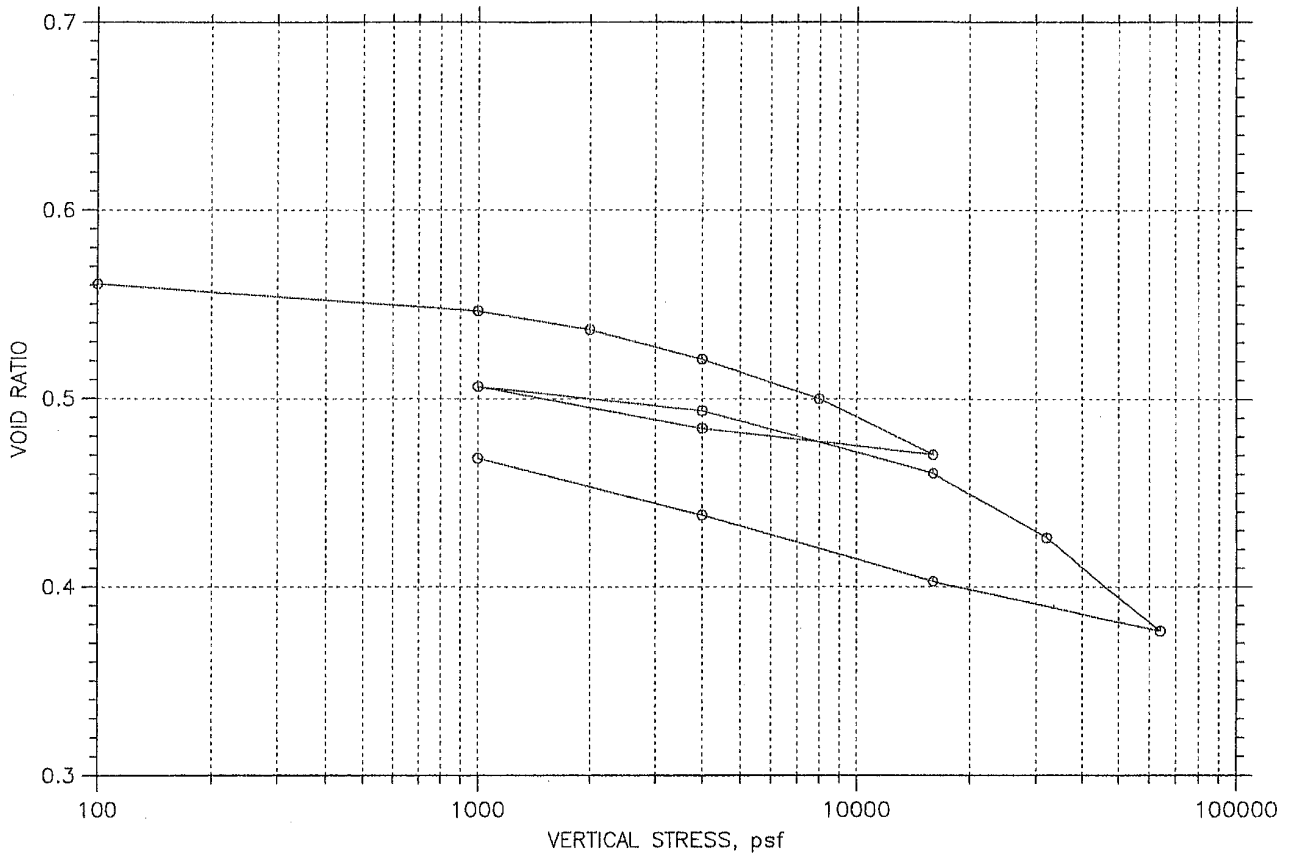
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-8 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEJ 4/27/09 |
| | Sample No.: UD-8 | Test Date: 4/7/09 | Depth: 125.0 ft - 126.6 ft |
| | Test No.: 9564 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Grey Fat Clay (CH) mottled Brownish Yellow | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.034 |

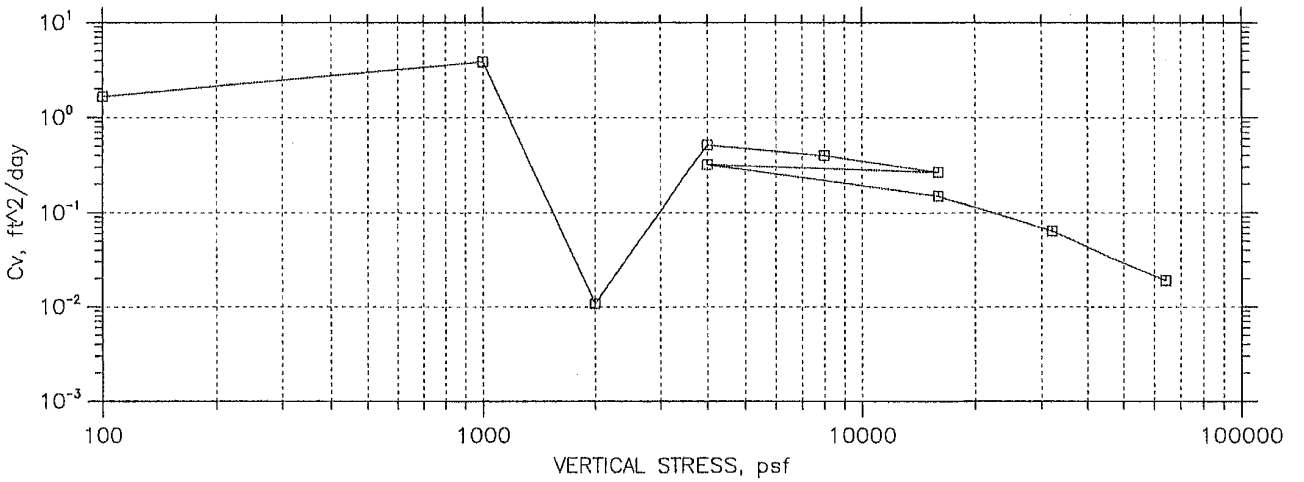
HAND REVISIONS MADE BY DSC ON 5-5-09

DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



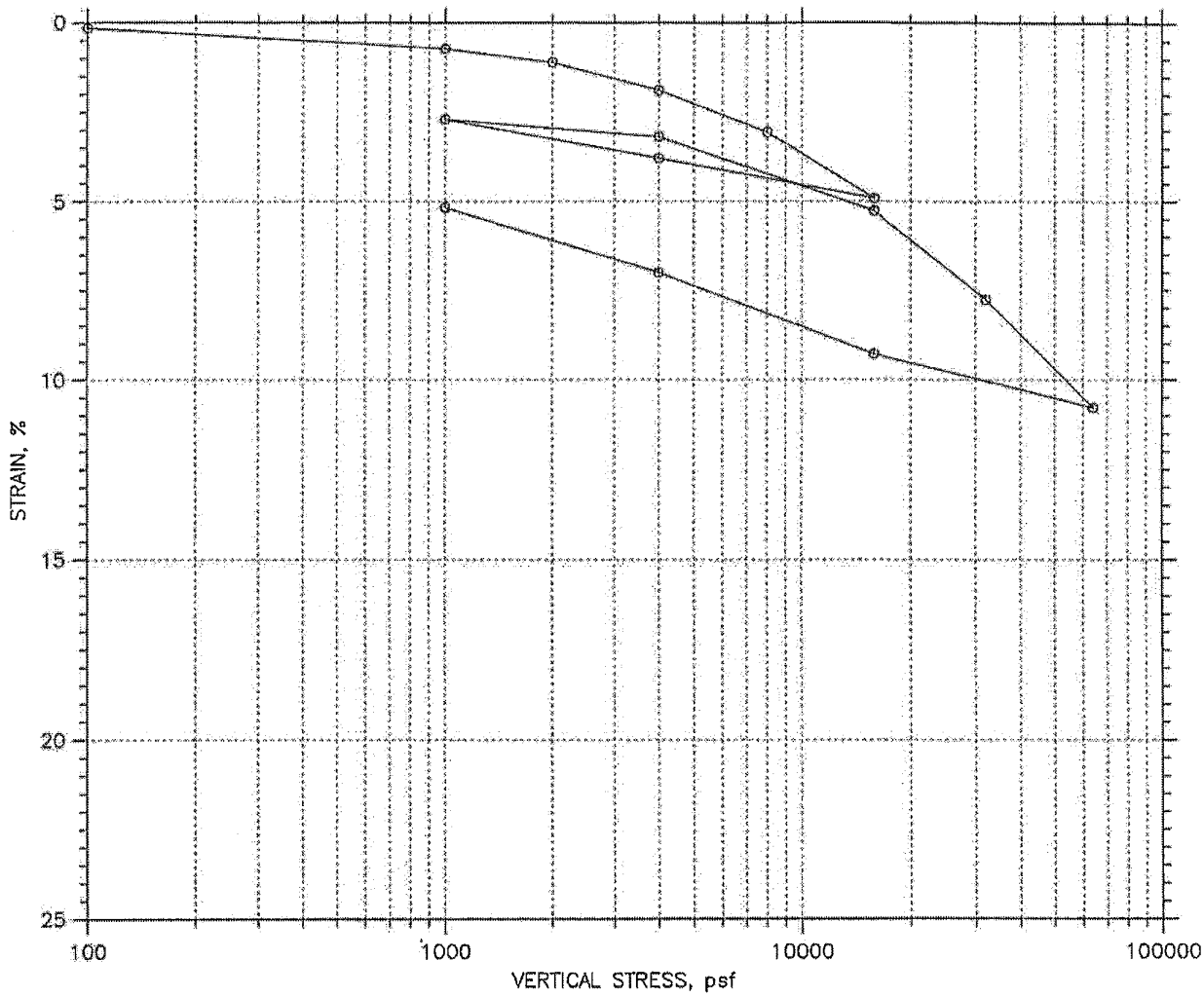




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-8 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEJ 4/27/09 |
| | Sample No.: UD-8 | Test Date: 4/7/09 | Depth: 125.0 ft |
| | Test No.: 9564 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Grey Fat Clay (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= |

Mon, 27-APR-2009 09:31:05

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | Before Test | After Test |
|---|---|---|---|---|---|
| Overburden Pressure: 1.256e+004 psf | | | | Water Content, % | 21.73 | 19.23 |
| Preconsolidation Pressure: 7270 psf | | | | Dry Unit Weight, pcf | 104.9 | 110.6 |
| Compression Index: 0.15 | | | | Saturation, % | 97.28 | 99.90 |
| Diameter: 2.498 in | | Height: 1.002 in | | Void Ratio | 0.60 | 0.52 |
| LL: 50 | PL: 18 | PI: 32 | GS: 2.69 | | | |

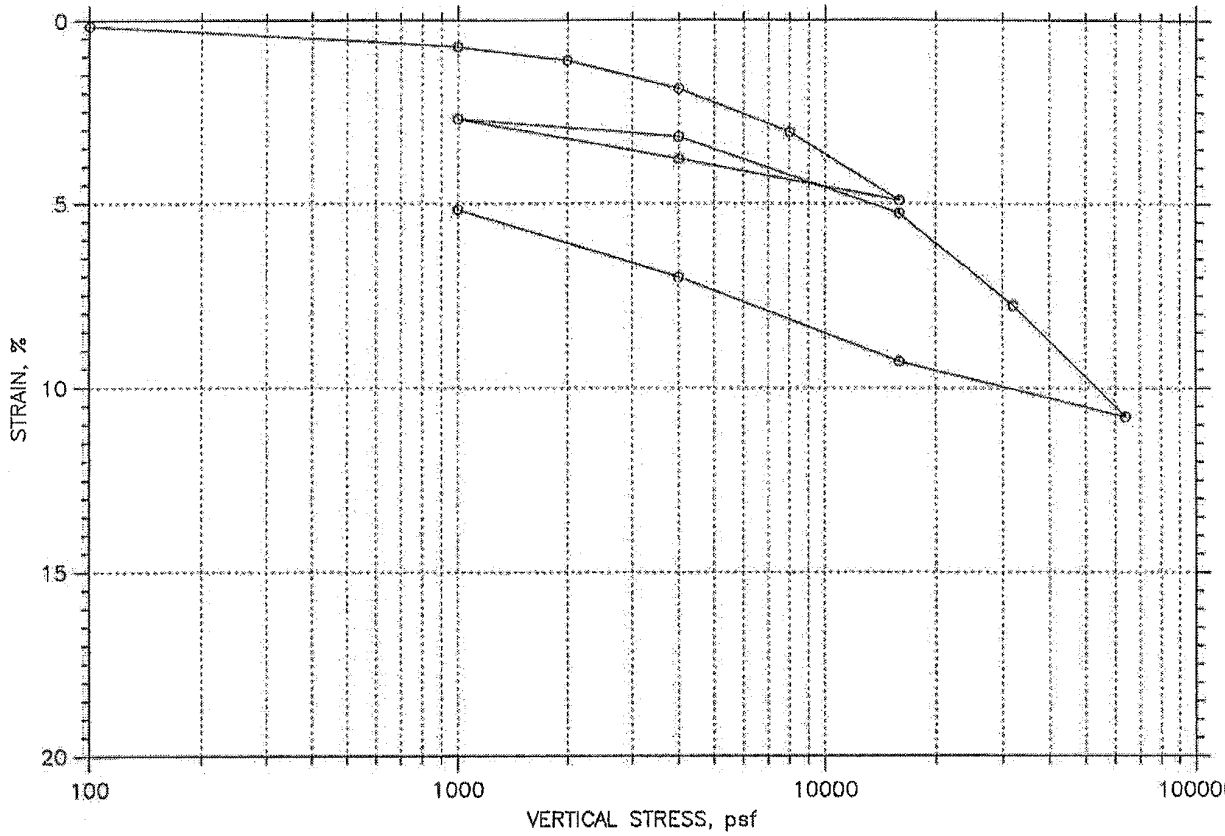
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-9 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JCT 5/5/09 |
| | Sample No.: UD-9 | Test Date: 4/7/09 | Depth: 150.0-151.6 |
| | Test No.: 9565 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.029 |

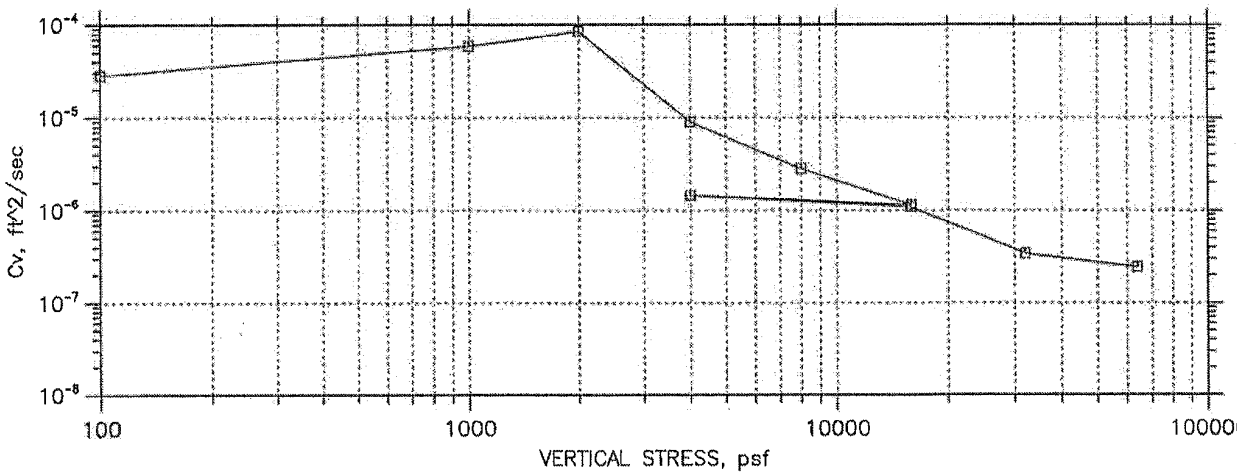
Tue, 05-MAY-2009 13:55:44

DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



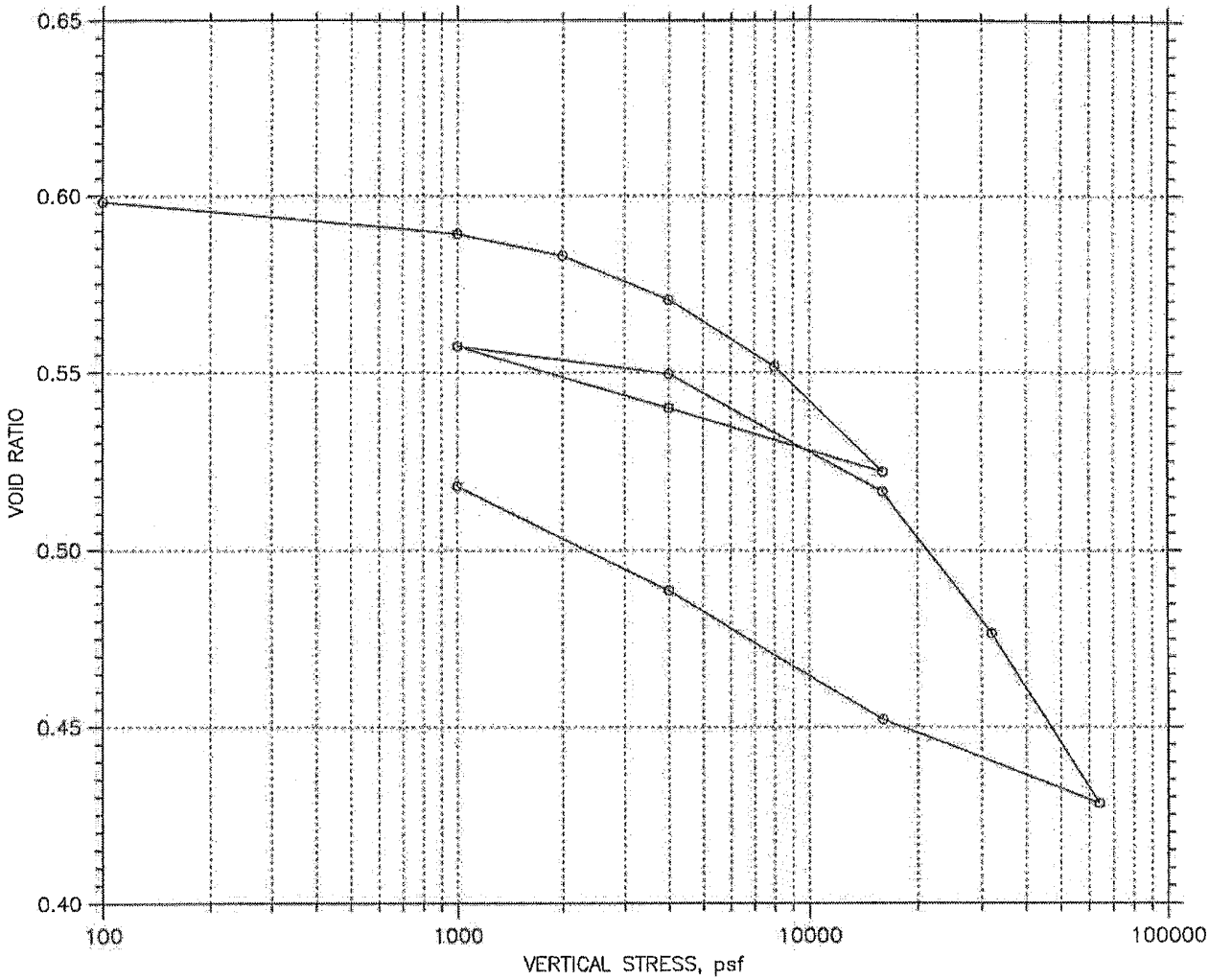




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-9 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JG 5/5/09 |
| | Sample No.: UD-9 | Test Date: 4/7/09 | Depth: 150.0-151.6 |
| | Test No.: 9565 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.029 |

Tue, 05-MAY-2009 13:55:44

# CONSOLIDATION TEST DATA

SUMMARY REPORT



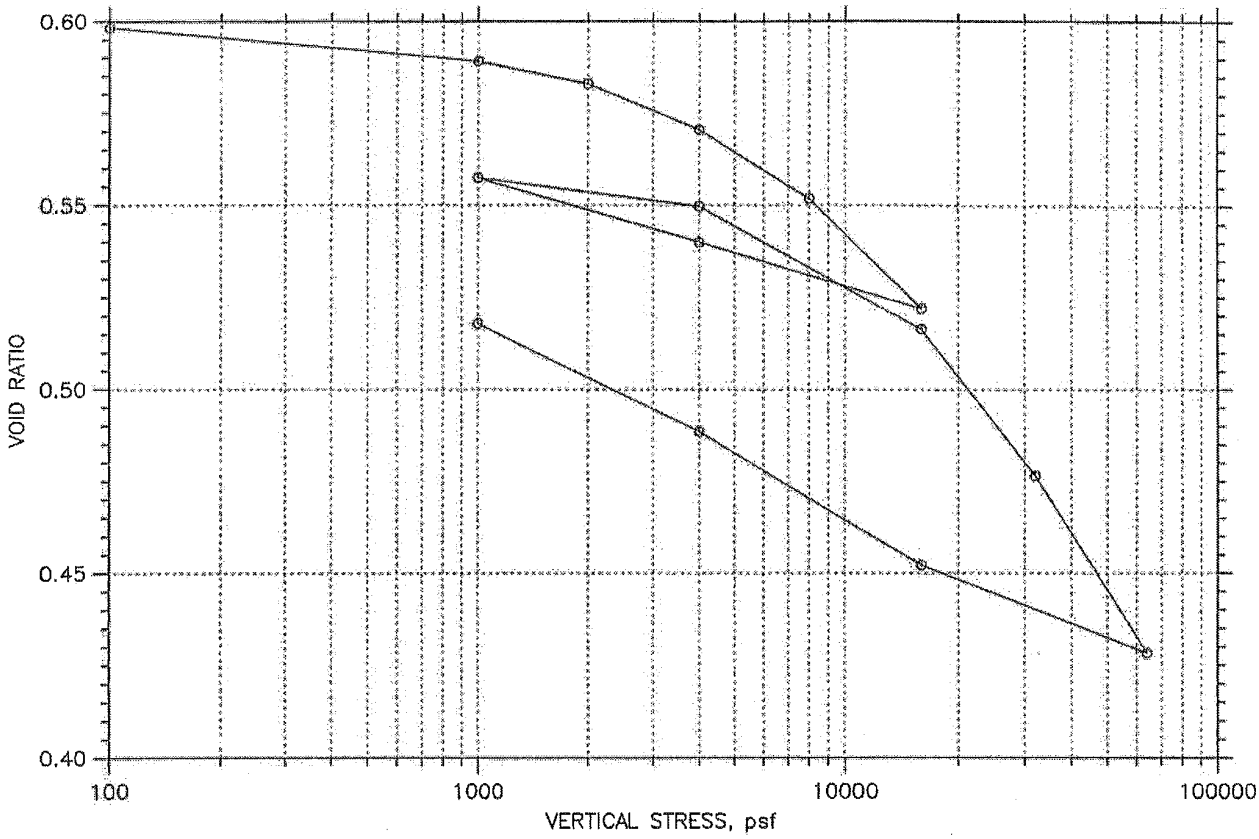

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 1.256e+004 psf | | | | Water Content, % | 21.73 | 19.23 |
| Preconsolidation Pressure: 7270 psf | | | | Dry Unit Weight, pcf | 104.9 | 110.6 |
| Compression Index: 0.15 | | | | Saturation, % | 97.28 | 99.90 |
| Diameter: 2.498 in | | Height: 1.002 in | | Void Ratio | 0.60 | 0.52 |
| LL: 50 | PL: 18 | PI: 32 | GS: 2.69 | | | |

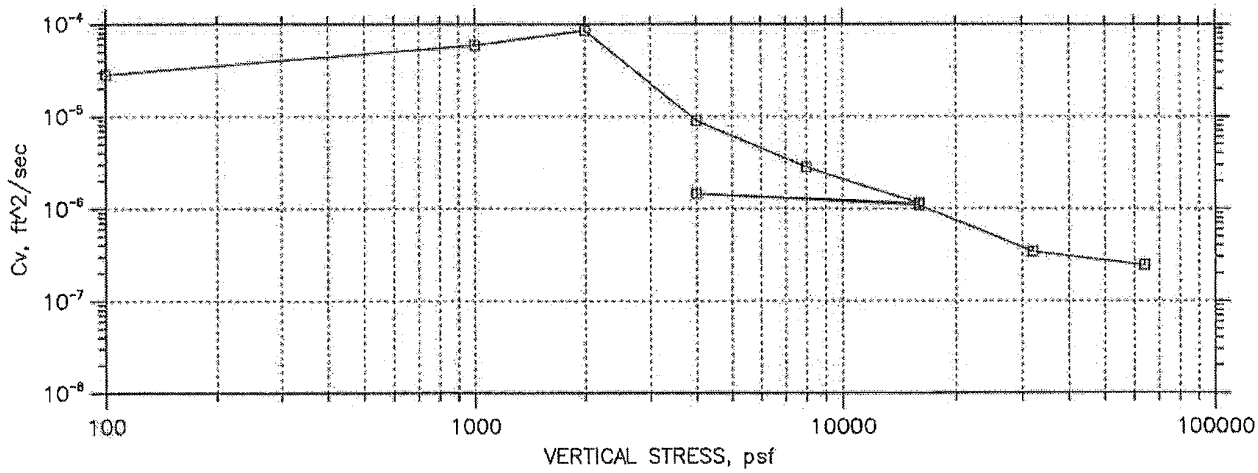
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-9 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JCF 5/5/09 |
| | Sample No.: UD-9 | Test Date: 4/7/09 | Depth: 150.0-151.6 |
| | Test No.: 9565 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.029 |

Tue, 05-MAY-2009 13:55:52

# CONSOLIDATION TEST DATA

SUMMARY REPORT



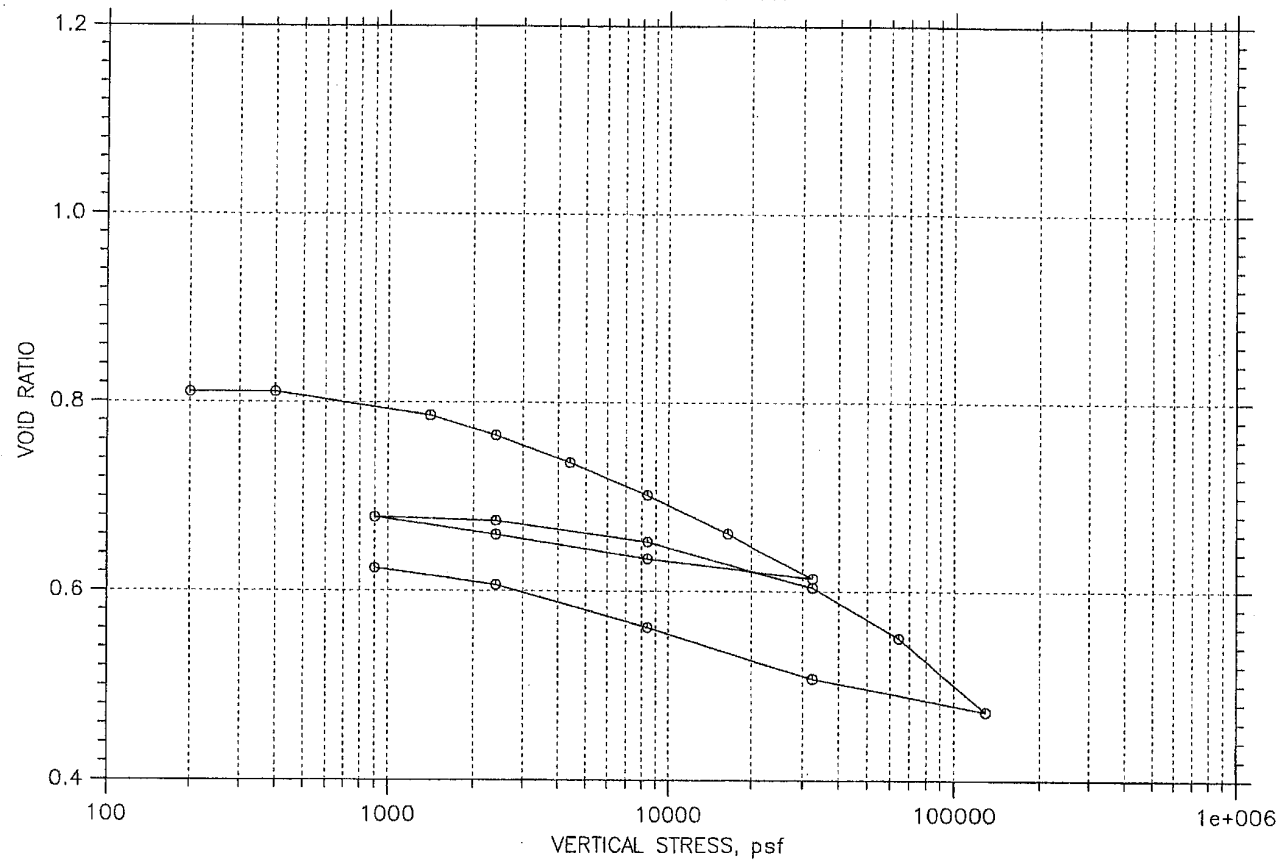



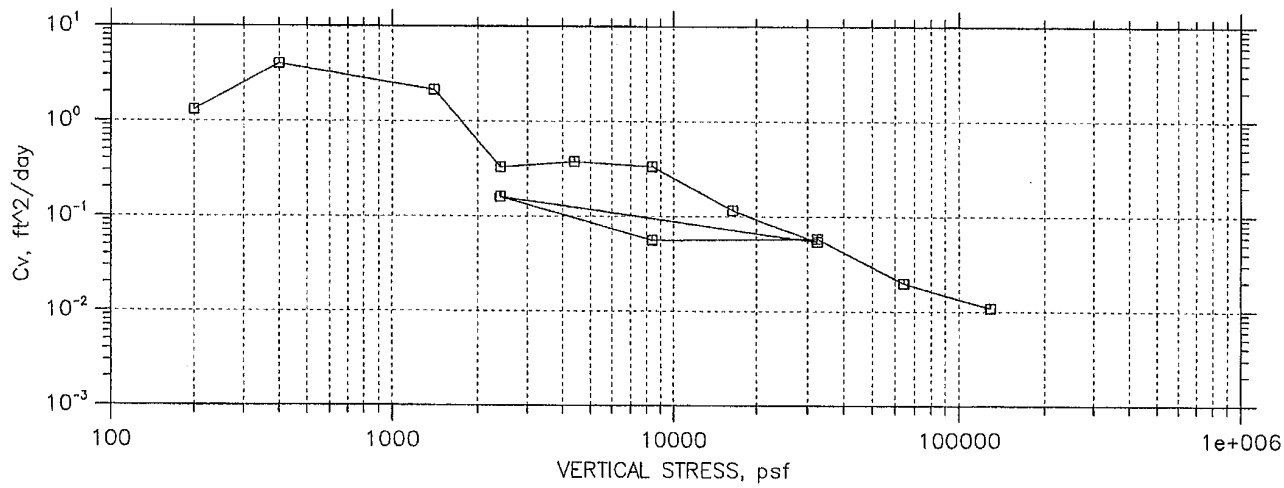

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-9 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGT 5/5/09 |
| | Sample No.: UD-9 | Test Date: 4/7/09 | Depth: 150.0-151.6 |
| | Test No.: 9565 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Light Gray mottled Brownish Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.029 |

Tue, 05-MAY-2009 13:55:52

# CONSOLIDATION TEST DATA

SUMMARY REPORT



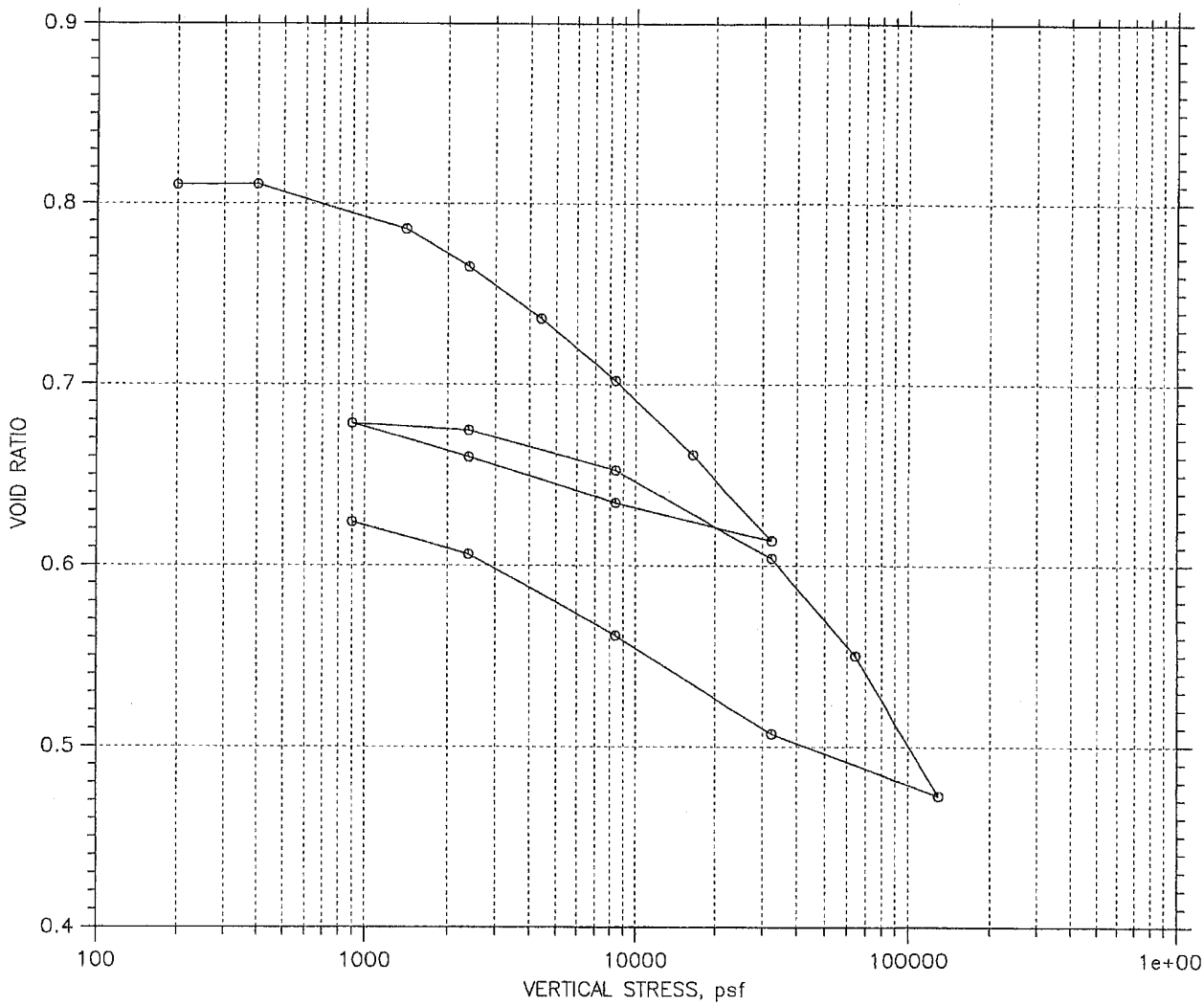

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: DEJ |
| | Sample No.: UD-16 | Test Date: 7/16/09 | Depth: 305.0-307.3 |
| | Test No.: 9566a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown mottled Brownish Yellow Fat CLAY(CH). Cr= 0.044. Sw. Pre. = 400 psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

Mon, 10-AUG-2009 11:01:40

KAW 8/10/09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



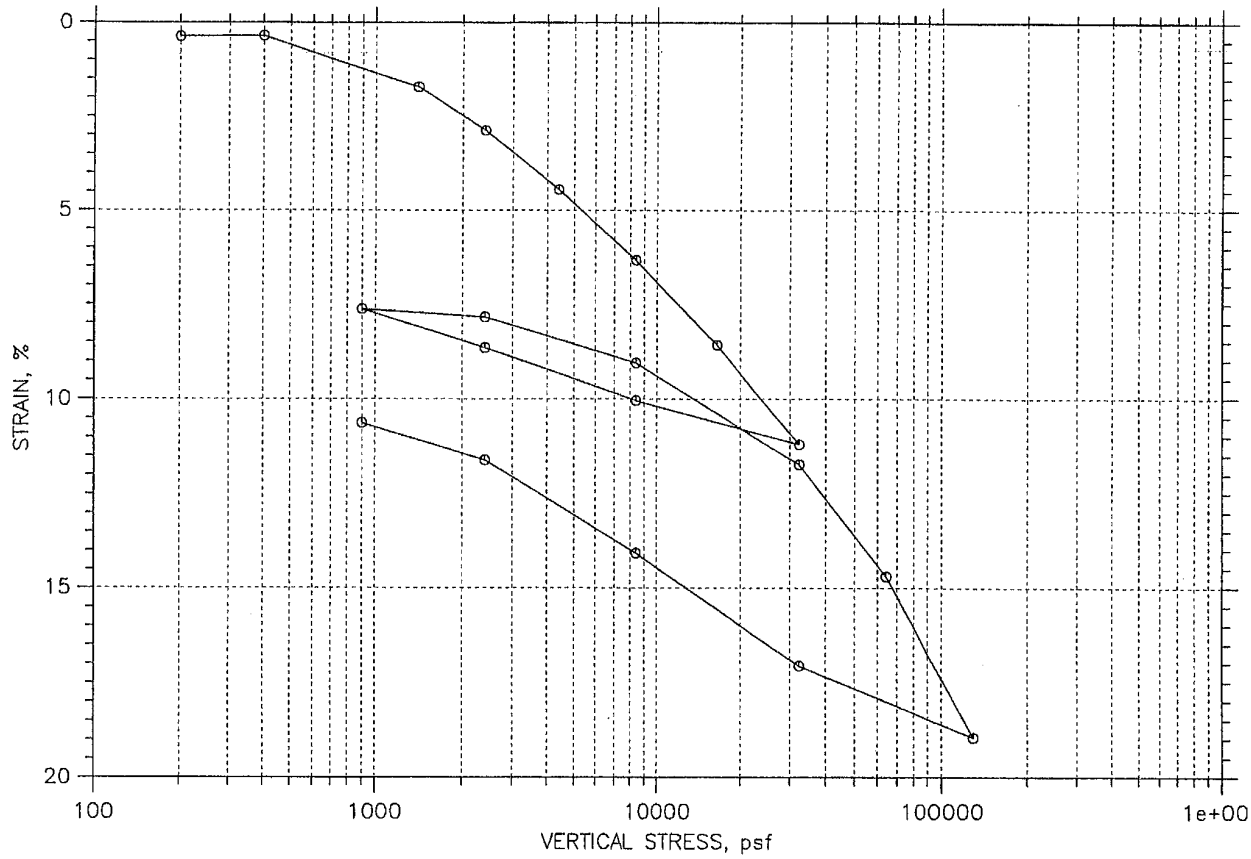

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 2.229e+004 psf | | | | Water Content, % | 25.25 | 22.18 |
| Preconsolidation Pressure: 1.107e+004 psf | | | | Dry Unit Weight, pcf | 94.13 | 105.3 |
| Compression Index: 0.251 | | | | Saturation, % | 84.67 | 97.39 |
| Diameter: 2.5 in | | Height: 1.005 in | | Void Ratio | 0.82 | 0.62 |
| LL: 78 | PL: 26 | PI: 52 | GS: 2.74 | | | |

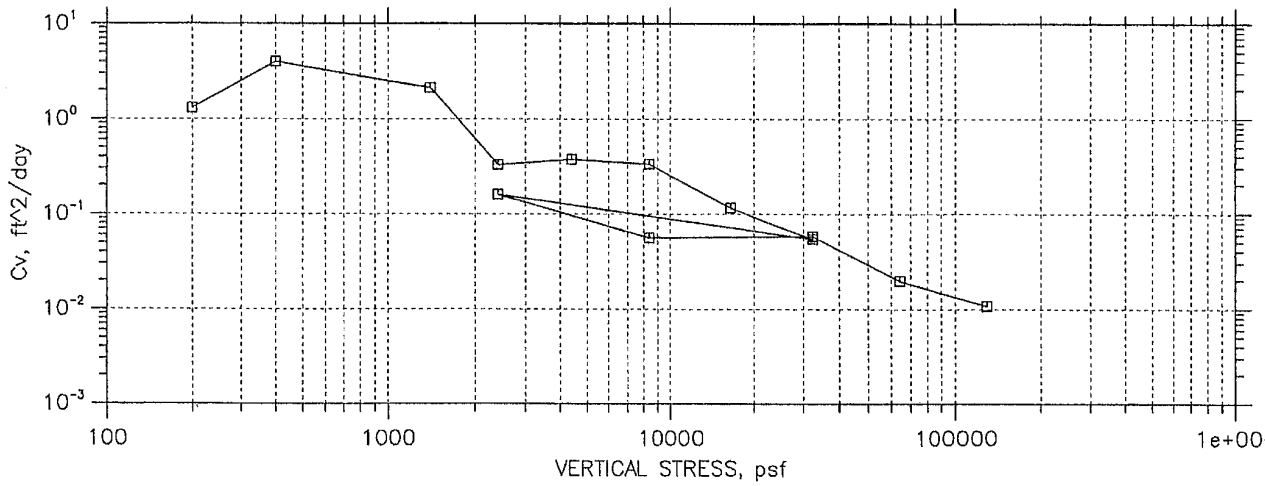
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEB |
| | Sample No.: UD-16 | Test Date: 7/16/09 | Depth: 305.0-307.3 |
| | Test No.: 9566a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown mottled Brownish Yellow Fat CLAY(CH). Cr= 0.044. Sw. Pre. = 400 psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

Mon, 10-AUG-2009 11:01:40

# CONSOLIDATION TEST DATA

SUMMARY REPORT



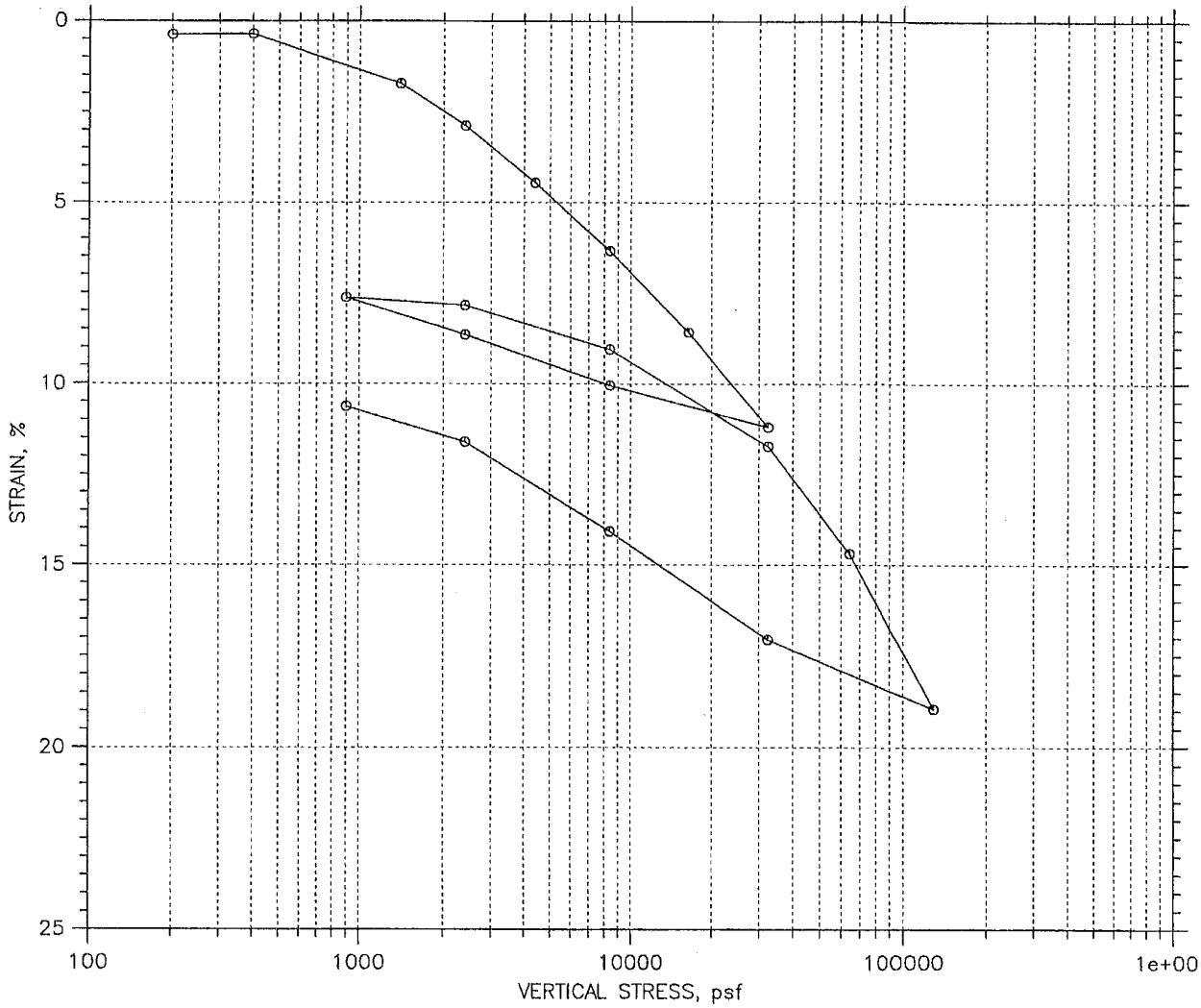




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEJ |
| | Sample No.: UD-16 | Test Date: 7/16/09 | Depth: 305.0-307.3 |
| | Test No.: 9566a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown mottled Brownish Yellow Fat CLAY(CH). Cr= 0.044. Sw. Pre. = 400 psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

Mon, 10-AUG-2009 10:57:36

# CONSOLIDATION TEST DATA

SUMMARY REPORT



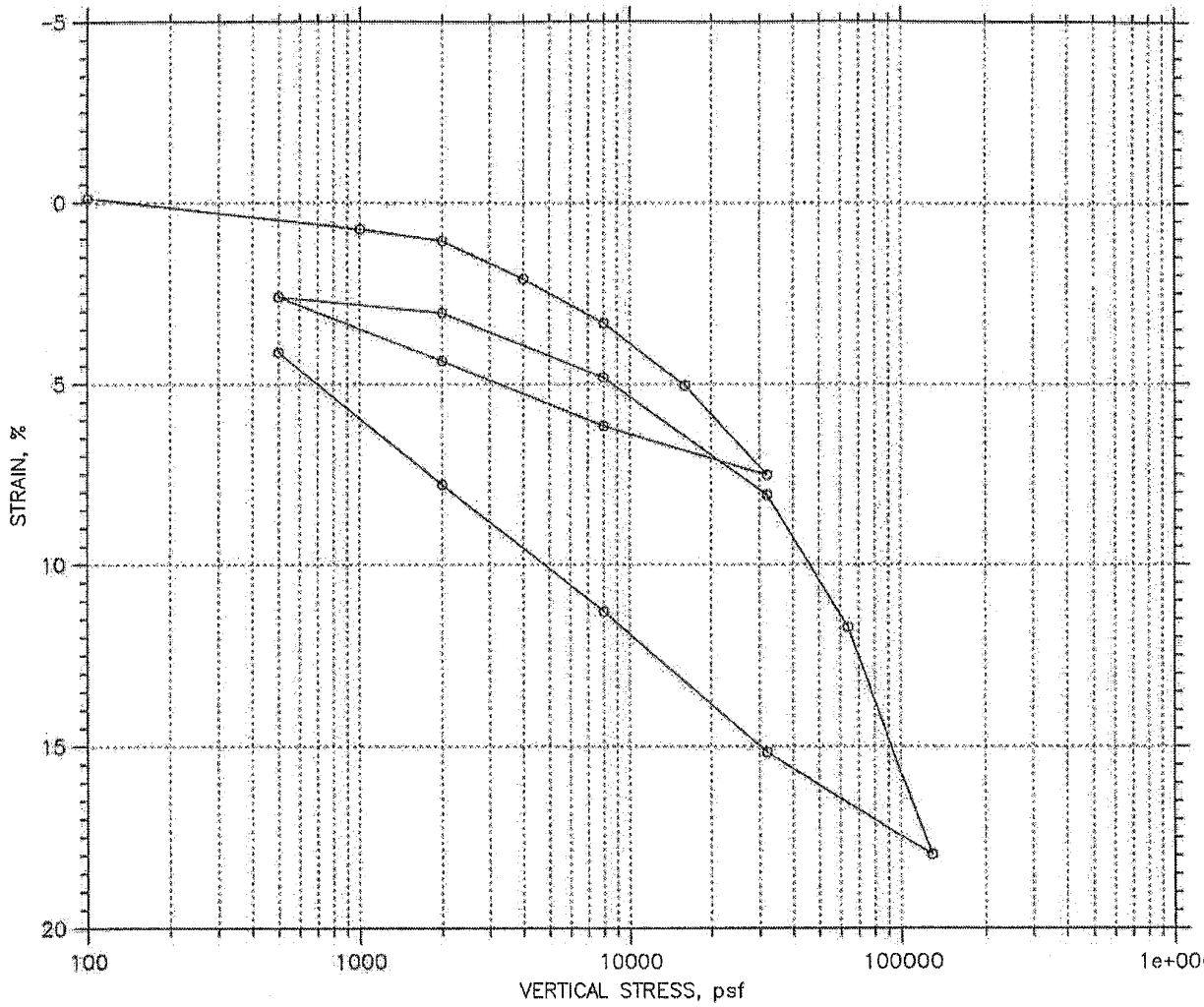

| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 2.229e+004 psf | | | | Water Content, % | 25.25 | 22.18 |
| Preconsolidation Pressure: 1.107e+004 psf | | | | Dry Unit Weight, pcf | 94.13 | 105.3 |
| Compression Index: 0.251 | | | | Saturation, % | 84.67 | 97.39 |
| Diameter: 2.5 in | | Height: 1.005 in | | Void Ratio | 0.82 | 0.62 |
| LL: 78 | PL: 26 | PI: 52 | GS: 2.74 | | | |

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-16 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGJ |
| | Sample No.: UD-16 | Test Date: 7/16/09 | Depth: 305.0-307.3 |
| | Test No.: 9566a | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Very Pale Brown mottled Brownish Yellow Fat CLAY(CH). Cr= 0.044. Sw. Pre. = 400 psf | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 (Method B) & D4546-08 (Method C) | | |

Mon, 10-AUG-2009 10:57:36

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 2.778e+004 psf | | | | Water Content, % | 36.12 | 34.06 |
| Preconsolidation Pressure: 2.634e+004 psf | | | | Dry Unit Weight, pcf | 85.44 | 89.12 |
| Compression Index: 0.456 | | | | Saturation, % | 98.40 | 101.11 |
| Diameter: 2.5 in | | Height: 1 in | | Void Ratio | 1.01 | 0.93 |
| LL: 68 | PL: 30 | PI: 38 | GS: 2.75 | | | |

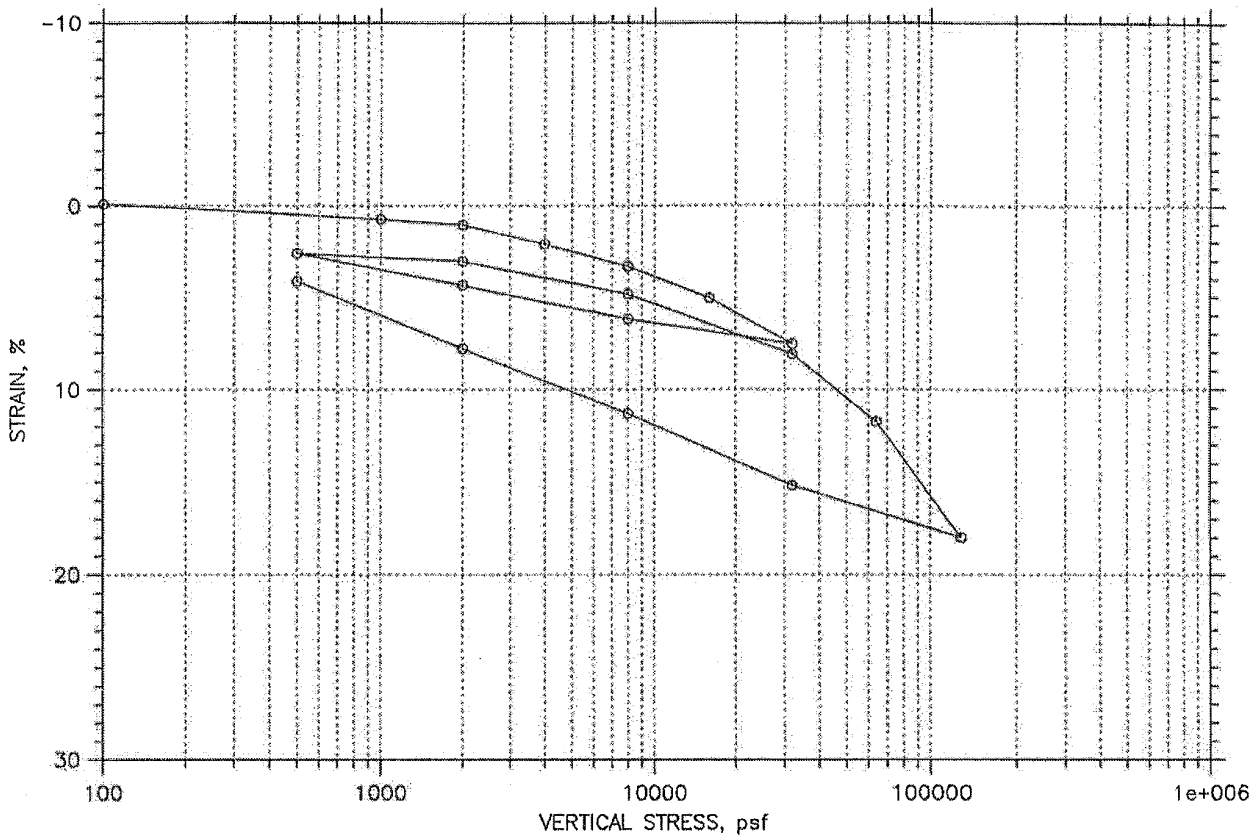
| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-19 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEF 5/5/09 |
| | Sample No.: UD-19 | Test Date: 4/16/09 | Depth: 393.0-394.8 |
| | Test No.: 9567 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Pale Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

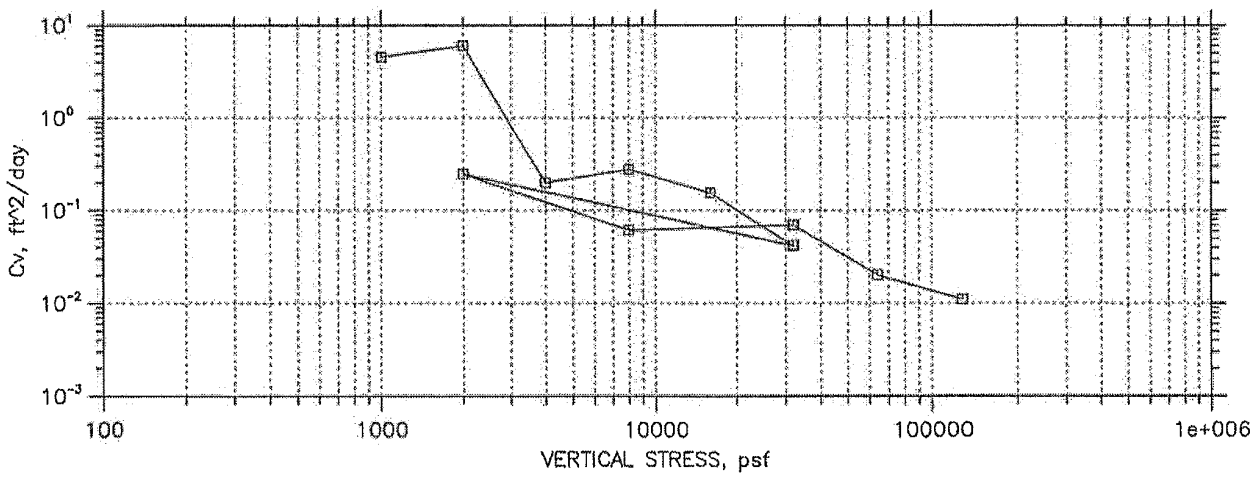
Tue, 05-MAY-2009 13:57:34

DSC 5-5-09

# CONSOLIDATION TEST DATA

SUMMARY REPORT



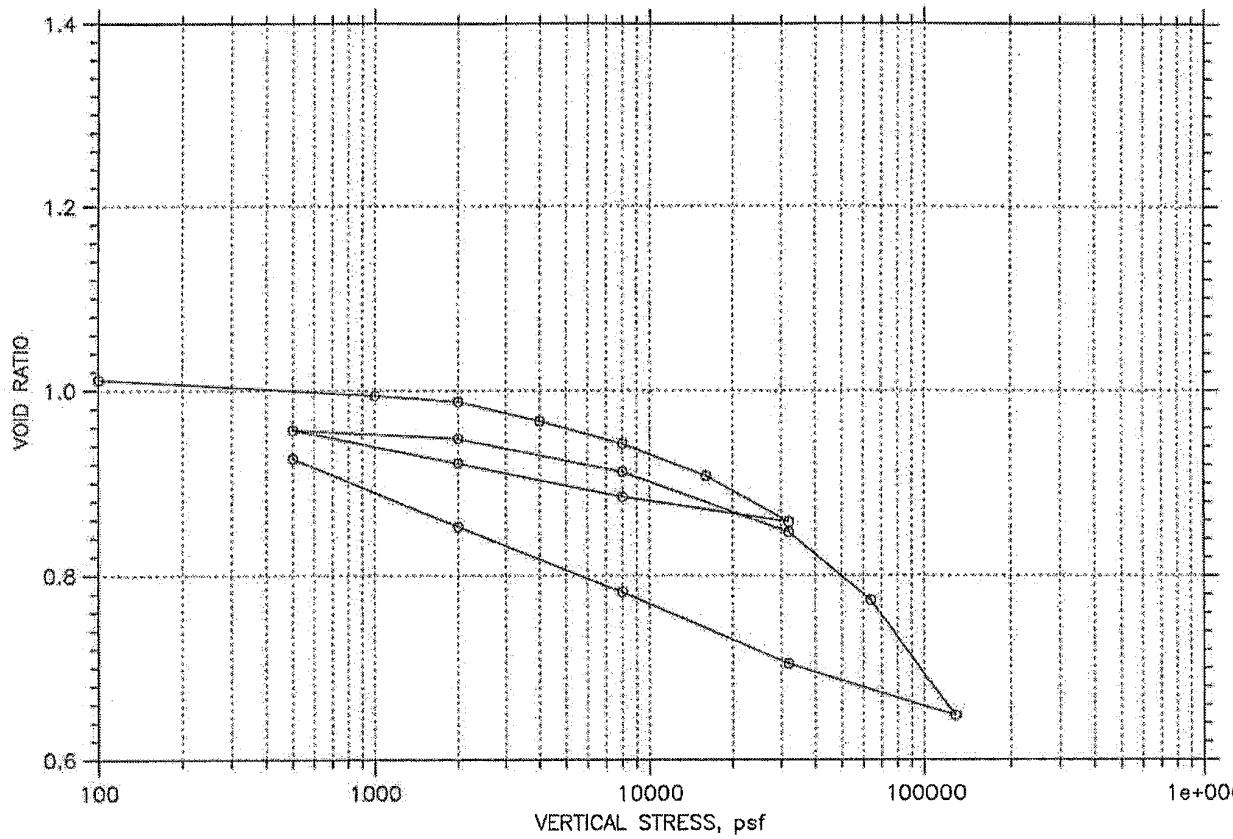



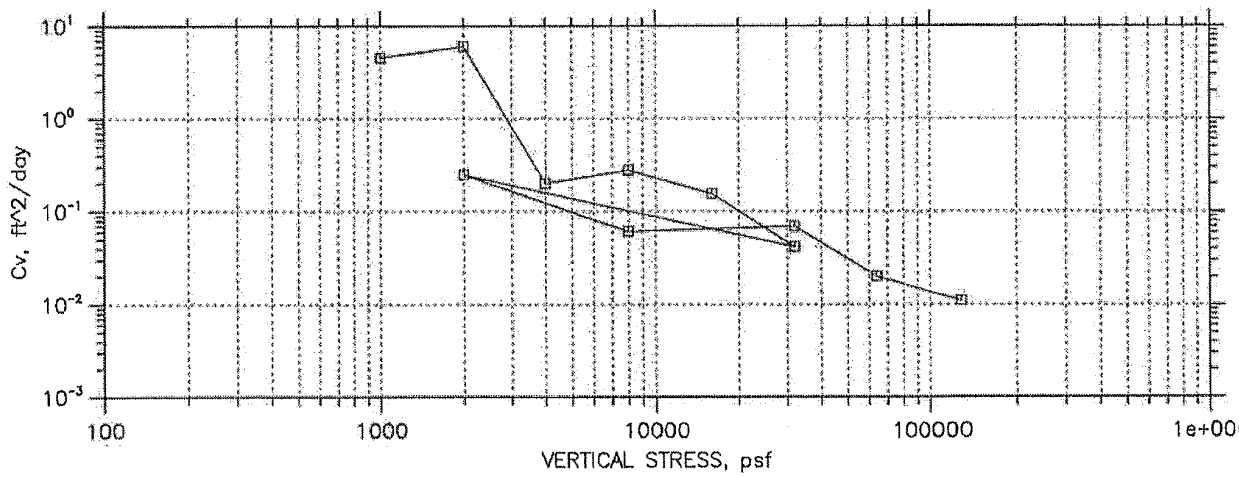

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-19 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JEJ 5/5/09 |
| | Sample No.: UD-19 | Test Date: 4/16/09 | Depth: 393.0-394.8 |
| | Test No.: 9567 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Pale Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

Tue, 05-MAY-2009 13:57:34

# CONSOLIDATION TEST DATA

SUMMARY REPORT



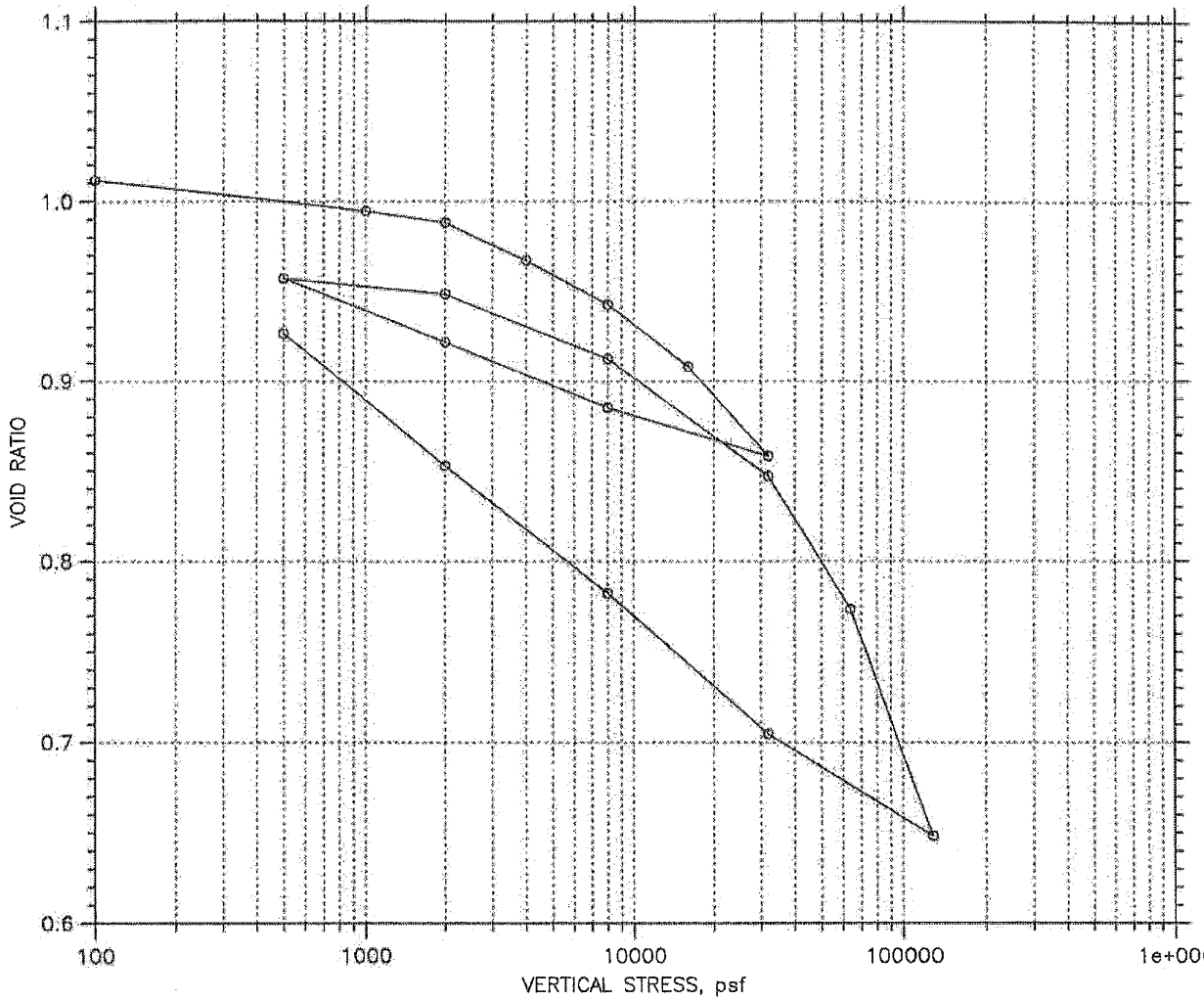




| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-19 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JGZ 5/5/09 |
| | Sample No.: UD-19 | Test Date: 4/16/09 | Depth: 393.0-394.8 |
| | Test No.: 9567 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Pale Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

Tue, 05-MAY-2009 13:57:45

# CONSOLIDATION TEST DATA

SUMMARY REPORT




| | | | | | Before Test | After Test |
|---|---|---|---|---|---|---|
| Overburden Pressure: 2.778e+004 psf | | | | Water Content, % | 36.12 | 34.06 |
| Preconsolidation Pressure: 2.634e+004 psf | | | | Dry Unit Weight, pcf | 85.44 | 89.12 |
| Compression Index: 0.456 | | | | Saturation, % | 98.40 | 101.11 |
| Diameter: 2.5 in | | Height: 1 in | | Void Ratio | 1.01 | 0.93 |
| LL: 68 | PL: 30 | PI: 38 | GS: 2.75 | | | |

| | | | |
|---|---|---|---|
| MACTEC | Project: Exelon Texas COL SI | Location: B-3234UD UD-19 | Project No.: 6468071777 |
| | Boring No.: B-3234UD | Tested By: JW | Checked By: JCF 5/5/09 |
| | Sample No.: UD-19 | Test Date: 4/16/09 | Depth: 393.0-394.8 |
| | Test No.: 9567 | Sample Type: Undisturbed | Elevation: N/A |
| | Description: Pale Yellow Fat CLAY (CH) | | |
| | Remarks: CONSOLIDATION TEST REPORT By ASTM D 2435-04 | | Cr= 0.056 |

Tue, 05-MAY-2009 13:57:45

# Soil Chemical Test Results

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

# ANALYTICAL REPORT

PROJECT NO. 6468071777

EXELON Victoria COL 200803591

Lot #: F9C030230

Kathryn White

MACTEC Engineering & Consultin
3301 Atlantic Ave
Raleigh, NC 27604

TESTAMERICA LABORATORIES, INC.

Ivan Vania
Project Manager

April 21, 2009

13715 Rider Trail North Earth City, MO 63045 tel 314.298.8566 fax 314.298.8757 www.testamericainc.com

**Case Narrative**
LOT NUMBER: F9C030230 – Revision 1

This report contains the analytical results for the 16 samples received under chain of custody by TestAmerica St. Louis on March 3, 2009. These samples are associated with your EXELON Victoria COL project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Method 300.0A is the latest promulgation for anion testing in SW-846 and was used to perform the anion analyses in this lot.

This revision contains retest results for resubmitted samples 009, 012, and 014 in addition to initial analysis results for sample 018.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

**Sulfate (MCAWW 300.0A)**
Batch 9063179:
The MS recovery for Sulfate is outside the established QC limits. Matrix interference is evident in the sample. Method performance is demonstrated by acceptable LCS recovery.
**Affected Samples:**
F9C030230 (1): B-3129 SS-9
F9C030230 (2): B-3129 SS-11
F9C030230 (3): B-3129 SS-15
F9C030230 (4): B-3129 SS-22
F9C030230 (5): B-3229 SS-7
F9C030230 (6): B-3229 SS-13
F9C030230 (7): B-3229 SS-17
F9C030230 (8): B-3123 SS-9
F9C030230 (13): B-3223 SS-9
F9C030230 (15): B-3223 SS-15
F9C030230 (16): B-3223 SS-22
F9C030230 (17): B-3223 SS-25

There were no other nonconformances or observations noted with any analysis on this lot.

# METHODS SUMMARY

F9C030230

| PARAMETER | ANALYTICAL METHOD | PREPARATION METHOD |
|---|---|---|
| Chloride | MCAWW 300.0A | MCAWW 300.0A |
| Percent Moisture | MCAWW 160.3 MOD | MCAWW 160.3 MOD |
| Soil and Waste pH | SW846 9045C | SW846 DI-LEACHA |
| Sulfate | MCAWW 300.0A | MCAWW 300.0A |

**References:**

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

F9C030230

| WO # | SAMPLE# | CLIENT SAMPLE ID | SAMPLED DATE | SAMP TIME |
|---|---|---|---|---|
| K702D | 001 | B-3129 SS-9 | 03/02/09 | |
| K702H | 002 | B-3129 SS-11 | 03/02/09 | |
| K702J | 003 | B-3129 SS-15 | 03/02/09 | |
| K702K | 004 | B-3129 SS-22 | 03/02/09 | |
| K702L | 005 | B-3229 SS-7 | 03/02/09 | |
| K702M | 006 | B-3229 SS-13 | 03/02/09 | |
| K702N | 007 | B-3229 SS-17 | 03/02/09 | |
| K702P | 008 | B-3123 SS-9 | 03/02/09 | |
| K702Q | 009 | B-3123 SS-11 | 04/09/09 | |
| K702V | 012 | B-3123 SS-25 | 04/09/09 | |
| K702W | 013 | B-3223 SS-9 | 03/02/09 | |
| K702X | 014 | B-3223 SS-11 | 04/09/09 | |
| K7020 | 015 | B-3223 SS-15 | 03/02/09 | |
| K7021 | 016 | B-3223 SS-22 | 03/02/09 | |
| K7022 | 017 | B-3223 SS-25 | 03/02/09 | |
| K935A | 018 | B-3229 SS-21 | 04/09/09 | |

**NOTE(S):**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3129 SS-9

General Chemistry

Lot-Sample #...: F9C030230-001 Work Order #...: K702D Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 18

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.2 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 114 | 12.2 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 5 | | Analysis Time..: 07:40 | | |
| Percent Moisture | 18.3 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 241 | 6.1 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 01:58 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3129 SS-11

General Chemistry

Lot-Sample #...: F9C030230-002 Work Order #...: K702H Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 04/09/09
% Moisture.....: 24

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.6 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 90.2 | 13.1 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 5 | | Analysis Time..: 08:47 | | |
| Percent Moisture | 23.5 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 202 | 6.5 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 02:45 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3129 SS-15

General Chemistry

Lot-Sample #...: F9C030230-003 Work Order #...: K702J Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 22

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.7 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 43.4 | 2.6 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 03:25 | | |
| Percent Moisture | 22.1 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 129 | 6.4 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 03:25 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3129 SS-22

General Chemistry

Lot-Sample #...: F9C030230-004 Work Order #...: K702K Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 16

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 9.0 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 38.2 | 2.4 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 03:39 | | |
| Percent Moisture | 16.3 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 31.8 | 6.0 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 03:39 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3229 SS-7

General Chemistry

Lot-Sample #...: F9C030230-005 Work Order #...: K702L Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 23

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.9 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 37.3 | 2.6 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 03:52 | | |
| Percent Moisture | 23.2 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 10 | 6.5 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 03:52 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3229 SS-13

General Chemistry

Lot-Sample #...: F9C030230-006 Work Order #...: K702M Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 22

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.9 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 9.2 | 2.6 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 04:05 | | |
| Percent Moisture | 22.2 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 17.9 | 6.4 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 04:05 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3229 SS-17

General Chemistry

Lot-Sample #...: F9C030230-007 Work Order #...: K702N Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 17

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 9.1 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 45.5 | 2.4 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 04:19 | | |
| Percent Moisture | 17.5 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 16.1 | 6.1 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 04:19 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3123 SS-9

General Chemistry

Lot-Sample #...: F9C030230-008 Work Order #...: K702P Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 19

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.3 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 381 | 24.6 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 10 | | Analysis Time..: 09:00 | | |
| Percent Moisture | 18.8 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 308 | 61.6 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 10 | | Analysis Time..: 09:00 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3123 SS-11

General Chemistry

Lot-Sample #...: F9C030230-009 Work Order #...: K702Q Matrix.....: SOLID
Date Sampled...: 04/09/09 Date Received..: 04/14/09
% Moisture.....: 21

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.5 | 0.10 | No Units | SW846 9045C | 04/20/09 | 9110230 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 220 | 50.4 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107446 |
| | | Dilution Factor: 20 | | Analysis Time..: 06:30 | | |
| Percent Moisture | 20.7 | 0.10 | % | MCAWW 160.3 MOD | 04/20/09 | 9110229 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 242 | 6.3 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107447 |
| | | Dilution Factor: 1 | | Analysis Time..: 06:16 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3123 SS-25

General Chemistry

Lot-Sample #...: F9C030230-012 Work Order #...: K702V Matrix.....: SOLID
Date Sampled...: 04/09/09 Date Received..: 04/14/09
% Moisture.....: 21

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.4 | 0.10 | No Units | SW846 9045C | 04/20/09 | 9110230 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 81.5 | 50.9 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107446 |
| | | Dilution Factor: 20 | | Analysis Time..: 07:54 | | |
| Percent Moisture | 21.4 | 0.10 | % | MCAWW 160.3 MOD | 04/20/09 | 9110229 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 30.1 | 6.4 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107447 |
| | | Dilution Factor: 1 | | Analysis Time..: 07:40 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3223 SS-9

General Chemistry

Lot-Sample #...: F9C030230-013 Work Order #...: K702W Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 13

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.2 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 4.6 | 2.3 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 05:12 | | |
| Percent Moisture | 12.9 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 2.2 B | 5.7 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 05:12 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3223 SS-11

General Chemistry

Lot-Sample #...: F9C030230-014 Work Order #...: K702X Matrix.....: SOLID
Date Sampled...: 04/09/09 Date Received..: 04/14/09
% Moisture.....: 12

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.8 | 0.10 | No Units | SW846 9045C | 04/20/09 | 9110230 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 12.7 | 2.3 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107446 |
| | | Dilution Factor: 1 | | Analysis Time..: 08:36 | | |
| Percent Moisture | 12.4 | 0.10 | % | MCAWW 160.3 MOD | 04/20/09 | 9110229 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 4.5 B | 5.7 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107447 |
| | | Dilution Factor: 1 | | Analysis Time..: 08:36 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3223 SS-15

General Chemistry

Lot-Sample #...: F9C030230-015 Work Order #...: K7020 Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 13

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.9 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 8.2 | 2.3 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 06:19 | | |
| Percent Moisture | 12.7 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 6.5 | 5.7 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 06:19 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3223 SS-22

General Chemistry

Lot-Sample #...: F9C030230-016 Work Order #...: K7021 Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 13

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.8 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 26.6 | 2.3 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 06:33 | | |
| Percent Moisture | 12.8 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 14.3 | 5.7 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 06:33 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3223 SS-25

General Chemistry

Lot-Sample #...: F9C030230-017 Work Order #...: K7022 Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09
% Moisture.....: 27

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.6 | 0.10 | No Units | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 36.5 | 2.8 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | Analysis Time..: 06:46 | | |
| Percent Moisture | 27.4 | 0.10 | % | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 25.6 | 6.9 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | Analysis Time..: 06:46 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3229 SS-21

General Chemistry

Lot-Sample #...: F9C030230-018 Work Order #...: K935A Matrix.....: SOLID
Date Sampled...: 04/09/09 Date Received..: 04/10/09
% Moisture.....: 17

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.9 | 0.10 | No Units | SW846 9045C | 04/17/09 | 9107118 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 21.0 | 2.4 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107446 |
| | | Dilution Factor: 1 | | Analysis Time..: 09:03 | | |
| Percent Moisture | 16.5 | 0.10 | % | MCAWW 160.3 MOD | 04/16-04/17/09 | 9106167 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 52.6 | 6.0 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107447 |
| | | Dilution Factor: 1 | | Analysis Time..: 09:03 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

# METHOD BLANK REPORT

## General Chemistry

**Client Lot #...:** F9C030230 **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| Chloride | | Work Order #: K73K21AA | | MB Lot-Sample #: | F9C040000-178 | |
| | ND | 2.0 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 12:17 | | | | |
| Chloride | | Work Order #: LADNQ1AA | | MB Lot-Sample #: | F9D170000-446 | |
| | ND | 2.0 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107446 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 05:49 | | | | |
| Sulfate | | Work Order #: K73K61AA | | MB Lot-Sample #: | F9C040000-179 | |
| | ND | 5.0 | mg/kg | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 12:17 | | | | |
| Sulfate | | Work Order #: LADNV1AA | | MB Lot-Sample #: | F9D170000-447 | |
| | ND | 5.0 | mg/kg | MCAWW 300.0A | 04/17/09 | 9107447 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 05:49 | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** F9C030230 **Matrix.....:** SOLID

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|
| pH (solid) | | Work Order #: K72DG1AA | LCS Lot-Sample#: F9C040000-135 | | |
| | 100 | (99 - 101) | SW846 9045C | 03/04/09 | 9063135 |
| | | Dilution Factor: 1 | Analysis Time..: 00:00 | | |
| pH (solid) | | Work Order #: K98XJ1AA | LCS Lot-Sample#: F9D170000-118 | | |
| | 100 | (99 - 101) | SW846 9045C | 04/17/09 | 9107118 |
| | | Dilution Factor: 1 | Analysis Time..: 00:00 | | |
| pH (solid) | | Work Order #: LADT81AC | LCS Lot-Sample#: F9D200000-230 | | |
| | 100 | (99 - 101) | SW846 9045C | 04/20/09 | 9110230 |
| | | Dilution Factor: 1 | Analysis Time..: 00:00 | | |
| Chloride | | Work Order #: K73K21AC | LCS Lot-Sample#: F9C040000-178 | | |
| | 98 | (90 - 110) | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 1 | Analysis Time..: 12:03 | | |
| Chloride | | Work Order #: LADNQ1AC | LCS Lot-Sample#: F9D170000-446 | | |
| | 90 | (90 - 110) | MCAWW 300.0A | 04/17/09 | 9107446 |
| | | Dilution Factor: 1 | Analysis Time..: 06:02 | | |
| Sulfate | | Work Order #: K73K61AC | LCS Lot-Sample#: F9C040000-179 | | |
| | 96 | (90 - 110) | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | Analysis Time..: 12:03 | | |
| Sulfate | | Work Order #: LADNV1AC | LCS Lot-Sample#: F9D170000-447 | | |
| | 93 | (90 - 110) | MCAWW 300.0A | 04/17/09 | 9107447 |
| | | Dilution Factor: 1 | Analysis Time..: 06:02 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# MATRIX SPIKE SAMPLE EVALUATION REPORT

## General Chemistry

Client Lot #...: F9C030230 Matrix.....: SOLID
Date Sampled...: 03/02/09 Date Received..: 03/03/09

Percnt Moisture: 11

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|
| Chloride | 102 | Work Order #...: K702D1AF (90 - 110) | MCAWW 300.0A | MS Lot-Sample #: 03/04/09 | F9C030230-001 9063178 |
| | | Dilution Factor: 5 | Analysis Time..: 07:40 | | |
| Chloride | 91 | Work Order #...: K702Q1AF (90 - 110) | MCAWW 300.0A | MS Lot-Sample #: 04/17/09 | F9C030230-009 9107446 |
| | | Dilution Factor: 20 | Analysis Time..: 06:30 | | |
| Chloride | 102 | Work Order #...: K702W1AF (90 - 110) | MCAWW 300.0A | MS Lot-Sample #: 03/04/09 | F9C030230-013 9063178 |
| | | Dilution Factor: 1 | Analysis Time..: 05:12 | | |
| Sulfate | 140 N | Work Order #...: K702D1AH (90 - 110) | MCAWW 300.0A | MS Lot-Sample #: 03/04/09 | F9C030230-001 9063179 |
| | | Dilution Factor: 1 | Analysis Time..: 01:58 | | |
| Sulfate | 103 | Work Order #...: K702Q1AH (90 - 110) | MCAWW 300.0A | MS Lot-Sample #: 04/17/09 | F9C030230-009 9107447 |
| | | Dilution Factor: 1 | Analysis Time..: 06:16 | | |
| Sulfate | 96 | Work Order #...: K702W1AG (90 - 110) | MCAWW 300.0A | MS Lot-Sample #: 03/04/09 | F9C030230-013 9063179 |
| | | Dilution Factor: 1 | Analysis Time..: 05:12 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** F9C030230 **Work Order #...:** K71RG-SMP K71RG-DUP **Matrix.....:** SOLID

**Date Sampled...:** 03/03/09 **Date Received..:** 03/04/09

**% Moisture.....:** 0.11

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Percent Moisture | | | | | | SD Lot-Sample #: | F9C040125-003 | |
| | 0.11 | 0.10 | % | 9.5 | (0-30) | MCAWW 160.3 MOD | 03/04-03/05/09 | 9063065 |

Dilution Factor: 1 Analysis Time..: 00:00

# SAMPLE DUPLICATE EVALUATION REPORT

## General Chemistry

Client Lot #...: F9C030230 Work Order #...: K7021-SMP Matrix.....: SOLID
K7021-DUP

Date Sampled...: 03/02/09 Date Received..: 03/03/09

% Moisture.....: 13

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| pH (solid) | | | | | | SD Lot-Sample #: | F9C030230-016 | |
| | 8.8 | 8.9 | No Units | 1.0 | (0-0.0) | SW846 9045C | 03/04/09 | 9063135 |

Dilution Factor: 1 Analysis Time..: 00:00

# SAMPLE DUPLICATE EVALUATION REPORT

## General Chemistry

**Client Lot #...:** F9C030230 **Work Order #...:** K702D-SMP K702D-DUP **Matrix.....:** SOLID

**Date Sampled...:** 03/02/09 **Date Received..:** 03/03/09

**% Moisture.....:** 18

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | | | | SD Lot-Sample #: | F9C030230-001 | |
| | 114 | 115 | mg/kg | 0.092 | (0-20) | MCAWW 300.0A | 03/04/09 | 9063178 |
| | | Dilution Factor: 5 | | | | Analysis Time..: 07:40 | | |
| Sulfate | | | | | | SD Lot-Sample #: | F9C030230-001 | |
| | 241 | 248 | mg/kg | 2.8 | (0-20) | MCAWW 300.0A | 03/04/09 | 9063179 |
| | | Dilution Factor: 1 | | | | Analysis Time..: 01:58 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** F9C030230 **Work Order #...:** K9VAC-SMP K9VAC-DUP **Matrix.....:** SOLID

**Date Sampled...:** 04/08/09 11:30 **Date Received..:** 04/09/09

**% Moisture.....:** 11

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Percent Moisture | | | | | | SD Lot-Sample #: | F9D090168-004 | |
| | 10.9 | 9.7 | % | 12 | (0-30) | MCAWW 160.3 MOD | 04/16-04/17/09 | 9106167 |

Dilution Factor: 1 Analysis Time..: 00:00

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

Client Lot #...: F9C030230 Work Order #...: K702Q-SMP Matrix.....: SOLID
K702Q-DUP

Date Sampled...: 04/09/09 Date Received..: 04/14/09

% Moisture.....: 21

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | | | | SD Lot-Sample #: | F9C030230-009 | |
| | 220 | 184 | mg/kg | 18 | (0-20) | MCAWW 300.0A | 04/17/09 | 9107446 |
| | | Dilution Factor: 20 | | | | Analysis Time..: 06:30 | | |
| Sulfate | | | | | | SD Lot-Sample #: | F9C030230-009 | |
| | 242 | 239 | mg/kg | 1.1 | (0-20) | MCAWW 300.0A | 04/17/09 | 9107447 |
| | | Dilution Factor: 1 | | | | Analysis Time..: 06:16 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** F9C030230 **Work Order #...:** K702X-SMP K702X-DUP **Matrix.....:** SOLID

**Date Sampled...:** 04/09/09 **Date Received..:** 04/14/09

**% Moisture.....:** 12

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Percent Moisture | | | | | | SD Lot-Sample #: | F9C030230-014 | |
| | 12.4 | 12.3 | % | 1.2 | (0-30) | MCAWW 160.3 MOD | 04/20/09 | 9110229 |
| | | | Dilution Factor: 1 | | | Analysis Time..: 00:00 | | |
| pH (solid) | | | | | | SD Lot-Sample #: | F9C030230-014 | |
| | 8.8 | 8.9 | No Units | 1.4 | (0-0.0) | SW846 9045C | 04/20/09 | 9110230 |
| | | | Dilution Factor: 1 | | | Analysis Time..: 00:00 | | |

# F9C030230 CLIENT ANALYSIS SUMMARY

Storage Loc: 2-50
Date Received: 2009-03-03
Analytical Due Date: 2009-04-17
Report Due Date: 2009-04-17
Report Type: W
EDD Code: 00

Project Manager: IV
Quote #: 78576
SDG:
Project: 6468071777
EXELON Victoria COL 200803591
PO#: 2008086614
Report to: Kathryn White
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS In LOT: 16

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 1 | B-3129 SS-9 | | | 2009-03-02 / 0 | K702D | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |
| S | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| S | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| X | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| X | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 2 | B-3129 SS-11 | | | 2009-03-02 / 0 | K702H | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 3 | B-3129 SS-15 | | | 2009-03-02 / 0 | K702J | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 4 | B-3129 SS-22 | | | 2009-03-02 / 0 | K702K | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 5 | B-3229 SS-7 | | | 2009-03-02 / 0 | K702L | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

# F9C030230 CLIENT ANALYSIS SUMMARY

Storage Loc: 2-50
Date Received: 2009-03-03
Analytical Due Date: 2009-04-17
Report Due Date: 2009-04-17
Report Type: W
EDD Code: 00

Project Manager: IV
Quote #: 78576
SDG:
Project: 6468071777
EXELON Victoria COL 200803591
PO#: 2008086614
Report to: Kathryn White
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS In LOT: 16

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 6 | B-3229 SS-13 | | | 2009-03-02 / 0 | K702M | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 7 | B-3229 SS-17 | | | 2009-03-02 / 0 | K702N | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 8 | B-3123 SS-9 | | | 2009-03-02 / 0 | K702P | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 9 | B-3123 SS-11 | | | 2009-04-09 / 0 | K702Q | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 12 | B-3123 SS-25 | | | 2009-04-09 / 0 | K702V | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

# F9C030230 CLIENT ANALYSIS SUMMARY

Storage Loc: 2-50
Date Received: 2009-03-03
Analytical Due Date: 2009-04-17
Report Due Date: 2009-04-17
Report Type: W
EDD Code: 00

Project Manager: IV
Quote #: 78576 SDG:
Project: 6468071777 EXELON Victoria COL 200803591
PO#: 2008086614 Report to: Kathryn White
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS in LOT: 16

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 13 | B-3223 SS-9 | | | 2009-03-02 / 0 | K702W | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |
| S | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| S | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 14 | B-3223 SS-11 | | | 2009-04-09 / 0 | K702X | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 15 | B-3223 SS-15 | | | 2009-03-02 / 0 | K7020 | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 16 | B-3223 SS-22 | | | 2009-03-02 / 0 | K7021 | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |
| X | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 17 | B-3223 SS-25 | | | 2009-03-02 / 0 | K7022 | SOLID |

SAMPLE COMMENTS:

# F9C030230

## CLIENT ANALYSIS SUMMARY

Storage Loc: 2-50
Date Received: 2009-03-03
Analytical Due Date: 2009-04-17
Report Due Date: 2009-04-17
Report Type: W
EDD Code: 00

Project Manager: IV
Quote #: 78576
SDG:
Project: 6468071777
EXELON Victoria COL 200803591
PO#: 2008086614
Report to: Kathryn White
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS In LOT: 16

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 18 | B-3229 SS-21 | | | 2009-04-09 / 0 | K935A | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

CUR 1163

# CHAIN OF CUSTODY RECORD
## EXELON COL VICTORIA SITE APPLICATION
## MACTEC JOB NO. 6468-07-1777

COC No. V-32

| SAMPLE DESIGNATION | SAMPLE TYPE | TAKEN BY | DATE TAKEN | INTENDED USE | | REMARKS |
|---|---|---|---|---|---|---|
| B-3123 SS-9 | Jar | Chana Savanapridi | 3/2/09 | CHEMICAL ANALYSIS | 27.5-29.0 | ~~78.4 gr~~ 89.7 gr |
| B-3123 SS-11 | Jar | | | | 38.4-39.9 | 93.5 gr |
| B-3123 SS-15 | Jar | | | | 57.5-59.0 | N/A |
| B-3123 SS-22B | Jar | | | | 92.5-94 | N/A |
| B-3123 SS-25 | Jar | | | | 118.7-120.2 | 78.9 gr |
| B-3223 SS-9 | Jar | | | | 28.4-29.9 | 88.5 gr |
| B-3223 SS-11 | Jar | | | 3/2/09 | 37.5-39 | 91.7 gr |
| B-3223 SS-15 | Jar | | | | ~~58.4-59.9~~ | 85.6 gr |
| B-3223 SS-22 | Jar | | | 93.5-95 | ~~118.7-120.2~~ | 101.7 gr |
| B-3223 SS-25 | Jar | | | | 118.7-120.2 | |
| | | | | | 8X | 125g |

| 1. Relinquished by: | 1. Date/Time | 1. Received by: | 1. Date/Time |
|---|---|---|---|
| Chana Savanapridi (name) Chana Savanapridi (signature) | 3/2/09 2:45PM | Leia Duty (name) Leia Duty (signature) | 3-3-09 0910 |
| 2. Relinquished by: (name) (signature) | 2. Date/Time | 2. Received by: (name) (signature) | 2. Date/Time |

Remarks: If relinquishing to a common carrier or Fed Ex – Record tracking number TRK # 7963-9074-4960

Lab Assignment 18 Victoria (2nd Supplemental Assignment) Total 8 samples.

~~B-3123 SS-22B 92.5-94~~

B-3123 SS-15 (57.5-59.) insufficient sample for chemical analysis as.

Receiving Laboratory: Please return original form after signing for receipt of samples; keep copy for your records. Retain all portions of unused samples in labeled containers.

Chain of Custody Form Rev 0 -12/22/08

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DCN No. EXE-1276

cut 163

# CHAIN OF CUSTODY RECORD
## EXELON COL VICTORIA SITE APPLICATION
## MACTEC JOB NO. 6468-07-1777

COC No. V-32

| SAMPLE DESIGNATION | SAMPLE TYPE | TAKEN BY | DATE TAKEN | INTENDED USE | | REMARKS |
|---|---|---|---|---|---|---|
| B-3123 SS-9 | 1 Jar | Chana Savanapridi | 3/2/09 | CHEMICAL ANALYSIS | 27.5-29.0 | ~~78.4 gr~~ 89.7 gr |
| B-3123 SS-11 | 2 Jar | | | | 38.4-39.9 | 93.5 gr |
| ~~B-3123 SS-15~~ 15F | Jar | | | | 57.5-59.0 | N/A |
| ~~B-3123 SS-22B~~ 15F | Jar | | | | 92.5-94 | N/A |
| B-3123 SS-25 | 3 Jar | | | | 118.7-120.2 | 78.9 gr |
| B-3223 SS-9 | 4 Jar | | | | 28.4-29.9 | 88.5 gr |
| B-3223 SS-11 | 5 Jar | | | | 37.5-39 | 91.7 gr |
| B-3223 SS-15 | 6 Jar | | | | ~~55.4-59.9~~ | 85.6 gr |
| B-3223 SS-22 | 7 Jar | | | | 93.5-95 ~~118.7-120.2~~ | 101.7 gr |
| B-3223 SS-25 | 8 Jar | | | | 118.7-120.2 | 86.6 |

| 1. Relinquished by: | 1. Date/Time | 1. Received by: | 1. Date/Time |
|---|---|---|---|
| Chana Savanapridi (name) Chana Savanapridi (signature) | 3/2/09 2:45PM | [signature] (name) (signature) | 3-3-09 0910 |
| 2. Relinquished by: (name) (signature) | 2. Date/Time | 2. Received by: (name) (signature) | 2. Date/Time |

**Remarks:** If relinquishing to a common carrier or Fed Ex – Record tracking number TRK # 7963-9074-4960

Lab Assignment 18 Victoria (2nd Supplemental Assignment) Total 8 samples.

~~B-3123 SS-22B 92.5-94~~

B-3123 SS-15 (57.5-59.) insufficient sample for chemical analysis as.

**Receiving Laboratory: Please return original form after signing for receipt of samples; keep copy for your records. Retain all portions of unused samples in labeled containers.**

*Chain of Custody Form Rev 0 -12/22/08*

Page 2 of 2

DCN No. EXE-1276

# CHAIN OF CUSTODY RECORD
## EXELON COL VICTORIA SITE APPLICATION
## MACTEC JOB NO. 6468-07-1777

ORIGINAL

COC No. V-37

| SAMPLE DESIGNATION | SAMPLE TYPE | TAKEN BY | DATE TAKEN | INTENDED USE | | REMARKS |
|---|---|---|---|---|---|---|
| B-3123 | SS-11 | Mitch Conner | 4/9/09 | Chemical Testing | 37.5-39 | 93.2g |
| B-3123 | SS-25 | ↓ | ↓ | ↓ | 112.5-114 | 90.9g |
| B-3229 | SS-21 | | | | 88.5-90 | 93.6g |
| B-3223 | SS-11 | | | | 38.4-39.9 | 90.1g |
| | | | | Samples Verified & Witnessed by: | | |
| | | | | Shane Johnson: [signature] 4/9/09 | | |

| 1. Relinquished by: | 1. Date/Time | 1. Received by: | 1. Date/Time |
|---|---|---|---|
| Mitch Conner [signature] (name) (signature) | 4/9/09 1:15pm | Brian Daniels [signature] (name) (signature) | 4/10/09 0920 |
| 2. Relinquished by: (name) (signature) | 2. Date/Time | 2. Received by: (name) (signature) | 2. Date/Time |

**Remarks:** If relinquishing to a common carrier or Fed Ex – Record tracking number

FED EX TRACKING # 7974 9313 5188

**Receiving Laboratory: Please return original form after signing for receipt of samples; keep copy for your records. Retain all portions of unused samples in labeled containers.**

*Chain of Custody Form Rev 0 -12/22/08*

Page 1 of 1

DCN No. EXE-1400





TestAmerica St. Louis

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F9C030230 1 of 2

# CONDITION UPON RECEIPT FORM

Client: MACTEC

Quote No: 78571

COC/RFA No: V-32 163

Initiated By: GD Date: 3-3-09 Time: 0910

## Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: _____ Multiple Packages: Y N

Shipping # (s):*

1. 7963 9074 4960
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

Sample Temperature (s):**

1. ambient
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

**Condition** (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

| | | | | | |
|---|---|---|---|---|---|
| 1. | Y N | Are there custody seals present on the cooler? | 8. | Y N | Are there custody seals present on bottles? |
| 2. | Y N N/A | Do custody seals on cooler appear to be tampered with? | 9. | Y N N/A | Do custody seals on bottles appear to be tampered with? |
| 3. | Y N | Were contents of cooler frisked after opening, but before unpacking? | 10. | Y N N/A | Was sample received with proper pH[1]? (If not, make note below) |
| 4. | Y N | Sample received with Chain of Custody? | 11. | Y N | Sample received in proper containers? |
| 5. | Y N N/A | Does the Chain of Custody match sample ID's on the container(s)? | 12. | Y N N/A | Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below) |
| 6. | Y N | Was sample received broken? | 13. | Y N N/A | Was Internal COC/Workshare received? |
| 7. | Y N | Is sample volume sufficient for analysis? | 14. | Y N N/A | Was pH taken by original TestAmerica lab? |

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:

Sample B-3123 SS-11 and B-3123 SS-25 missing

Duplicates of B-3223 SS-11 and B-3223 SS-25

Samples matched by sample ID depth measurements and mass. And logged per COC

Corrective Action:

- ☐ Client Contact Name: _____ Informed by: _____
- ☐ Sample(s) processed "as is"
- ☐ Sample(s) on hold until: _____ If released, notify: _____
- Project Management Review: _____ Date: 3-5-9

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F9C030230 2 of 2

## CONDITION UPON RECEIPT FORM

Client: Mactec

Quote No:

COC/RFA No: V-37

190

Initiated By: bA Date: 4/10/09 Time: 0920

**Shipping Information**

Shipper: (FedEx) UPS DHL Courier Client Other: _____ Multiple Packages: Y (N)

Shipping # (s):*

1. 7974 9313 5186
2.
3.
4.
5.
6.
7.
8.
9.
10.

Sample Temperature (s):**

1. ambient
2.
3.
4.
5.
6.
7.
8.
9.
10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

**Condition** (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

| | | | | | |
|---|---|---|---|---|---|
| 1. | Y (N) | Are there custody seals present on the cooler? | 8. | Y (N) | Are there custody seals present on bottles? |
| 2. | Y N (N/A) | Do custody seals on cooler appear to be tampered with? | 9. | Y N (N/A) | Do custody seals on bottles appear to be tampered with? |
| 3. | (Y) N | Were contents of cooler frisked after opening, but before unpacking? | 10. | Y N (N/A) | Was sample received with proper pH[1]? (If not, make note below) |
| 4. | (Y) N | Sample received with Chain of Custody? | 11. | (Y) N | Sample received in proper containers? |
| 5. | (Y) N N/A | Does the Chain of Custody match sample ID's on the container(s)? | 12. | Y N (N/A) | Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below) |
| 6. | Y (N) | Was sample received broken? | 13. | Y N (N/A) | Was Internal COC/Workshare received? |
| 7. | (Y) N | Is sample volume sufficient for analysis? | 14. | Y N (N/A) | Was pH taken by original TestAmerica lab? |

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:
Replacement + additional samples received 4-10-09

Corrective Action:
☐ Client Contact Name: _____ Informed by: _____
☐ Sample(s) processed "as is"
☐ Sample(s) on hold until: _____ If released, notify: _____
Project Management Review: _____ Date: _____

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.
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## Vania, Ivan

**From:** White, Kathryn [KAWHITE@mactec.com]
**Sent:** Thursday, April 09, 2009 10:37 AM
**To:** Vania, Ivan
**Cc:** Auger, Scott; Johnson, J. Shane; Williams, Siesta
**Subject:** Exelon Phase III Additional Tests

Ivan, we will be sending you 4 additional samples for chemical testing in accordance to Work Instruction 315, latest revision.

The following 3 tests are retests of the samples that you have already performed.

1. B-3123 SS-11 009
2. B-3123 SS-25 012
3. B-3223 SS-11 014

In addition, please test the following additional sample (which replaces B-3229 SS-22B which had insufficient sample to perform tests).

1. B-3229 SS-21 018

Please replace the old results with the new results, include new test result, revise report according to 4/8/09 email from me (I have copied below for convenience), and resubmit revised test report.

For your information, the following tests which had sufficient sample to tests have been cancelled and will not be replaced with other samples for testing.

1. B-3123 SS-15 ✓
2. B-3123 SS-22B ✓

I understand that the samples will be shipped to you for testing today.

Thanks, Kathryn

**Kathryn A. White, P.E.** | Principal - Chief Engineer
MACTEC Engineering and Consulting, Inc.
**Mobile** 281-904-4239
**Email** kawhite@mactec.com | **Web** www.mactec.com

4/8/09 Email:

Ivan, I have reviewed the test report, Lot F9C030230. I have the following comments that need to be corrected in your test report, or addressed.

1. The test report should be issued to me (see below) rather than Mitch Connor. You can keep the Raleigh address

2. TA-5, 6, 7 have the incorrect boring number as B-3329. Please correct in the summary as well as the individual test report to B-3229.
3. The Work Instruction indicates the sulfate and chloride tests were performed under Method 300.0. Your test report indicated 300.0A. Are these different methods or revisions? My initial thought is that a clarification statement should be placed in the Case Narrative of your report.
4. On you Matrix Spike Report, there is a N by the percent recovery value for sulfate indicating value above control limits. Is this a problem with the test results? Does it and/or how does it impact test results?

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

# ANALYTICAL REPORT

REVISED

PROJECT NO. 6468071777

Exelon Texas COL Project
Supplemental Investigation
Including UHS

Lot #: F9D020354

Kathryn White

MACTEC Engineering & Consultin
3301 Atlantic Ave
Raleigh, NC 27604

TESTAMERICA LABORATORIES, INC.

Ivan Vania
Project Manager

May 1, 2009

**Case Narrative**
LOT NUMBER: F9D020354 – Revision 1

This report contains the analytical results for the sample received under chain of custody by TestAmerica St. Louis on April 2, 2009. This sample is associated with your EXELON Victoria COL 200803591 project.

The analytical results included in this report meet all applicable quality control procedure requirements.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Due to limitations in the LIMS reporting system some methods may print on reports as earlier versions, but the latest version is used for analysis. In particular, pH in this lot was analyzed using method 9045D, but method 9045C appears on the report. It is not customary for TA STL to report the temperature parameter for pH analyses.

Method 300.0A is the latest promulgation for anion testing in SW-846 and was used to perform the anion analyses in this lot.

This revision contains additional analysis notes as requested by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

There were no nonconformances or observations noted with any analysis on this lot.

# METHODS SUMMARY

F9D020354

| PARAMETER | ANALYTICAL METHOD | PREPARATION METHOD |
|---|---|---|
| Chloride | MCAWW 300.0A | MCAWW 300.0A |
| Percent Moisture | MCAWW 160.3 MOD | MCAWW 160.3 MOD |
| Soil and Waste pH | SW846 9045C | SW846 DI-LEACHA |
| Sulfate | MCAWW 300.0A | MCAWW 300.0A |

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

**F9D020354**

| WO # | SAMPLE# | CLIENT SAMPLE ID | SAMPLED DATE | SAMP TIME |
|---|---|---|---|---|
| K9H5X | 001 | B-3170A SS-2 | 04/01/09 | |
| K9H54 | 002 | B-3170A SS-6 | 04/01/09 | |
| K9H57 | 003 | B-3170A SS-8 | 04/01/09 | |
| K9H59 | 004 | B-3170A SS-10 | 04/01/09 | |
| K9H6C | 005 | B-3170A SS-12 | 04/01/09 | |
| K9H6G | 006 | B-3270A SS-2 | 04/01/09 | |
| K9H6M | 007 | B-3270A SS-4 | 04/01/09 | |
| K9H6N | 008 | B-3270A SS-7 | 04/01/09 | |
| K9H6Q | 009 | B-3270A SS-9 | 04/01/09 | |
| K9H6T | 010 | B-3270A SS-11 | 04/01/09 | |
| K9H6V | 011 | B-3270A SS-13 | 04/01/09 | |

**NOTE(S):**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3170A SS-2

General Chemistry

Lot-Sample #...: F9D020354-001 Work Order #...: K9H5X Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 15

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.5 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 7.4 | 2.4 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 08:06 | | |
| Percent Moisture | 15.2 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 7.2 | 5.9 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 08:06 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3170A SS-6

General Chemistry

Lot-Sample #...: F9D020354-002 Work Order #...: K9H54 Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 16

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.5 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 4.6 | 2.4 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 09:30 | | |
| Percent Moisture | 16.3 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 6.3 | 6.0 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 09:30 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3170A SS-8

General Chemistry

Lot-Sample #...: F9D020354-003 Work Order #...: K9H57 Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 20

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.3 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 17.9 | 2.5 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 10:26 | | |
| Percent Moisture | 19.5 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 54.3 | 6.2 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 10:26 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3170A SS-10

General Chemistry

Lot-Sample #...: F9D020354-004 Work Order #...: K9H59 Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 17

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.3 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 11.7 | 2.4 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 10:53 | | |
| Percent Moisture | 17.1 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 30.3 | 6.0 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 10:53 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3170A SS-12

General Chemistry

Lot-Sample #...: F9D020354-005 Work Order #...: K9H6C Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 18

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.2 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 21.5 | 2.5 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 11:21 | | |
| Percent Moisture | 18.4 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 55.8 | 6.1 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 11:21 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3270A SS-2

General Chemistry

Lot-Sample #...: F9D020354-006 Work Order #...: K9H6G Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 13

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.2 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 21.6 | 2.3 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 11:49 | | |
| Percent Moisture | 12.6 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 38.3 | 5.7 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 11:49 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3270A SS-4

General Chemistry

Lot-Sample #...: F9D020354-007 Work Order #...: K9H6M Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 17

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.0 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 112 | 2.4 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 12:17 | | |
| Percent Moisture | 16.9 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 8.8 | 6.0 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 12:17 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3270A SS-7

General Chemistry

Lot-Sample #...: F9D020354-008 Work Order #...: K9H6N Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 14

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.0 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 9.5 | 2.3 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 01:13 | | |
| Percent Moisture | 13.5 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 5.2 B | 5.8 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 01:13 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3270A SS-9

General Chemistry

Lot-Sample #...: F9D020354-009 Work Order #...: K9H6Q Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 19

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 7.8 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 18.0 | 2.5 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 01:41 | | |
| Percent Moisture | 19.5 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 2.2 B | 6.2 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 01:41 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3270A SS-11

General Chemistry

Lot-Sample #...: F9D020354-010 Work Order #...: K9H6T Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 22

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.1 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 16.4 | 2.6 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 02:08 | | |
| Percent Moisture | 22.2 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 8.4 | 6.4 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 02:08 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: B-3270A SS-13

General Chemistry

Lot-Sample #...: F9D020354-011 Work Order #...: K9H6V Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09
% Moisture.....: 13

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| pH (solid) | 8.2 | 0.10 | No Units | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Chloride | 19.2 | 2.3 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097214 |
| | | Dilution Factor: 1 | | Analysis Time..: 02:36 | | |
| Percent Moisture | 13.4 | 0.10 | % | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | Analysis Time..: 00:00 | | |
| Sulfate | 4.7 B | 5.8 | mg/kg | MCAWW 300.0A | 04/08-04/09/09 | 9097215 |
| | | Dilution Factor: 1 | | Analysis Time..: 02:36 | | |

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

# METHOD BLANK REPORT

## General Chemistry

**Client Lot #...:** F9D020354 **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| Chloride | | Work Order #: K9W931AA | | MB Lot-Sample #: | F9D070000-214 | |
| | ND | 2.0 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 07:39 | | | | |
| Sulfate | | Work Order #: K9W951AA | | MB Lot-Sample #: | F9D070000-215 | |
| | ND | 5.0 | mg/kg | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 07:39 | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### General Chemistry

Client Lot #...: F9D020354 Matrix.....: SOLID

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|
| pH (solid) | | Work Order #: K9XC61AA | LCS Lot-Sample#: F9D100000-211 | | |
| | 100 | (99 - 101) | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | Analysis Time..: 00:00 | | |
| Chloride | | Work Order #: K9W931AC | LCS Lot-Sample#: F9D070000-214 | | |
| | 98 | (90 - 110) | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | Analysis Time..: 07:52 | | |
| Sulfate | | Work Order #: K9W951AC | LCS Lot-Sample#: F9D070000-215 | | |
| | 98 | (90 - 110) | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | Analysis Time..: 07:52 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# MATRIX SPIKE SAMPLE EVALUATION REPORT

## General Chemistry

Client Lot #...: F9D020354 Matrix.....: SOLID
Date Sampled...: 04/01/09 Date Received..: 04/02/09

Percnt Moisture: 0.0

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|
| Chloride | | Work Order #...: K9H5X1AF | | MS Lot-Sample #: F9D020354-001 | |
| | 109 | (90 - 110) | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | Analysis Time..: 08:06 | | |
| Chloride | | Work Order #...: K9H6V1AG | | MS Lot-Sample #: F9D020354-011 | |
| | 104 | (90 - 110) | MCAWW 300.0A | 04/08-04/09/09 | 9097214 |
| | | Dilution Factor: 1 | Analysis Time..: 02:36 | | |
| Sulfate | | Work Order #...: K9H5X1AH | | MS Lot-Sample #: F9D020354-001 | |
| | 105 | (90 - 110) | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | Analysis Time..: 08:06 | | |
| Sulfate | | Work Order #...: K9H6V1AH | | MS Lot-Sample #: F9D020354-011 | |
| | 98 | (90 - 110) | MCAWW 300.0A | 04/08-04/09/09 | 9097215 |
| | | Dilution Factor: 1 | Analysis Time..: 02:36 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** F9D020354 **Work Order #...:** K9H6V-SMP K9H6V-DUP **Matrix.....:** SOLID

**Date Sampled...:** 04/01/09 **Date Received..:** 04/02/09

**% Moisture.....:** 13

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Percent Moisture | | | | | | SD Lot-Sample #: | F9D020354-011 | |
| | 13.4 | 14.5 | % | 7.5 | (0-30) | MCAWW 160.3 MOD | 04/08-04/09/09 | 9096314 |
| | | Dilution Factor: 1 | | | | Analysis Time..: 00:00 | | |
| pH (solid) | | | | | | SD Lot-Sample #: | F9D020354-011 | |
| | 8.2 | 8.2 | No Units | 0.61 | (0-0.0) | SW846 9045C | 04/10/09 | 9100211 |
| | | Dilution Factor: 1 | | | | Analysis Time..: 00:00 | | |

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** F9D020354 **Work Order #...:** K9H5X-SMP K9H5X-DUP **Matrix.....:** SOLID

**Date Sampled...:** 04/01/09 **Date Received..:** 04/02/09

**% Moisture.....:** 15

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | | | | SD Lot-Sample #: | F9D020354-001 | |
| | 7.4 | 7.6 | mg/kg | 2.3 | (0-20) | MCAWW 300.0A | 04/08/09 | 9097214 |
| | | Dilution Factor: 1 | | | | Analysis Time..: 08:06 | | |
| Sulfate | | | | | | SD Lot-Sample #: | F9D020354-001 | |
| | 7.2 | 7.1 | mg/kg | 0.86 | (0-20) | MCAWW 300.0A | 04/08/09 | 9097215 |
| | | Dilution Factor: 1 | | | | Analysis Time..: 08:06 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

# F9D020354 CLIENT ANALYSIS SUMMARY

Storage Loc: 3-70
Date Received: 2009-04-02
Analytical Due Date: 2009-04-13
Report Due Date: 2009-04-13
Report Type: W
EDD Code: 00

Project Manager: IV
Quote #: 78576
SDG:
Project: EXELON TX COL Pro
Additional Investigation w/UHS.
PO#: 2008086614
Report to: Kathryn White
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS in LOT: 11

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 1 | B-3170A SS-2 | | | 2009-04-01 / 0 | K9H5X | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |
| S | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| S | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| X | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| X | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 2 | B-3170A SS-6 | | | 2009-04-01 / 0 | K9H54 | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 3 | B-3170A SS-8 | | | 2009-04-01 / 0 | K9H57 | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 4 | B-3170A SS-10 | | | 2009-04-01 / 0 | K9H59 | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 5 | B-3170A SS-12 | | | 2009-04-01 / 0 | K9H6C | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

# F9D020354 CLIENT ANALYSIS SUMMARY

Storage Loc: 3-70
Date Received: 2009-04-02
Analytical Due Date: 2009-04-13
Report Due Date: 2009-04-13
Report Type: W
EDD Code: 00

Project Manager: IV
Quote #: 78576
SDG:
Project: EXELON TX COL Pro
Additional Investigation w/UHS
PO#: 2008086614
Report to: Kathryn White
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS in LOT: 11

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 6 | B-3270A SS-2 | | | 2009-04-01 / 0 | K9H6G | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 7 | B-3270A SS-4 | | | 2009-04-01 / 0 | K9H6M | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 8 | B-3270A SS-7 | | | 2009-04-01 / 0 | K9H6N | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 9 | B-3270A SS-9 | | | 2009-04-01 / 0 | K9H6Q | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 10 | B-3270A SS-11 | | | 2009-04-01 / 0 | K9H6T | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |

# F9D020354

## CLIENT ANALYSIS SUMMARY

Storage Loc: 3-70
Date Received: 2009-04-02
Analytical Due Date: 2009-04-13
Report Due Date: 2009-04-13
Report Type: W
EDD Code: 00

Project Manager: IV
Quote #: 78576
SDG:
Project: EXELON TX COL Pro
Additional Investigation w/UHS
PO#: 2008086614
Report to: Kathryn White
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS in LOT: 11

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

| SAMPLE # | CLIENT SAMPLE ID | Site ID | Client Matrix | DATE/TIME SAMPLED | WORKORDER | A |
|---|---|---|---|---|---|---|
| 11 | B-3270A SS-13 | | | 2009-04-01 / 0 | K9H6V | SOLID |

SAMPLE COMMENTS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |
| S | XX | CX | MCAW W | 300.0A | SOLID, 300.0A, Chloride (300.0A, Ion Chr | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| S | XX | CY | MCAW W | 300.0A | SOLID, 300.0A, Sulfate (300.0A, Ion Chro | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| X | XX | OZ | SW846 | 9045C | SOLID, 9045C, pH (9045C) - Non-Aqueous | 82 | LEACHATE, DI (Routine) | 01 | STANDARD TEST SET | PROT: B | WRK LOC | 06 |
| X | XX | WM | MCAW W | 160.3 MOD | SOLID, 160.3 MOD, Percent Moisture | 88 | NO SAMPLE PREPARATION PERFORMED / DIRECT | 01 | STANDARD TEST SET | PROT: A | WRK LOC | 06 |

18574

**CHAIN OF CUSTODY RECORD**
**EXELON COL VICTORIA SITE APPLICATION**
**MACTEC JOB NO. 6468-07-1777**

COC No. V- 36

| SAMPLE DESIGNATION | SAMPLE TYPE | TAKEN BY | DATE TAKEN | INTENDED USE | REMARKS |
|---|---|---|---|---|---|
| B-3170A SS-2 | Jar | CS | 4-1-09 | CHEMICAL ANALYSIS 120G | |
| B-3170A SS-6 | Jar | CS | | | |
| B-3170A SS-8 | Jar | | | | |
| B-3170A SS-10 | Jar | | | | |
| B-3170A SS-12 | Jar | | | | |
| | | | | | |
| B-3270A SS-2 | Jar | | | | |
| B-3270A SS-4 | Jar | | | | |
| B-3270A SS-7 | Jar | | | | |
| B-3270A SS-9 | Jar | | | | |
| B-3270A SS-11 | Jar | | | | |
| B-3270A SS-13 | Jar | | | | |
| | | | | | |
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1. Relinquished by: C SOVANAPRIDI C Sovanapridi (name) (signature) | 1. Date/Time 4/1/09 2:00 PM | 1. Received by: FED EX TRK # 7964 8101 0321 (name) (signature) | 1. Date/Time | | |
| 2. Relinquished by: (name) (signature) | 2. Date/Time | 2. Received by: S Wilson [signature] (name) (signature) | 2. Date/Time 04.02.09 0915 | | |

**Remarks:** If relinquishing to a common carrier or Fed Ex – Record tracking number

Lab Assignment 21 Victoria (5th Supplemental Assignment)

Total 11 Jars

**Receiving Laboratory: Please return original form after signing for receipt of samples; keep copy for your records. Retain all portions of unused samples in labeled containers.**

ORIGINAL

*Chain of Custody Form Rev 0 -12/22/08*

Page 1 of 1

DCN No. EXE-1391

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): ~~F9D020354~~ AB 4-2-09
F9D020354

## CONDITION UPON RECEIPT FORM

Client: Madec
Quote No: 78576
COC/RFA No: V-36

89

Initiated By: SV
Date: 04.02.09 Time: 0915

**Shipping Information**

Shipper: FedEx UPS DHL Courier Client Other: _____ Multiple Packages: Y N

| Shipping # (s):* | | Sample Temperature (s):** | |
|---|---|---|---|
| 1. 7964 8101 0321 | 6. | 1. ambient | 6. |
| 2. | 7. | 2. | 7. |
| 3. | 8. | 3. | 8. |
| 4. | 9. | 4. | 9. |
| 5. | 10. | 5. | 10. |

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

**Condition** (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

| | | | | | |
|---|---|---|---|---|---|
| 1. | Y N | Are there custody seals present on the cooler? | 8. | Y N | Are there custody seals present on bottles? |
| 2. | Y N N/A | Do custody seals on cooler appear to be tampered with? | 9. | Y N N/A | Do custody seals on bottles appear to be tampered with? |
| 3. | Y N | Were contents of cooler frisked after opening, but before unpacking? | 10. | Y N N/A | Was sample received with proper pH[1]? (If not, make note below) |
| 4. | Y N | Sample received with Chain of Custody? | 11. | Y N | Sample received in proper containers? |
| 5. | Y N N/A | Does the Chain of Custody match sample ID's on the container(s)? | 12. | Y N N/A | Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below) |
| 6. | Y N | Was sample received broken? | 13. | Y N N/A | Was Internal COC/Workshare received? |
| 7. | Y N | Is sample volume sufficient for analysis? | 14. | Y N N/A | Was pH taken by original TestAmerica lab? |

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:
Samples not cooled.
OK to log per IV - AB 4-2-09
AB 4-2-09

Corrective Action:
☐ Client Contact Name: _____ Informed by: _____
☐ Sample(s) processed "as is"
☐ Sample(s) on hold until: _____ If released, notify: _____
Project Management Review: [signature] Date: 4-6-9

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.
ADMIN-0004, REVISED 10/21/08 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev11.doc

# DRAFT DATA REPORT
# GEOTECHNICAL EXPLORATION AND TESTING

## EXELON TEXAS COL PROJECT
## VICTORIA COUNTY, TEXAS
## SUPPLEMENTAL INVESTIGATION INCLUDING UHS

**May 5, 2009**

**VOLUME 3**
**Appendix F – RCTS Data**

**Prepared By:**

**MACTEC Engineering and Consulting, Inc.**
**Raleigh, North Carolina**

**MACTEC Project No. 6468-07-1777**

**Prepared For:**

**Bechtel Power Corporation**
**Subcontract No. 25352-102-HC4-CY00-00001**

# Section Not Used