APPENDIX E

CALIPER, NATURAL GAMMA, RESISTIVITY, AND SPONTANEOUS POTENTIAL LOGS

GEOVision Job 5492

ROBERTSON GEOLOGGING LIMITED

Vogtle Nuclear Power Plant

ROBERTSON GEOLOGGING TECHNOLOGY

12/19/2005

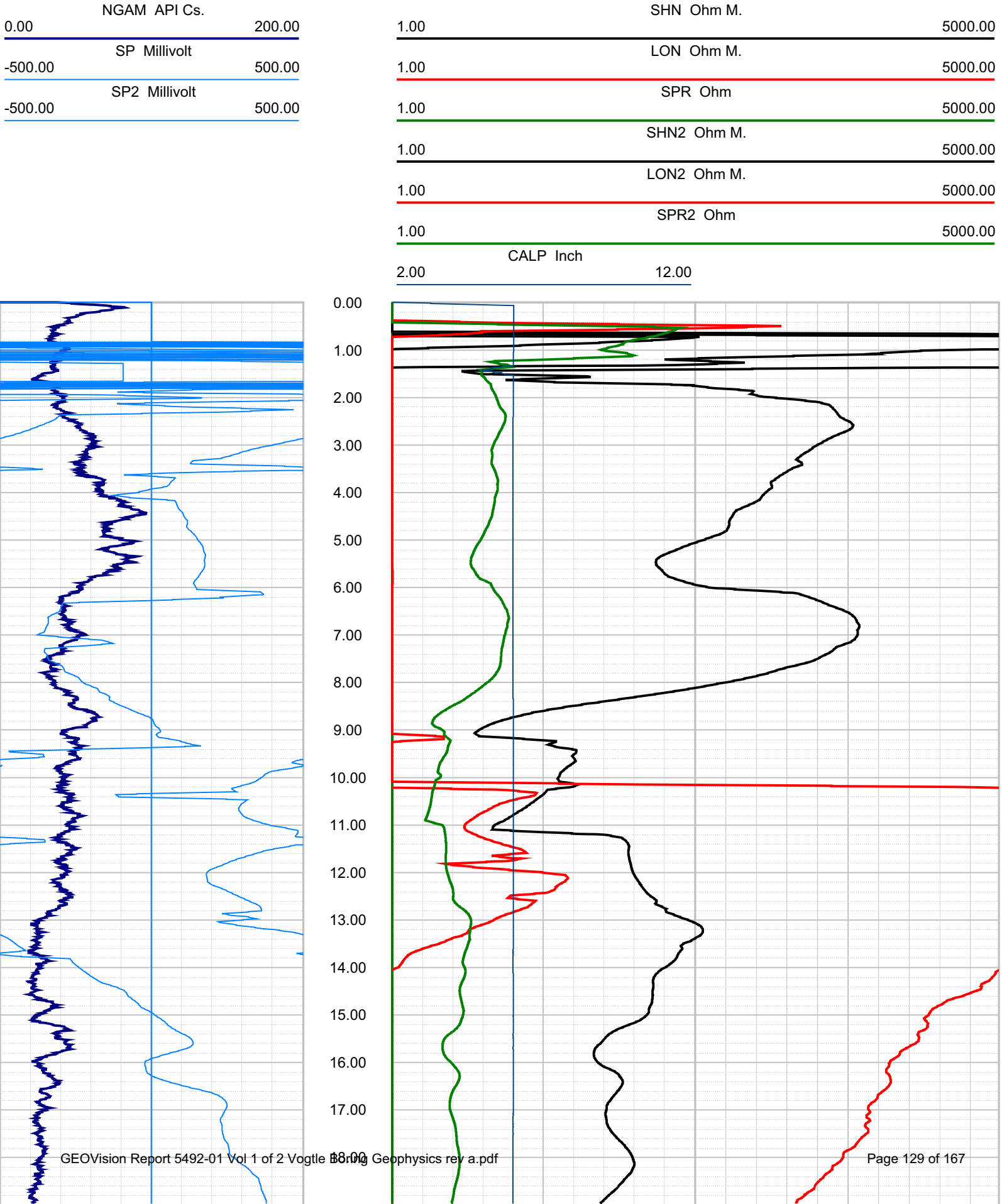
REMARKS (C:\Data\PSwork.ing\Vogtle\B1002\B1002 all logs.hed)

COMPANY	GEOVision	OTHER SERVICES
WELL	B-1002, B-1002A	
FIELD		
COUNTRY		
STATE	GA	
COUNTY		
LAT.:		
LONG.:		

Perm. Da..	Elev	KB	0.00
Log. Datum		DF	0.00
Drill Datum		GL	0.00

DATE	22 Sep 05	23 Sep 05	23 Sep 05
RUN#	1	2	3
TYPE OF LOG	Caliper / Nat Ga..	ELOG	ELOG
DEPTH DRILLER	79.30	79.30	21.30
DEPTH LOGGER	77.70	77.70	21.30
LOG DEEPEST	77.70	77.70	21.30
LOG SHALLOW	0.00	26.30	1.00
FLUID IN HOLE	Bentonite drilling..	Bentonite drilling..	Bentonite drilli..
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	Rob Steller	Rob Steller	Rob Steller
WITNESSED BY	Jay Fagan	Jay Fagan	Jay Fagan

RUN#	BIT RECORD			CASING RECORD			
	SIZE	FROM	TO	SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00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200.00
SP Millivolt
-500.00
500.00
SP2 Millivolt
-500.00
500.00
SHN Ohm M.
1.00
5000.00
LON Ohm M.
1.00
5000.00
SPR Ohm
1.00
5000.00
SHN2 Ohm M.
1.00
5000.00
LON2 Ohm M.
1.00
5000.00
SPR2 Ohm
1.00
5000.00
CALP Inch
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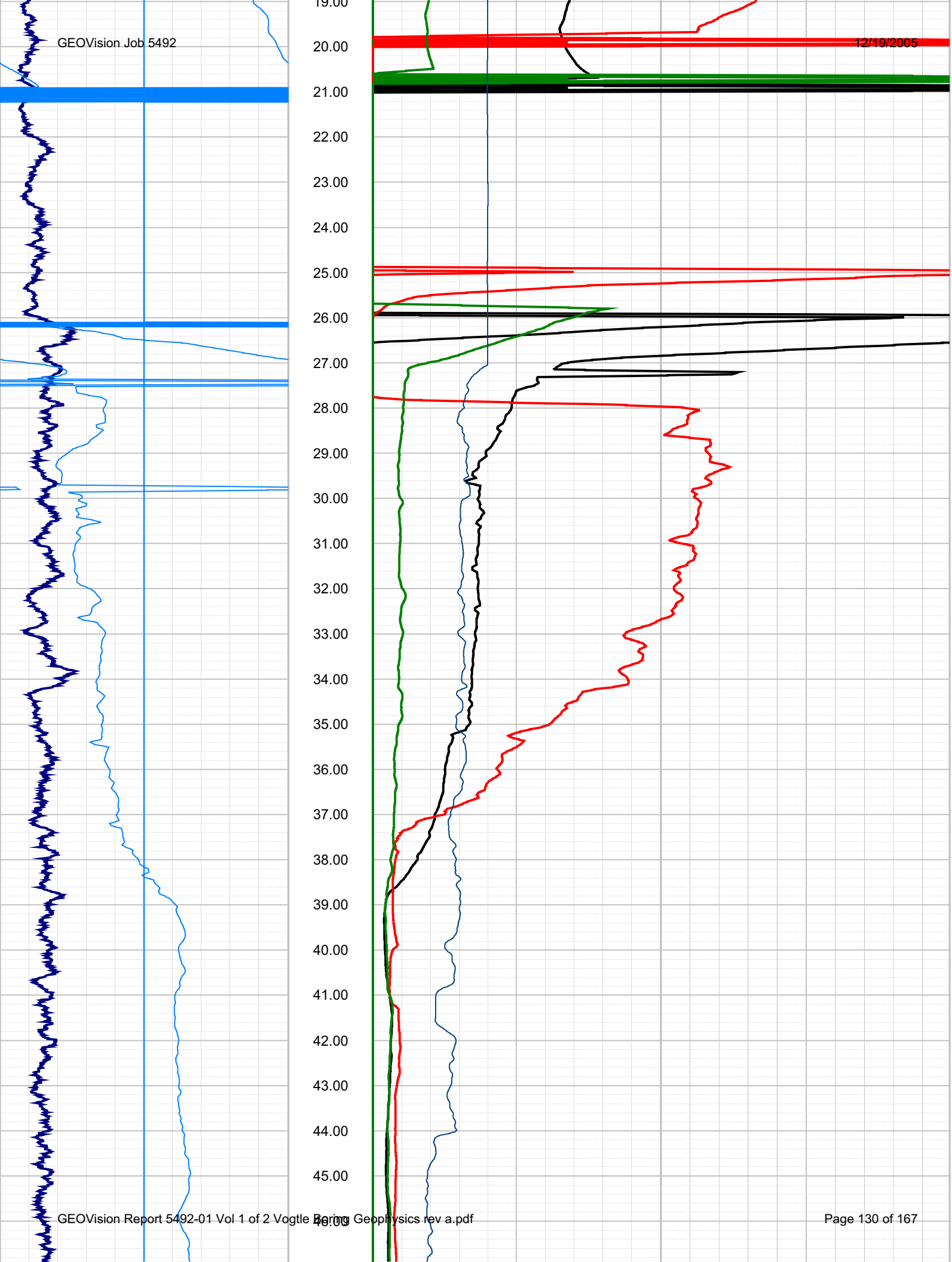
GEOVision Job 5492
12/19/2005
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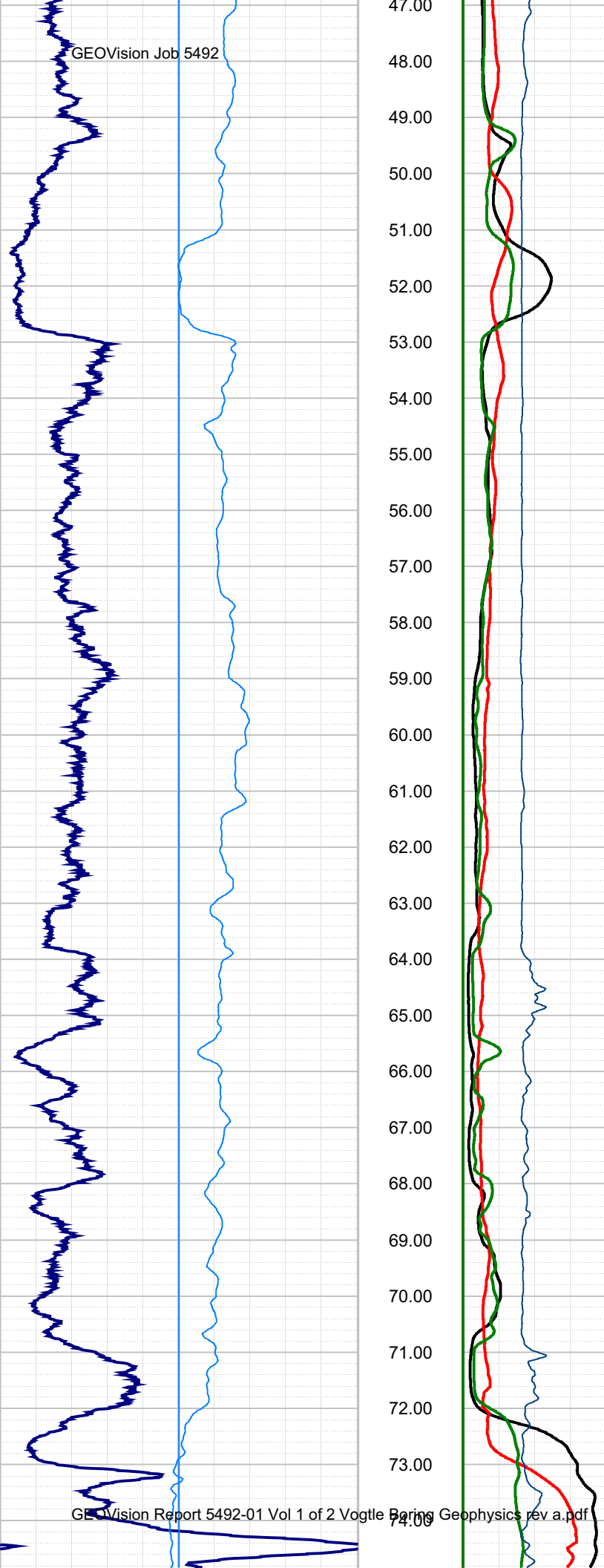
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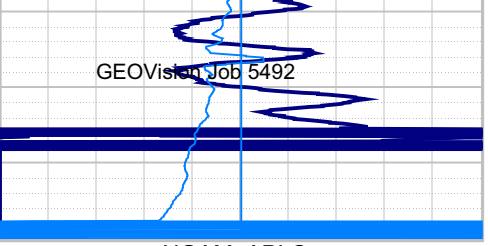


NGAM API Cs.

0.00 200.00

SP Millivolt

-500.00 500.00

SP2 Millivolt

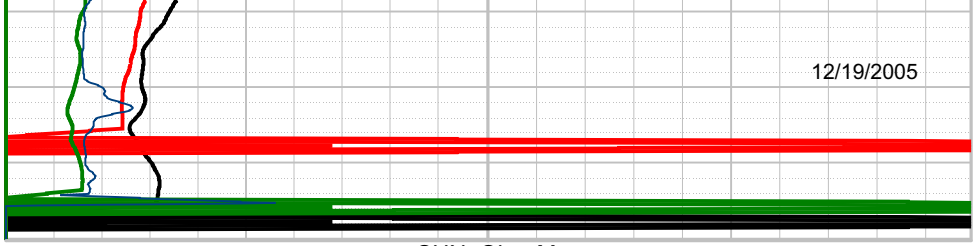
-500.00 500.00

75.00

76.00

77.00

78.00



SHN Ohm M.

1.00 5000.00

LON Ohm M.

1.00 5000.00

SPR Ohm

1.00 5000.00

SHN2 Ohm M.

1.00 5000.00

LON2 Ohm M.

1.00 5000.00

SPR2 Ohm

1.00 5000.00

CALP Inch

2.00 12.00

ROBERTSON GEOLOGGING LIMITED

Vogtle B-1003

ROBERTSON GEOLOGGING TECHNOLOGY

12/19/2005

REMARKS (C:\Data\PSwork.ing\Vogtle\B1003\B1003 all log.hed)

COMPANY	GEOVision
WELL	B-1003
FIELD	
COUNTRY	
STATE	GA
COUNTY	
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	Elev	KB	0.00
Log. Datum		DF	0.00
Drill Datum		GL	0.00

DATE	03 Oct 05	22 Oct 05	10 Nov 05
RUN#	1	2	3
TYPE OF LOG	Caliper / Nat Ga..	Elog	Caliper / Nat ..
DEPTH DRILLER	0.00	0.00	0.00
DEPTH LOGGER	0.00	0.00	0.00
LOG DEEPEST	328.06	323.73	403.56
LOG SHALLOW	0.00	25.27	320.34
FLUID IN HOLE			
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	Rob Steller	Rob Steller	Rob Steller
WITNESSED BY	Matt Cooke	Matt Cooke	Matt Cooke

RUN#	BIT RECORD			CASING RECORD			
	SIZE	FROM	TO	SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NGAM API Cs.
0.00 150.00

NGA2 API Cs.
0.00 150.00

SP Millivolt
-500.00 500.00

SP2 Millivolt
-500.00 500.00

SHN Ohm M.
1.00 1000.00

LON Ohm M.
1.00 1000.00

SPR Ohm
1.00 500.00

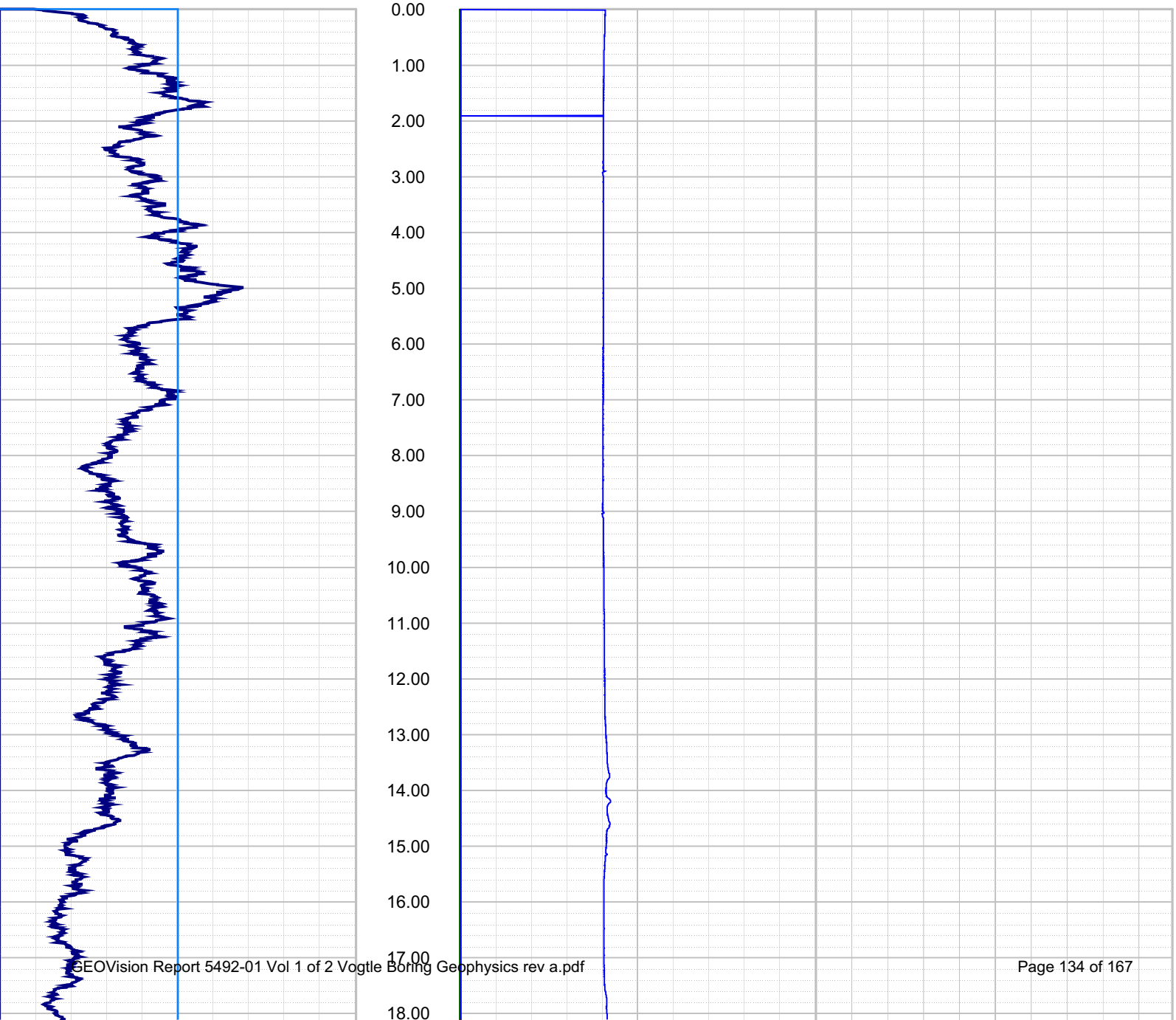
SHN2 Ohm M.
1.00 1000.00

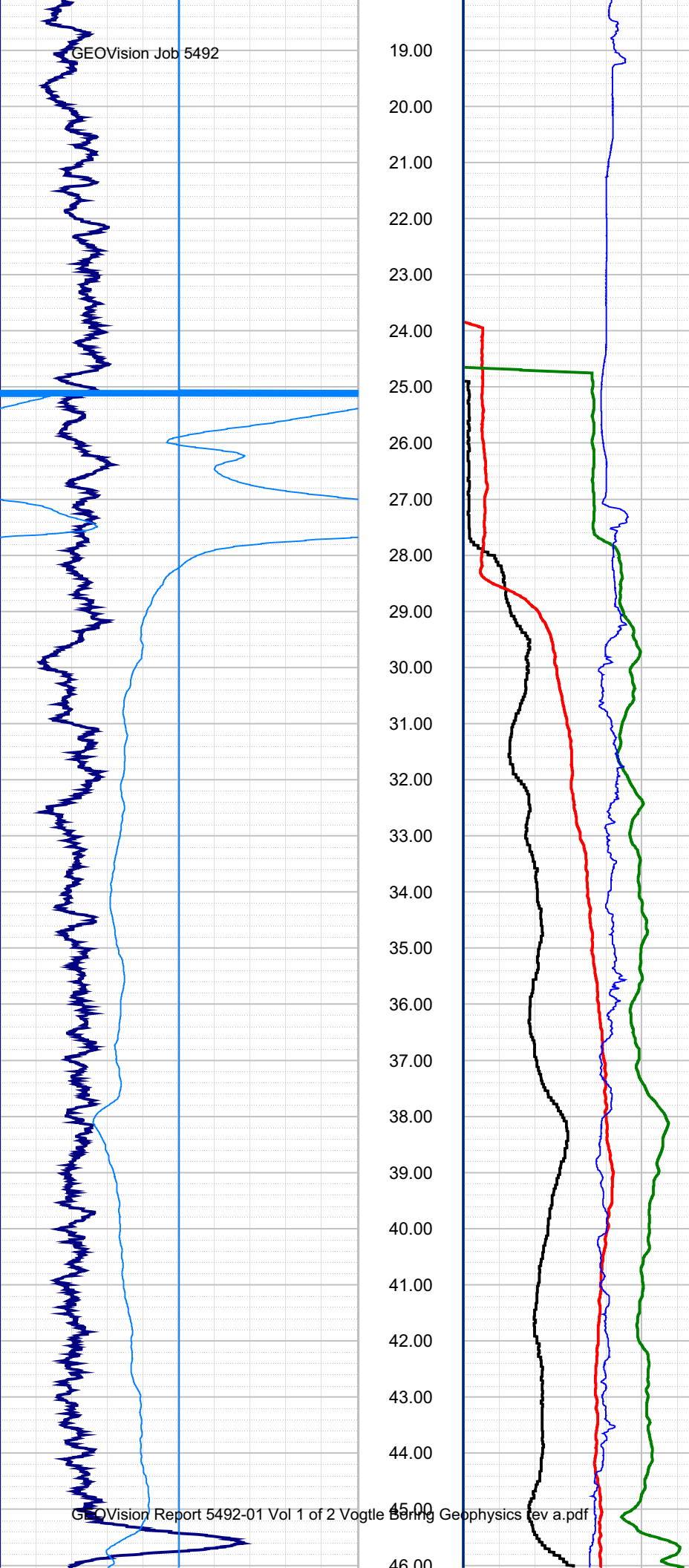
LON2 Ohm M.
1.00 1000.00

SPR2 Ohm
1.00 500.00

CALP Inch
2.00 12.00

CAL2 Inch
2.00 12.00

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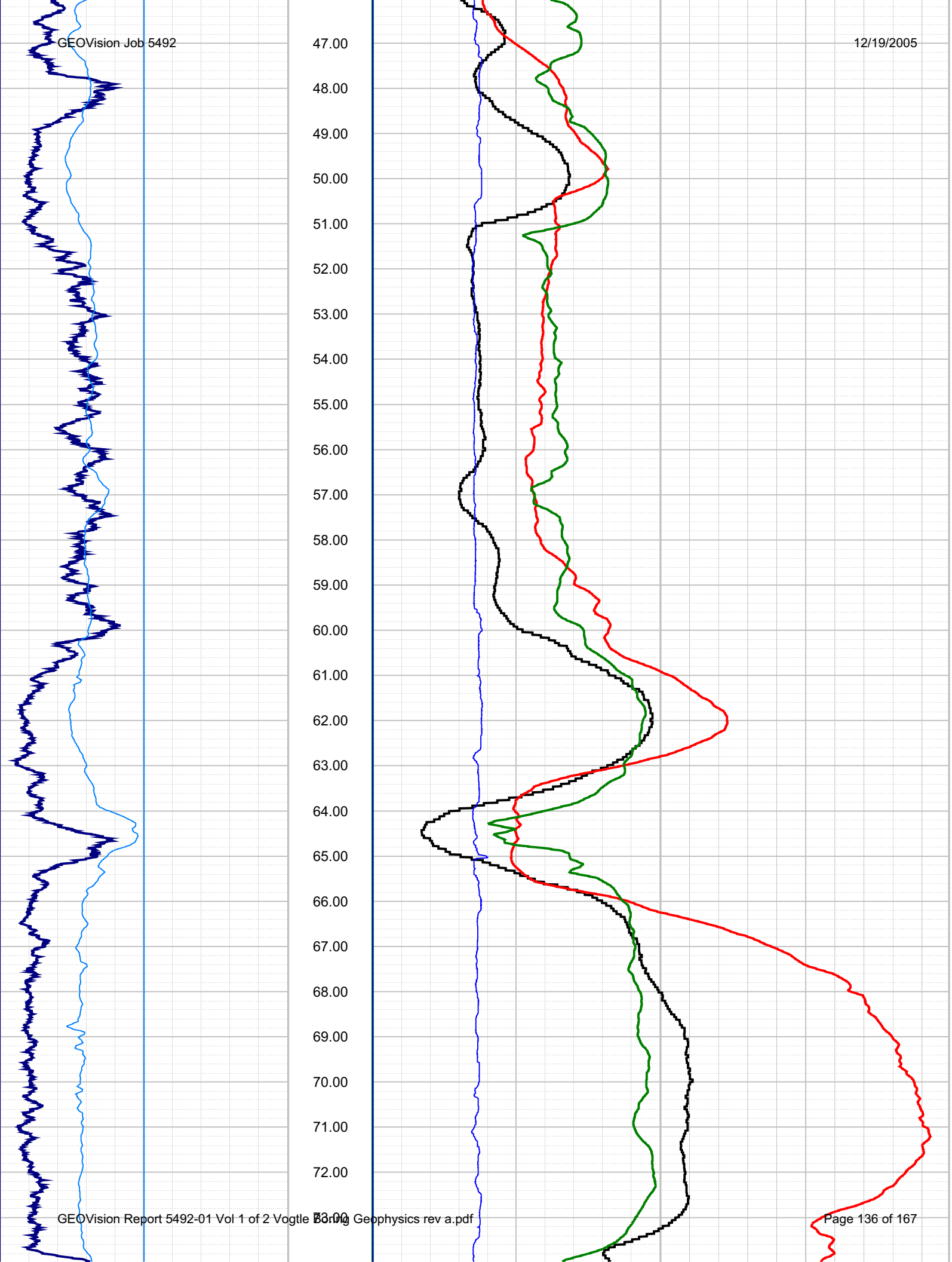
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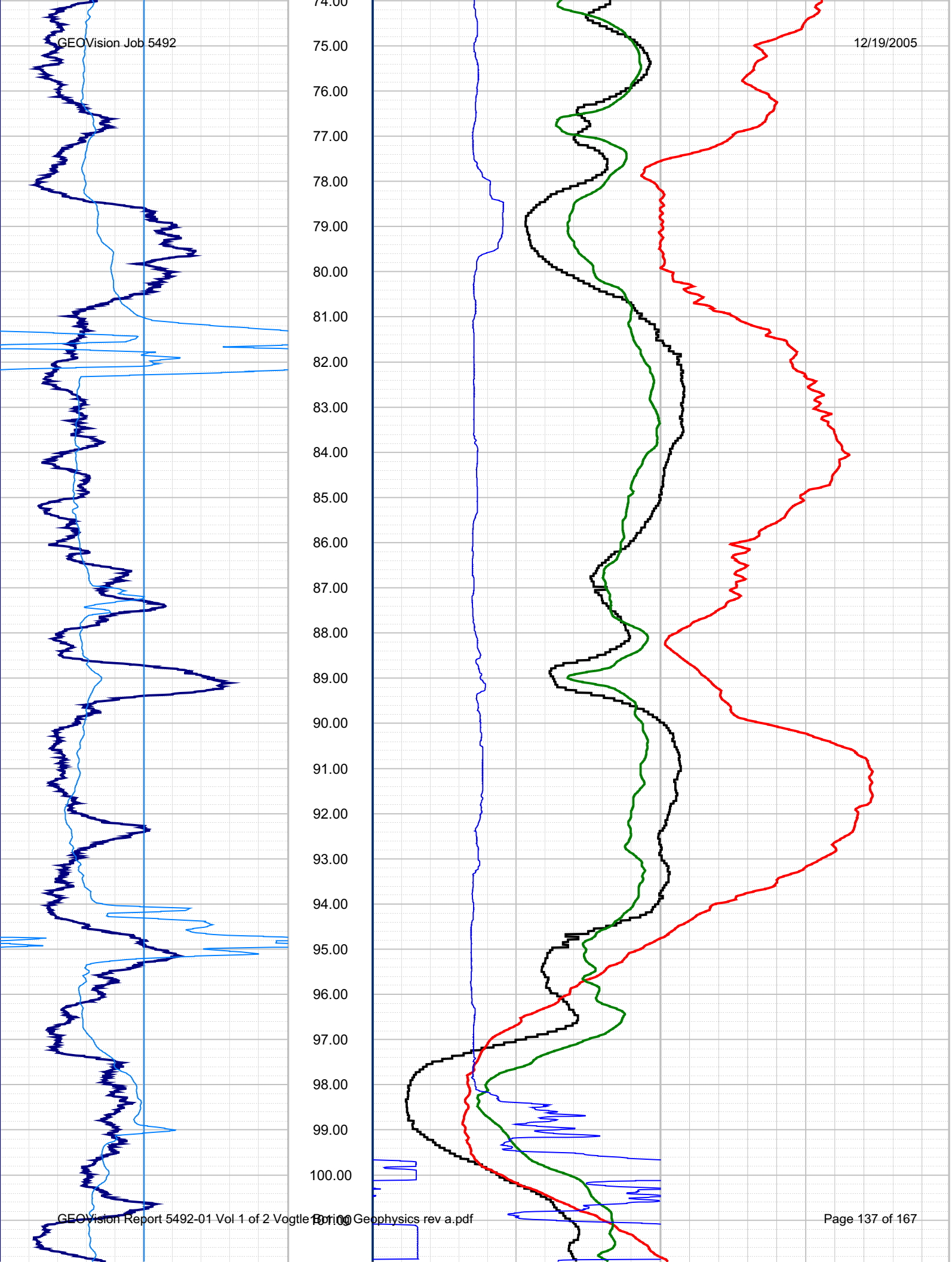
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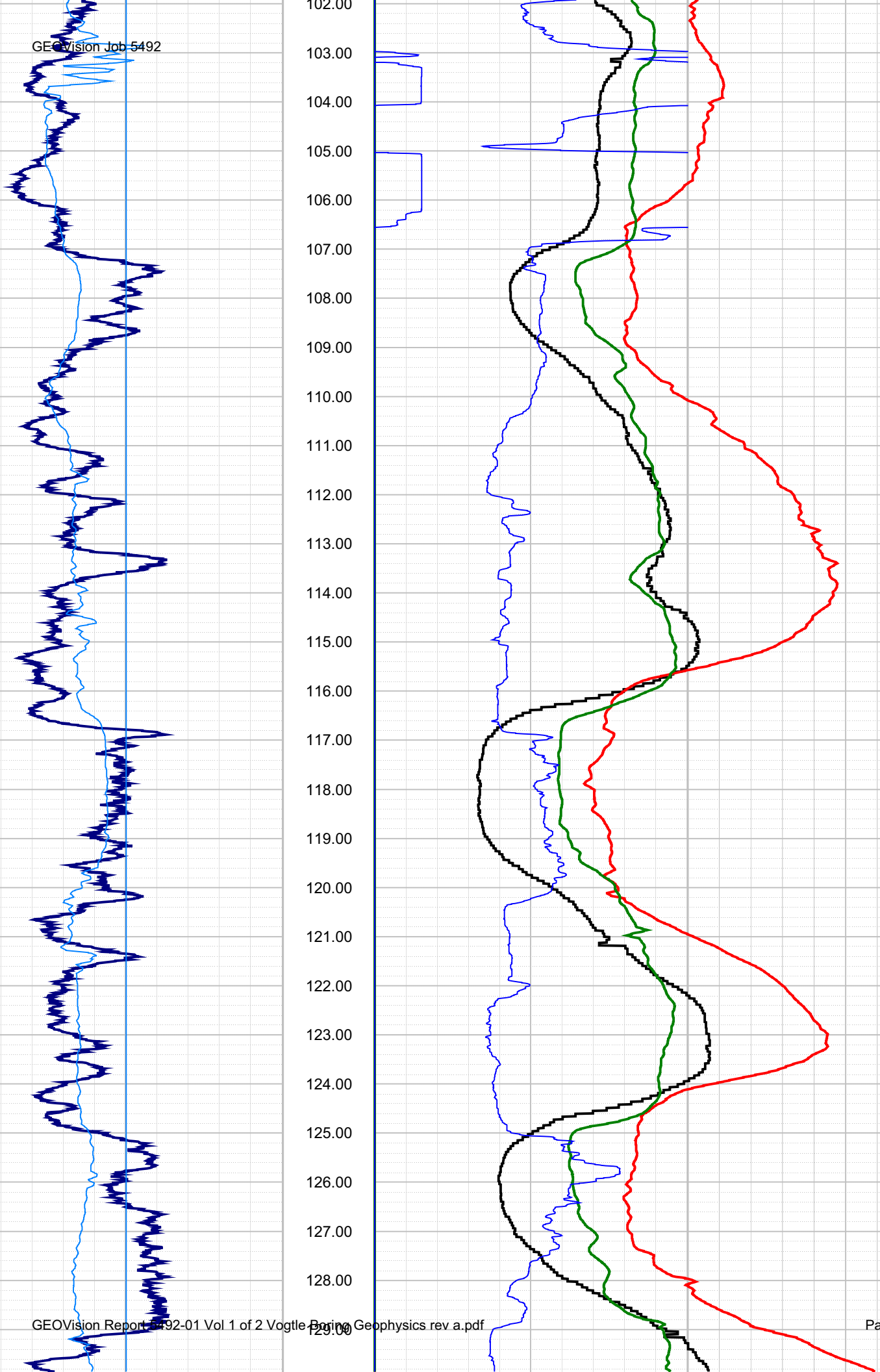
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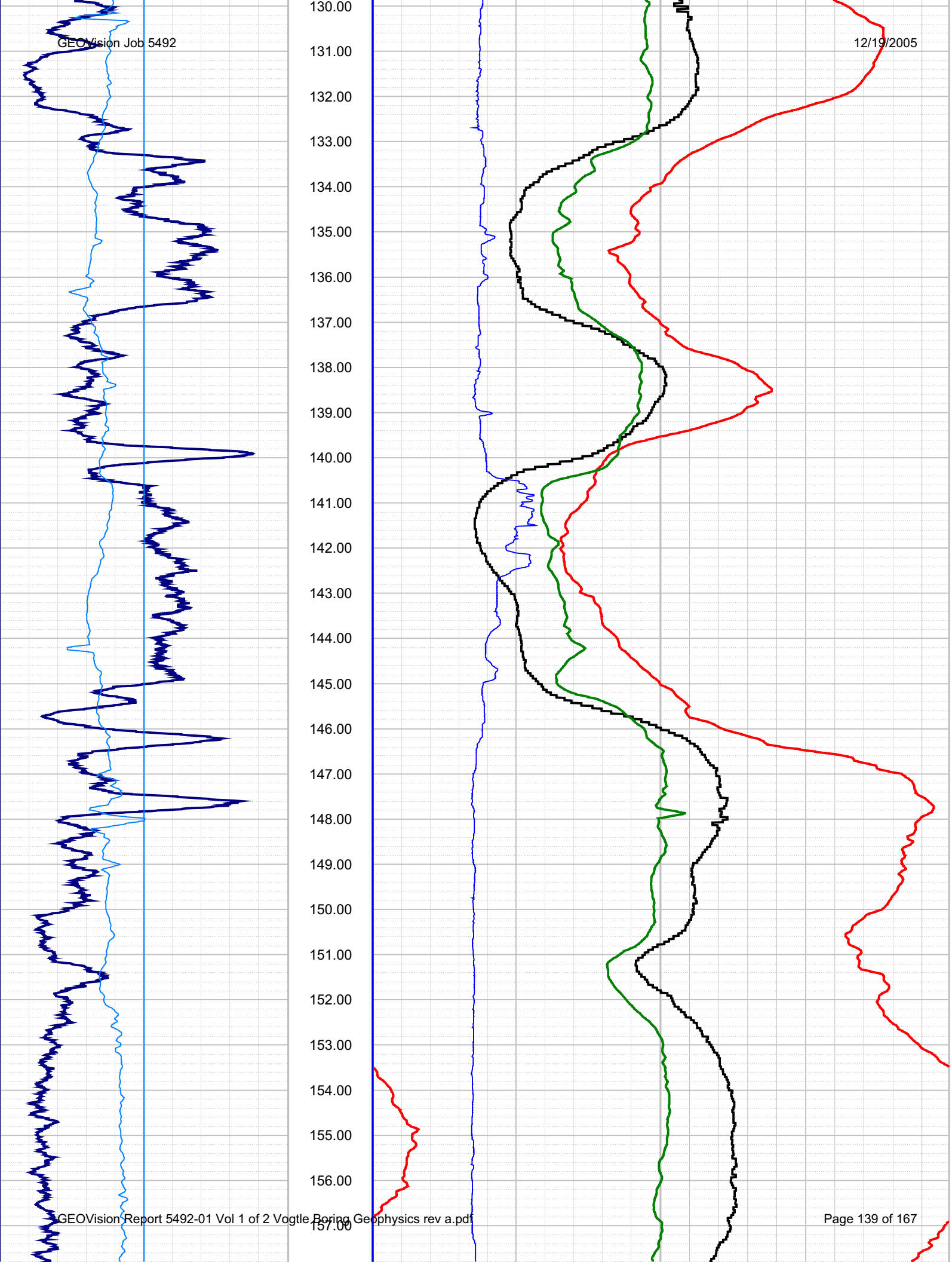
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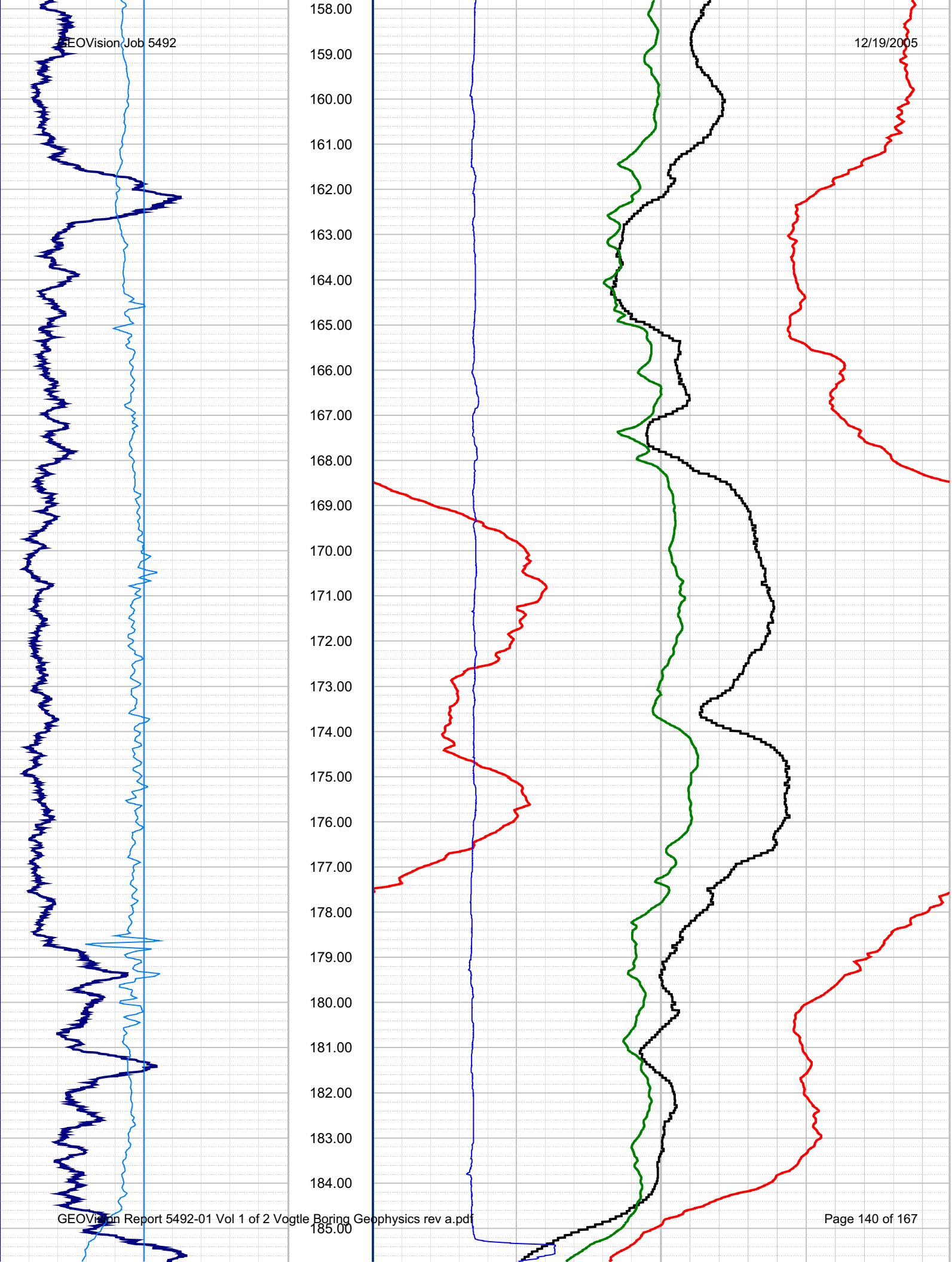
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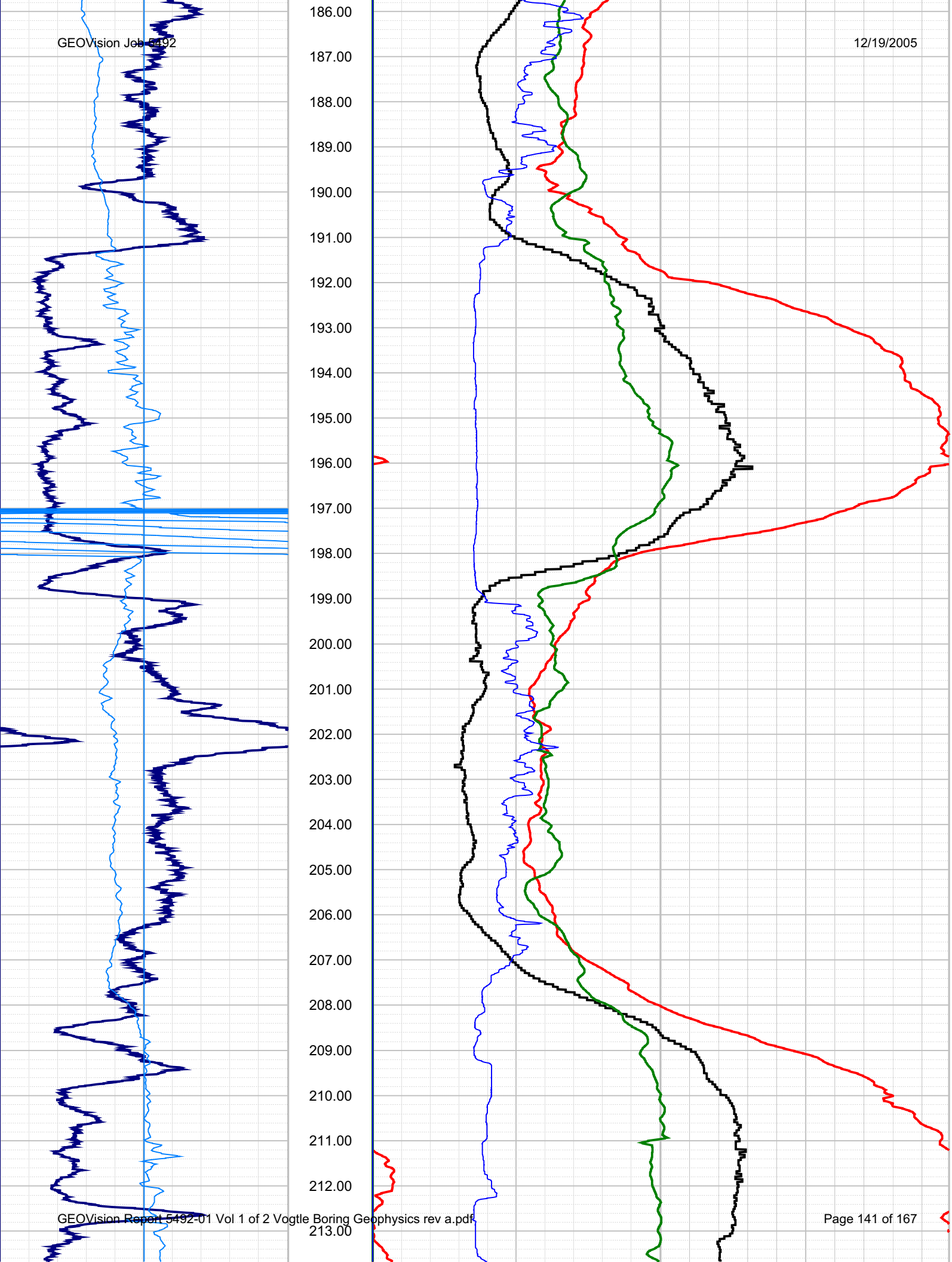
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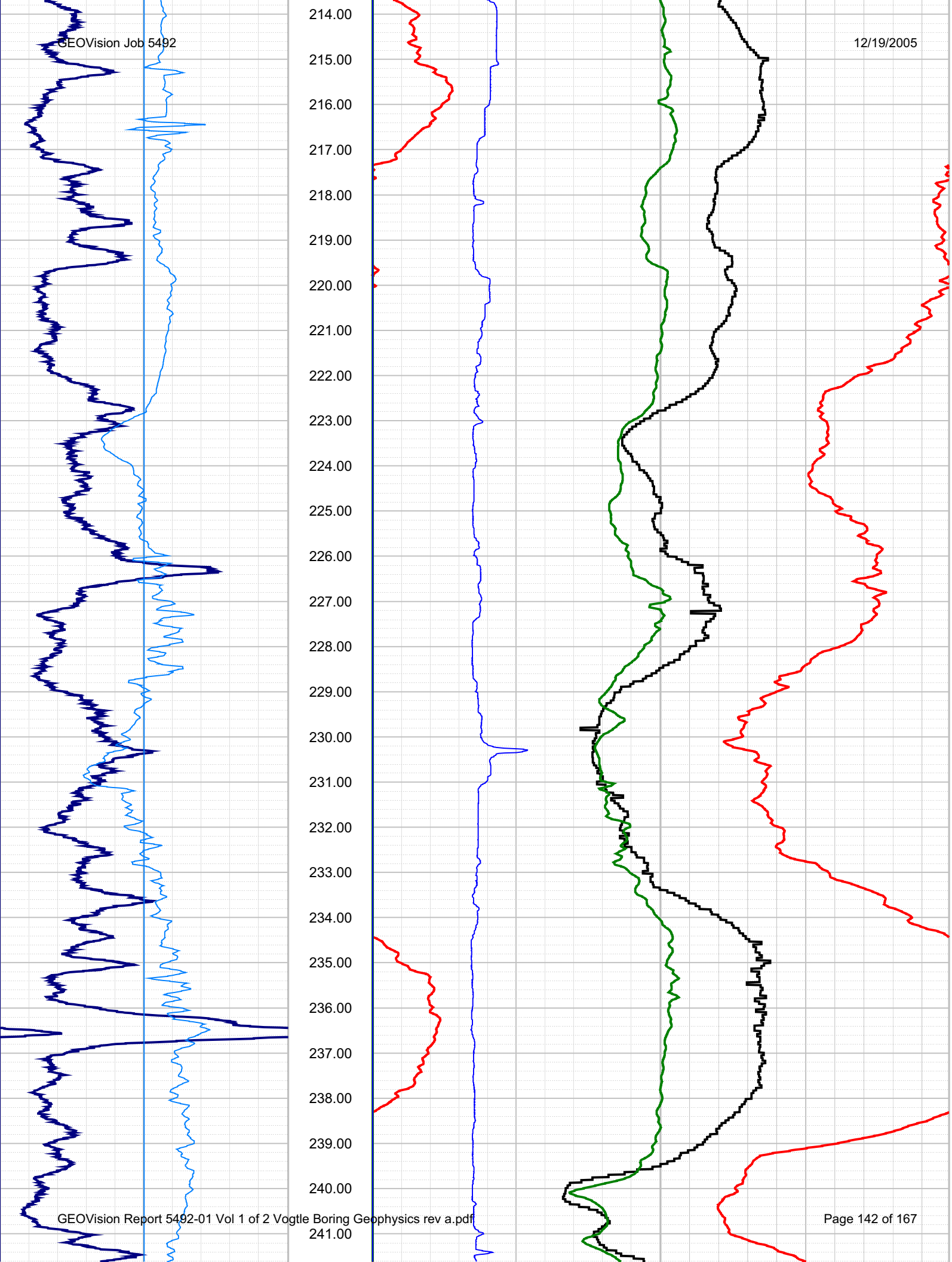
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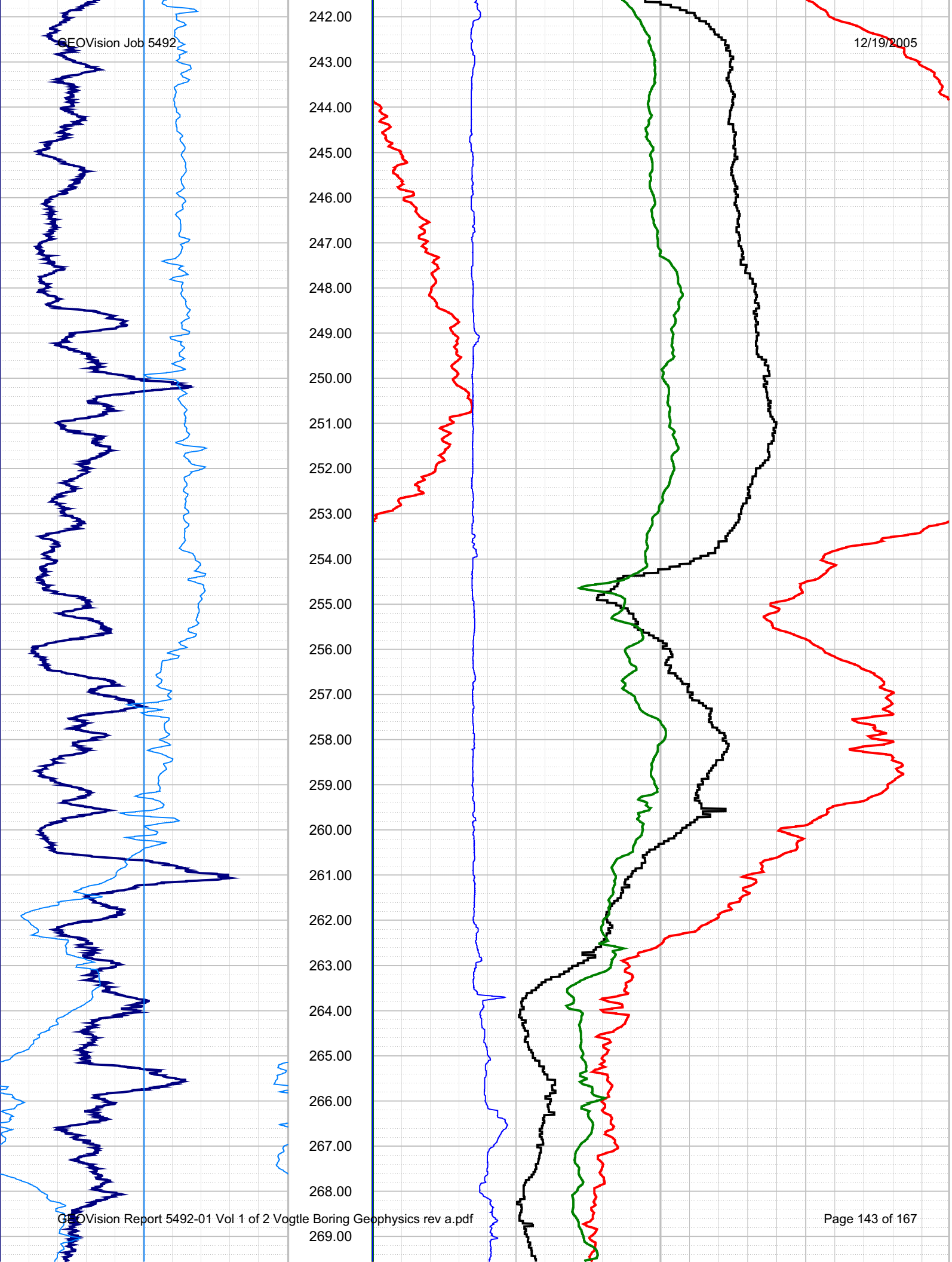
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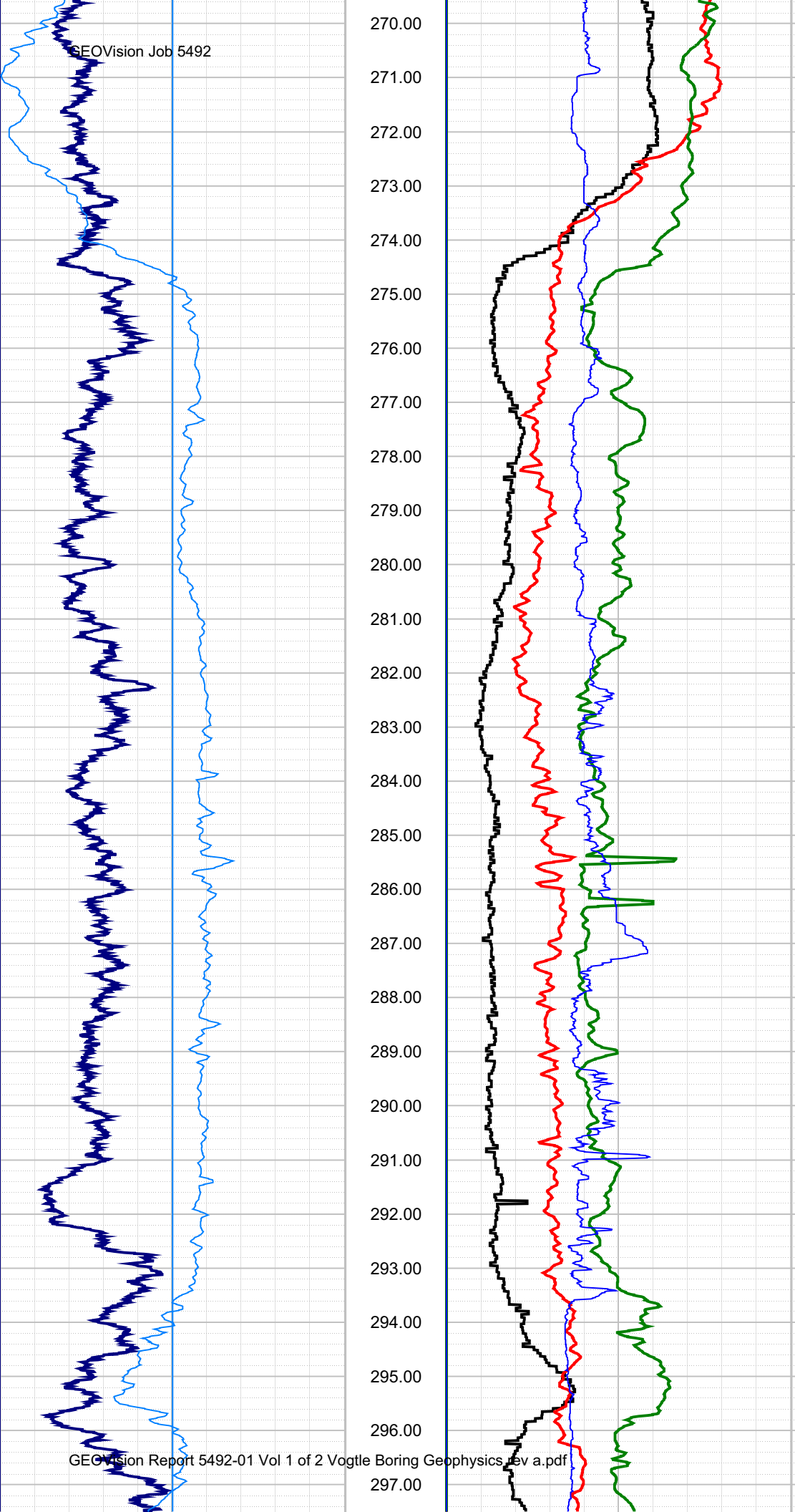
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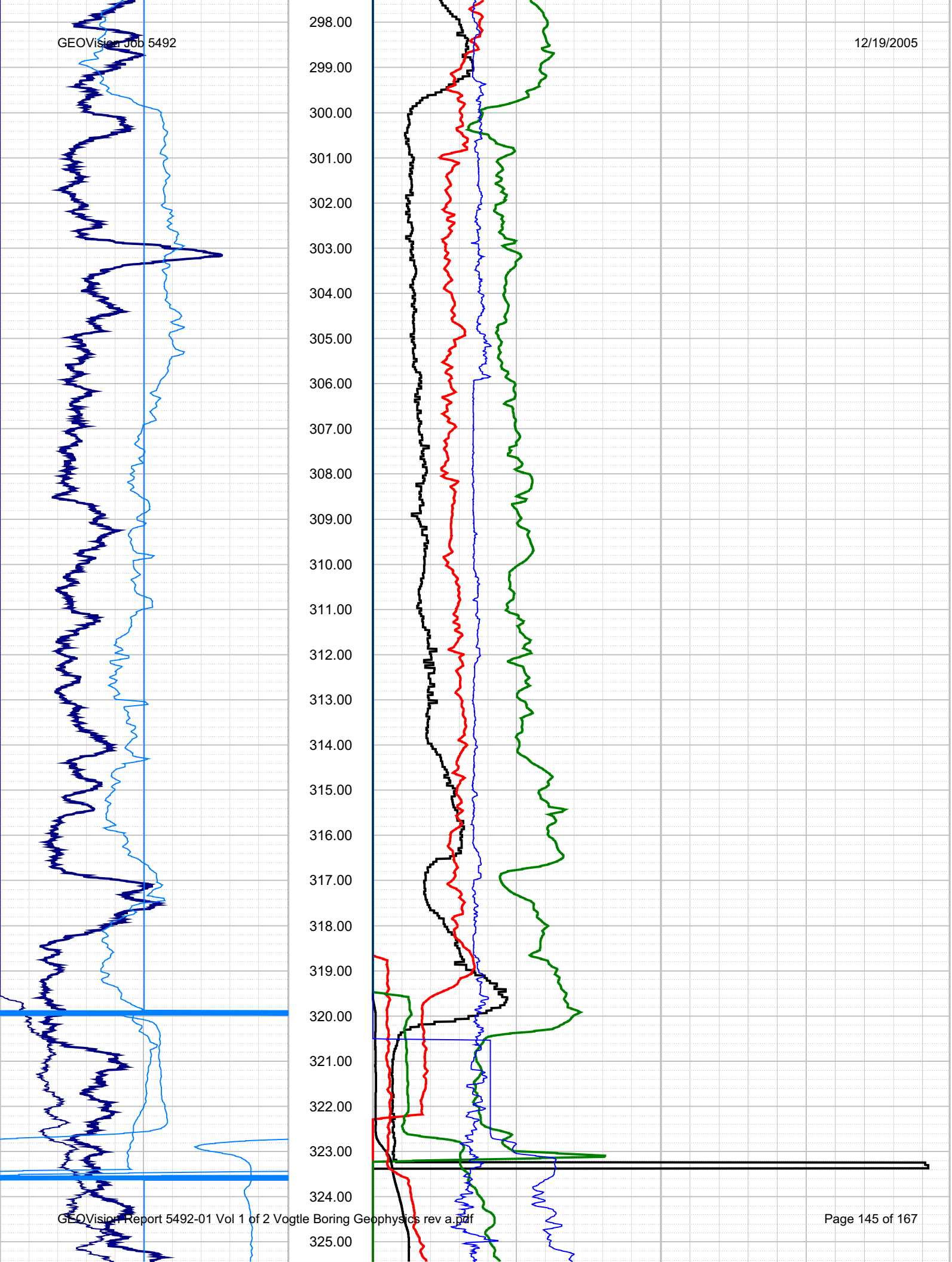
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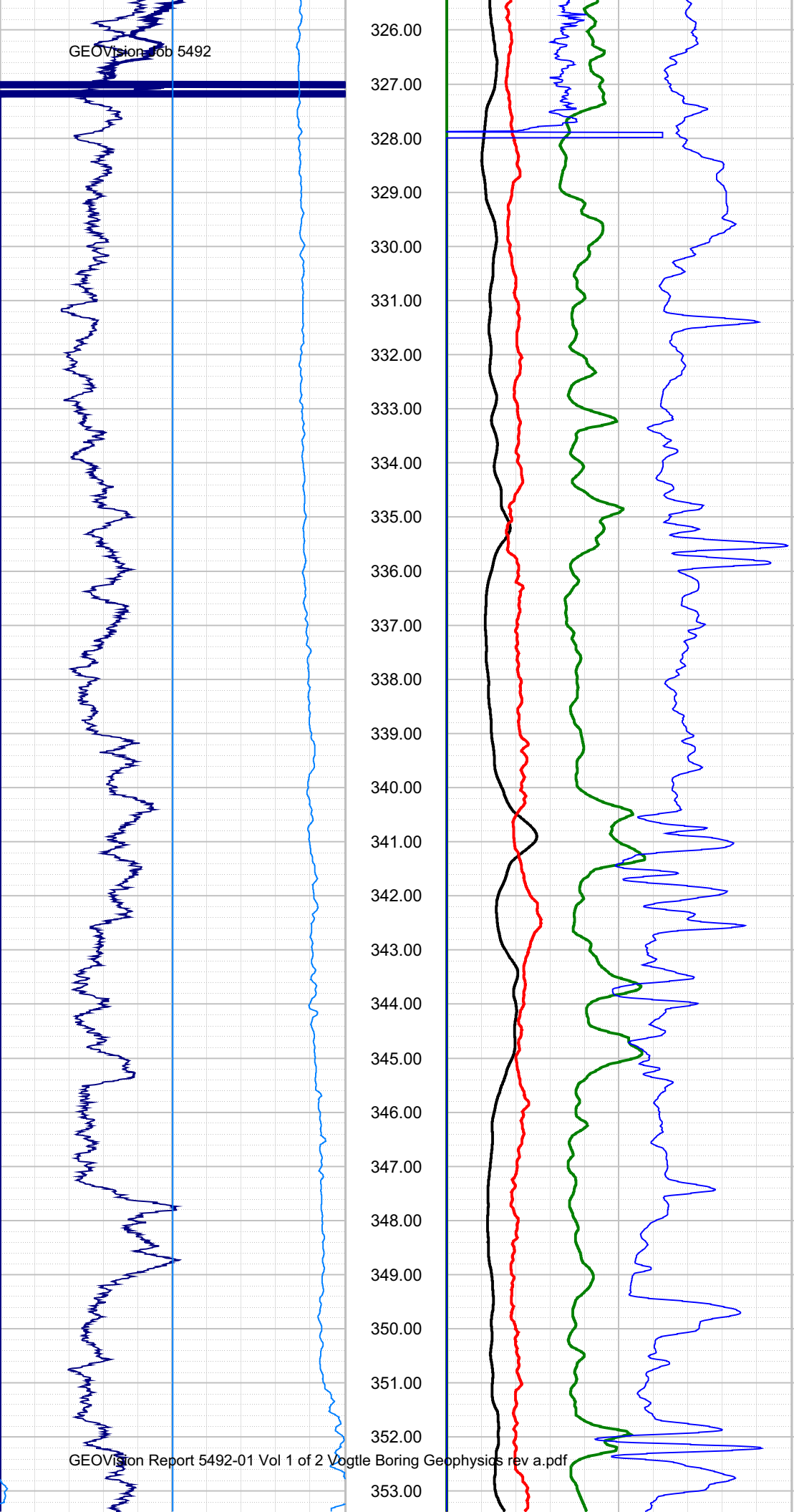
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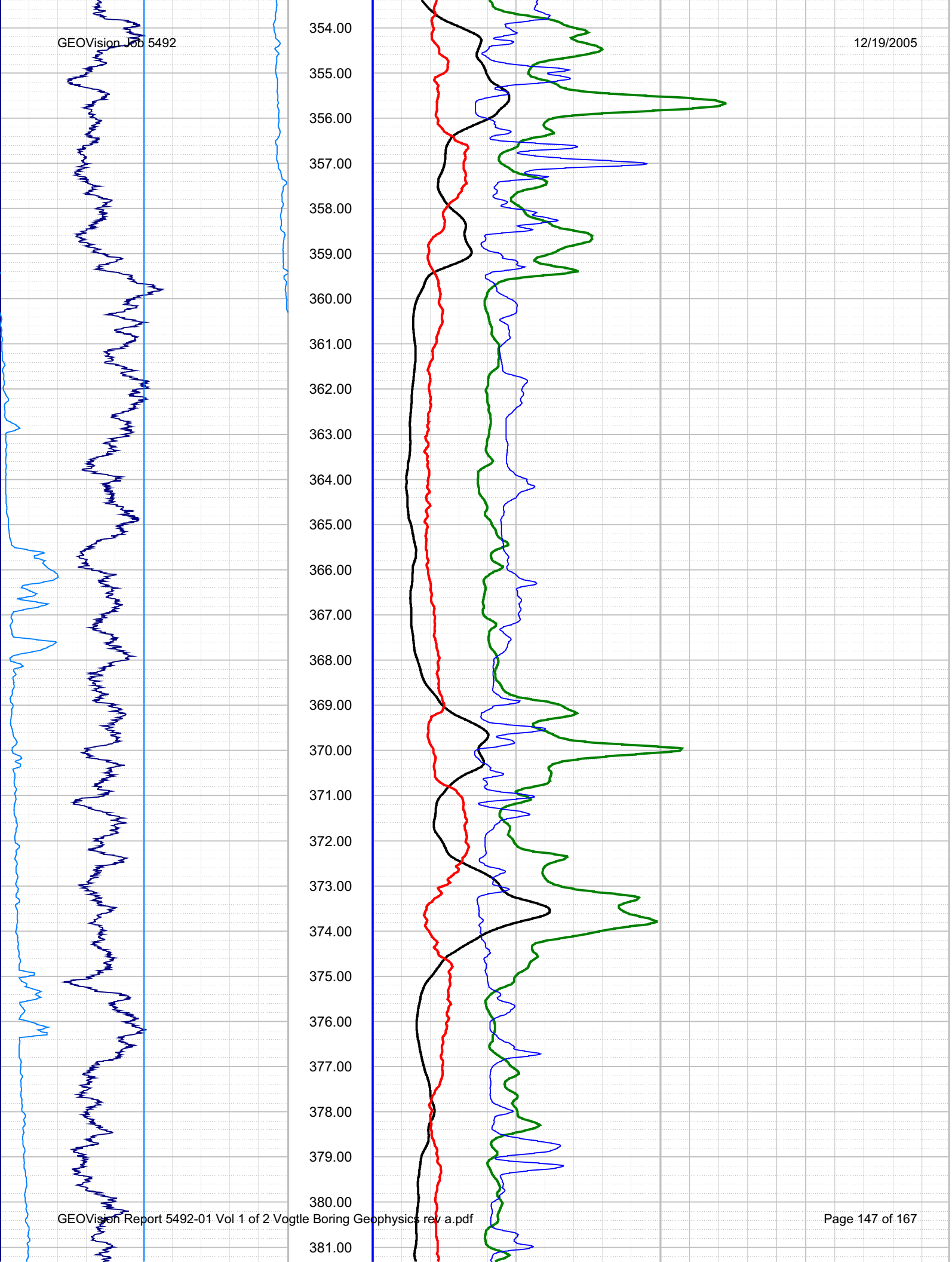
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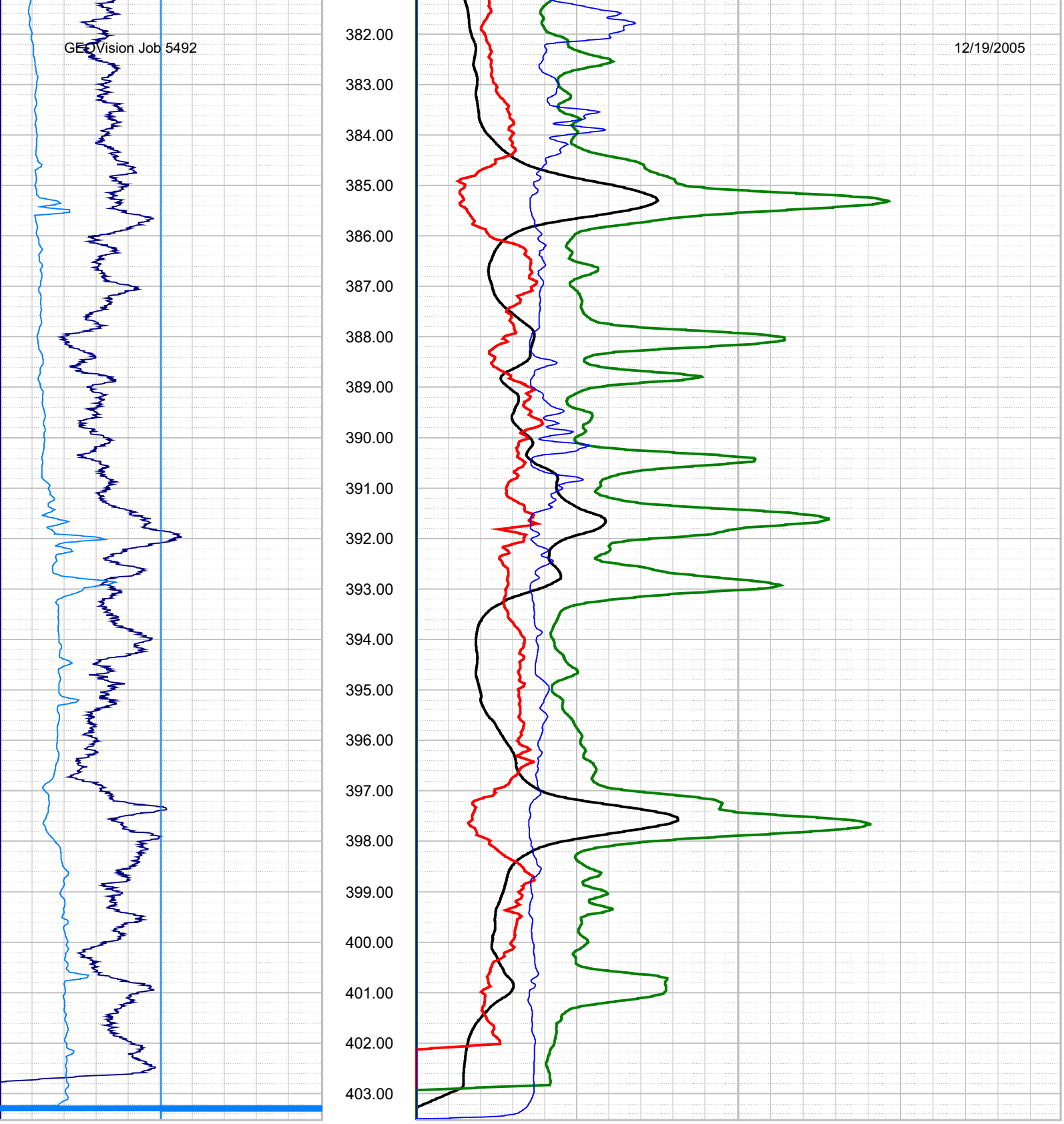
GEOVision Job 5492
12/19/2005
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402.00
403.00

NGAM API Cs.
0.00 150.00

NGA2 API Cs.
0.00 150.00

SP Millivolt
-500.00 500.00

SP2 Millivolt
-500.00 500.00

SHN Ohm M.
1.00 1000.00

LON Ohm M.
1.00 1000.00

SPR Ohm
1.00 500.00

SHN2 Ohm M.
1.00 1000.00

LON2 Ohm M.
1.00 1000.00

SPR2 Ohm
1.00 500.00

CALP Inch
2.00 12.00

CAL2 Inch
2.00 12.00

GEOVision Job 5492

ROBERTSON GEOLOGGING LIMITED

Vogtle Nuclear Power Plant B-1004

ROBERTSON GEOLOGGING TECHNOLOGY

12/19/2005

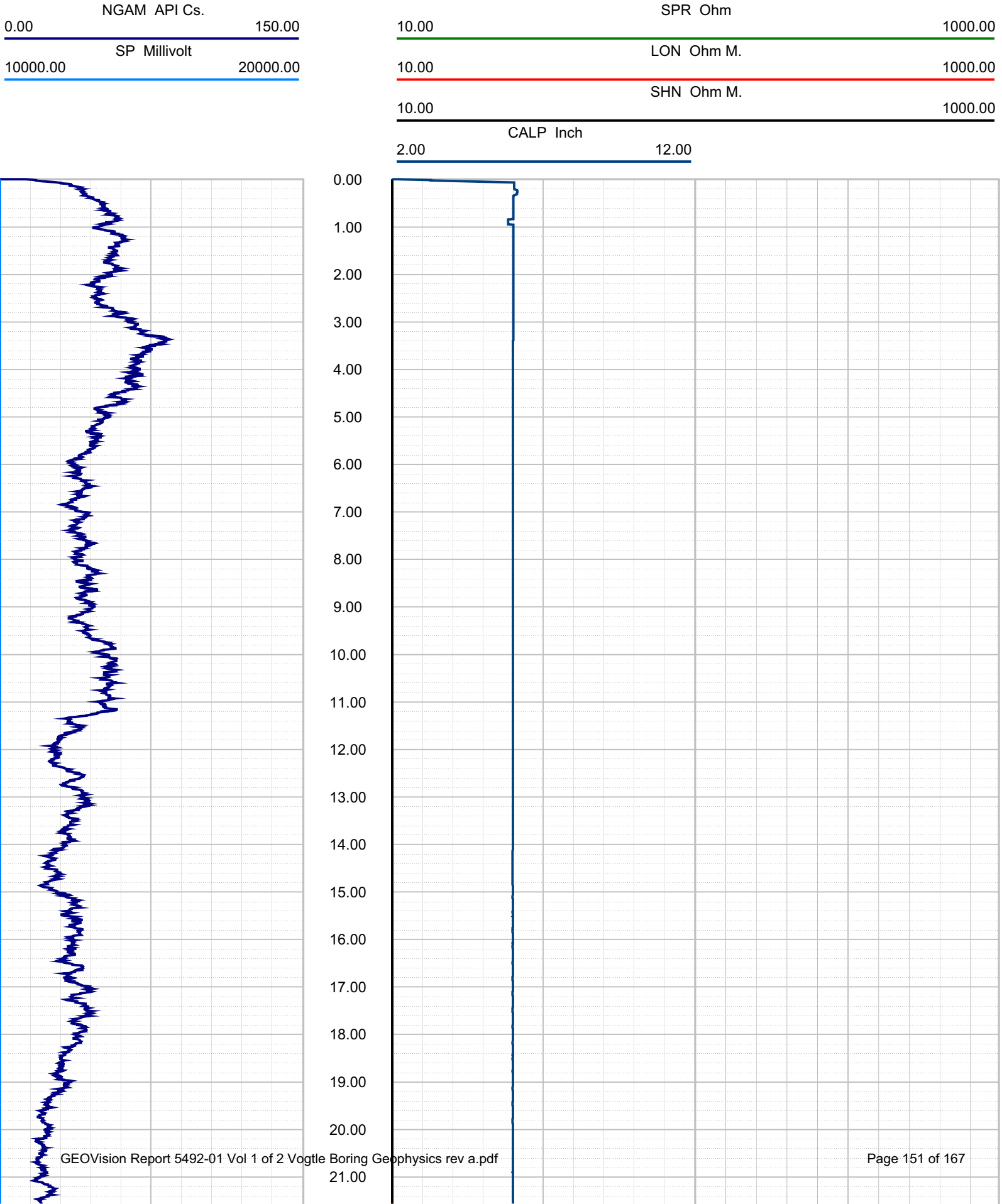
REMARKS (C:\Data\PSwork.ing\Vogtle\B1004\B1004 all log.hed)

COMPANY	GEOVision	OTHER SERVICES
WELL	B-1004	
FIELD		
COUNTRY		
STATE	GA	
COUNTY		
LAT.:		
LONG.:		

Perm. Da..	Elev	KB	0.00
Log. Datum		DF	0.00
Drill Datum		GL	0.00

DATE	04 Oct 05	4 Oct 05	18 Dec 05
RUN#	1	2	0
TYPE OF LOG	Caliper / Nat. Ga..	ELOG	
DEPTH DRILLER	92.05	92.05	0.00
DEPTH LOGGER	92.50	92.50	0.00
LOG DEEPEST	92.50	92.50	0.00
LOG SHALLOW	0.00	36.00	0.00
FLUID IN HOLE	Bentonite drilling..	Bentonite drilling..	
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	Rob Steller	Rob Steller	
WITNESSED BY	Matt Cooke	Matt Cooke	

RUN#	BIT RECORD			CASING RECORD			
	SIZE	FROM	TO	SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00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SP Millivolt
10000.00
20000.00
SPR Ohm
10.00
1000.00
LON Ohm M.
10.00
1000.00
SHN Ohm M.
10.00
1000.00
CALP Inch
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12.00
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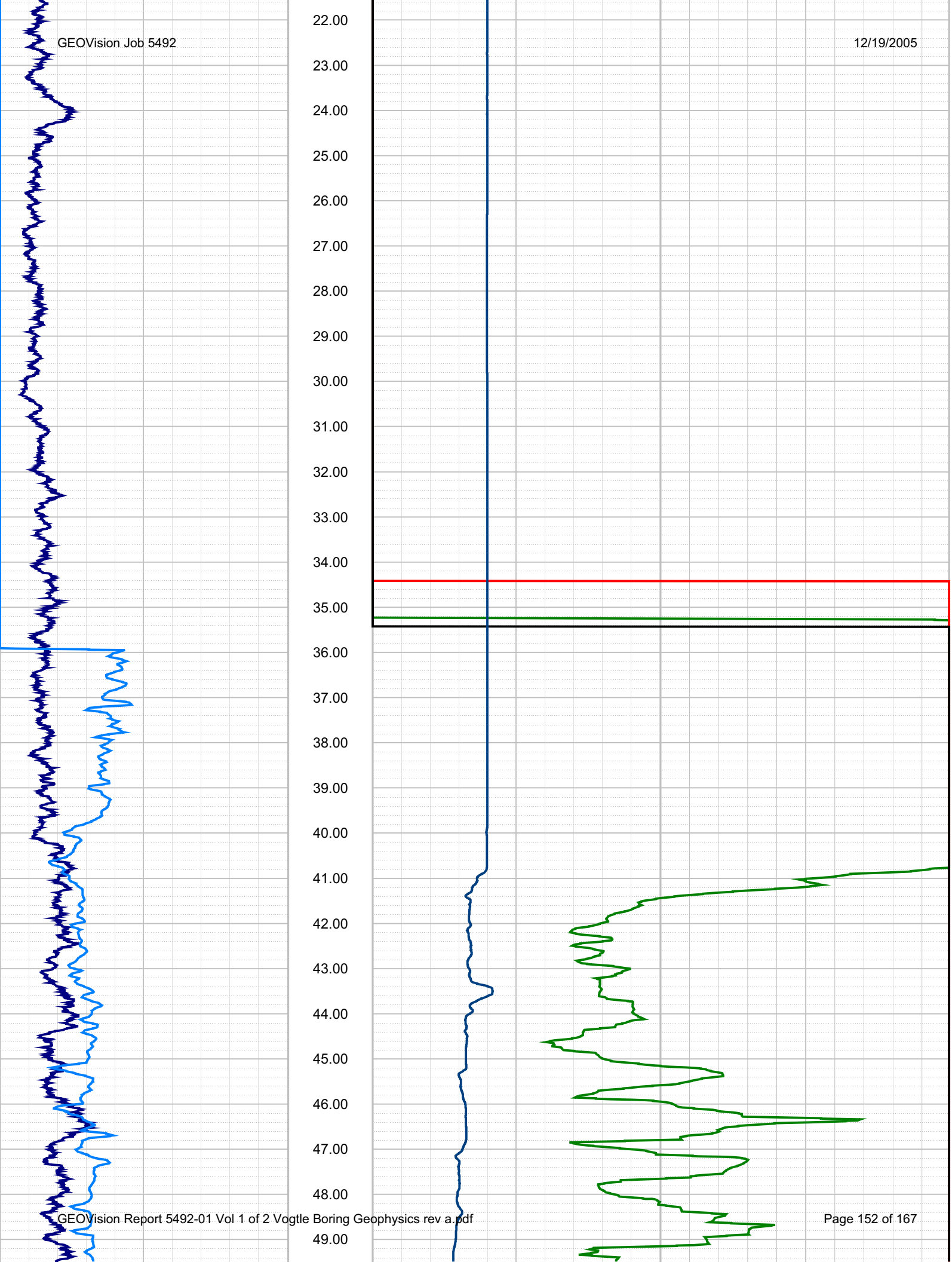
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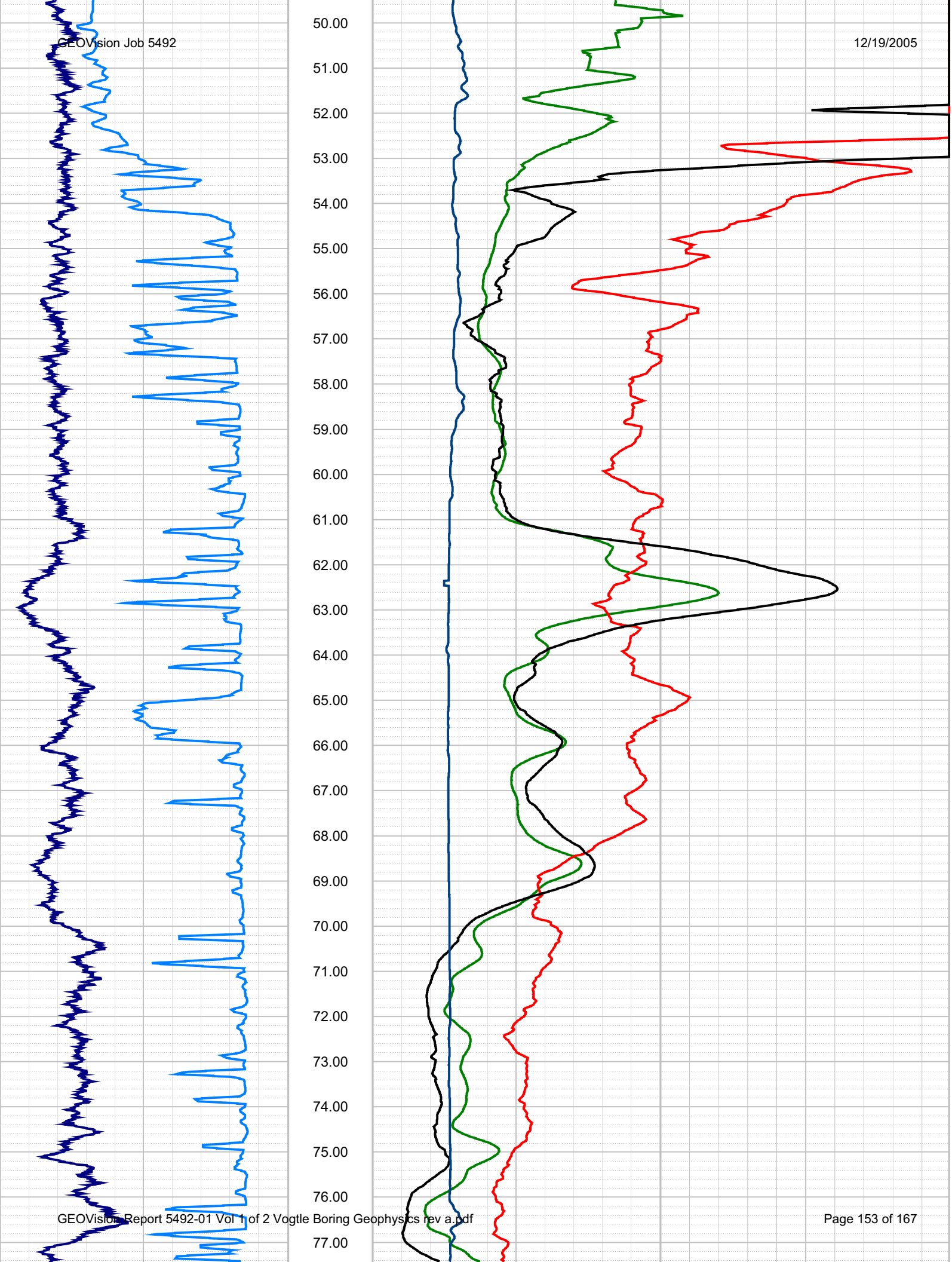
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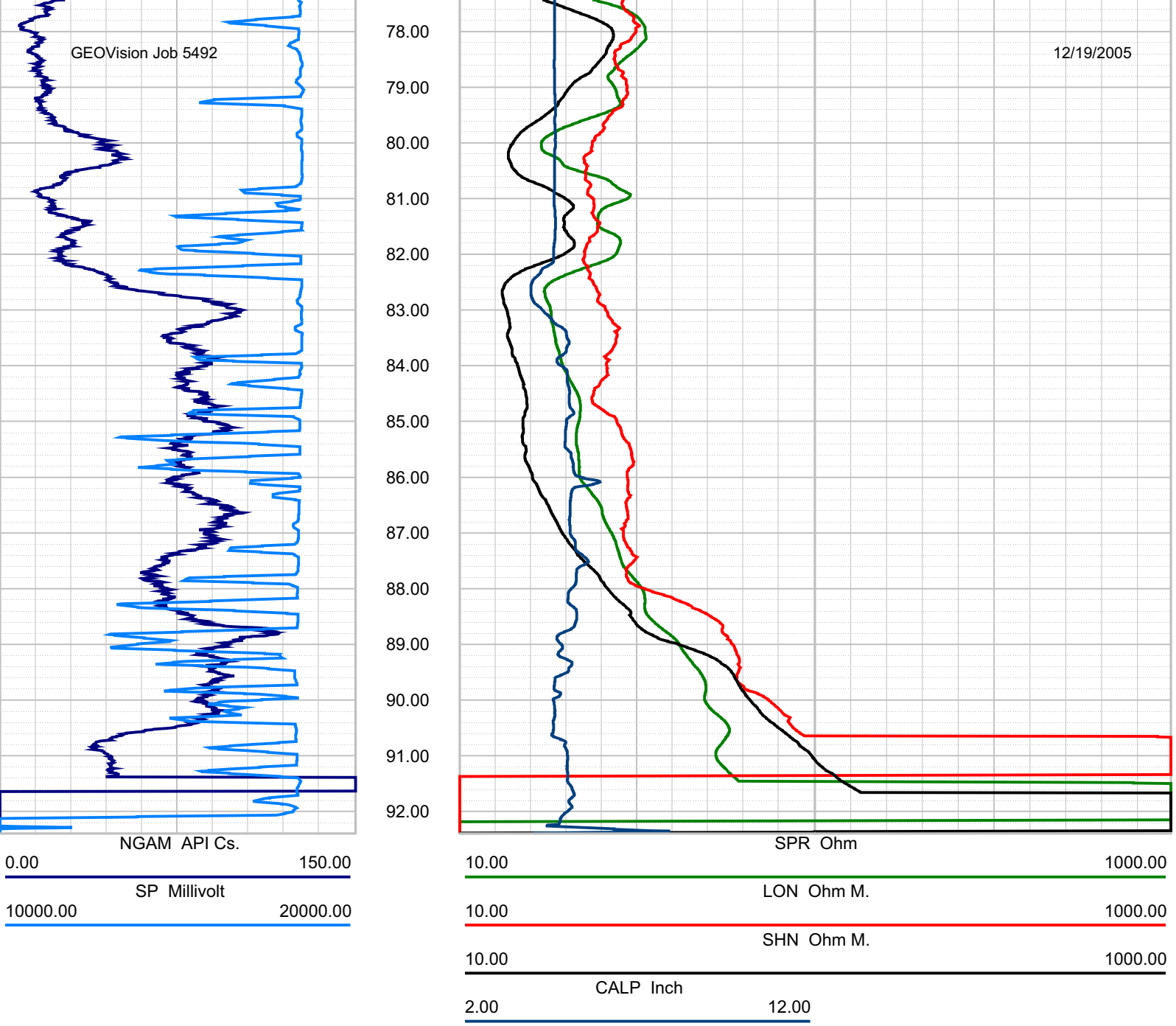
GEOVision Job 5492
12/19/2005
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80.00
81.00
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85.00
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87.00
88.00
89.00
90.00
91.00
92.00
NGAM API Cs.
0.00
150.00
SP Millivolt
10000.00
20000.00
SPR Ohm
10.00
1000.00
LON Ohm M.
10.00
1000.00
SHN Ohm M.
10.00
1000.00
CALP Inch
2.00
12.00

APPENDIX F

CALIPER, NATURAL GAMMA, RESISTIVITY, AND SPONTANEOUS POTENTIAL FIELD DATA SHEETS

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BORING GEOPHYSICS FIELD LOG

SITE: VOGTLE B-1002 DATE: 9/22/05, 9/23/05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 1 OF 2

CONTACT: _____ OFFICE PHONE: _____
PHONE: _____
CONTACT: _____ OFFICE PHONE: _____
PHONE: _____
CONTACT: _____ PHONE: _____
PHONE: _____
CONTACT: _____ PHONE: _____
PHONE: _____
DRILLER: _____ PHONE: _____
COMPANY: _____ PHONE: _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

EA#: _____
BOREHOLE DESIGNATION: B-1002 LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED ____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 5" 0 TO 133.5'; 4", 133.5' TO 260'
BOREHOLE TOTAL DEPTH AS DRILLED: 260'
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 88.5 (RUN 1); NO ____ (RUN 2)
DEPTH TO BEDROCK: NA DEPTH TO WATER TABLE: ≈80'
BOREHOLE FLUID: WATER ____; FRESH WATER MUD ✓; SALT WATER MUD ____;
OTHER: _____
DEPTH TO BOREHOLE FLUID: _____ TIME SINCE LAST CIRCULATION: 1/2 HR

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SITE: VOGTLE B-1002 DATE: 9/22/05, 9/23/05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 2

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED____; BLUE____; WHITE RENTAL
MOBILIZED FROM: DEPARTURE TIME:
ARRIVED ON SITE: 10:00
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
DEMOBILIZED TO: ARRIVAL TIME:
ADDITIONAL DEMOB TIME: REASON:

WINCH COMPROBE____ SILVER ✓ OYO____

RUN	S/N	FILE NAME	TOOL LEN	STICKUP	DEPTH REF.
CAL 1	2915	B1002 CAL RUN1	2.08 m	Ø	2.08↓ 2.10↑
ELOG 1	3040	B1002 ELOG RUN 1	2.50 m	Ø	2.50↓ 2.50↑
ELOG 2	3040	B1002 ELOG RUN 2	2.50 m	Ø	2.50↓ 2.50↑

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS:

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BORING GEOPHYSICS FIELD LOG

SITE: VOGTLE B-1003 DATE: 10/ 3 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 1 OF 2

CONTACT: _____ OFFICE PHONE: _____
_____ PHONE: _____
CONTACT: _____ OFFICE PHONE: _____
_____ PHONE: _____
CONTACT: _____ _____ PHONE: _____
_____ PHONE: _____
CONTACT: _____ _____ PHONE: _____
_____ PHONE: _____
DRILLER: _____ _____ PHONE: _____
COMPANY: _____ _____ PHONE: _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

EA#: _____
BOREHOLE DESIGNATION: B-1003 LOCATION: _____
COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED ____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 5" 0 TO 1074' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED: 1074'
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 88' ; NO ____ 6" PVC SCH 40
DEPTH TO BEDROCK: 1049' DEPTH TO WATER TABLE: _____
BOREHOLE FLUID: WATER ____ ; FRESH WATER MUD ✓ ; SALT WATER MUD ____ ;
OTHER: _____
DEPTH TO BOREHOLE FLUID: _____ TIME SINCE LAST CIRCULATION: 3 HR.

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SITE: VOGTLE B-1003 DATE: 10 / 3 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 2

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED_____; BLUE_____; WHITE RENTAL
MOBILIZED FROM:_____ DEPARTURE TIME:_____
ARRIVED ON SITE: 08:00
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
DEMOBILIZED TO:_____ ARRIVAL TIME:_____
ADDITIONAL DEMOB TIME:_____ REASON:_____

WINCH COMPROBE_____ SILVER ✓ OYO_____

RUN	S/N	FILE NAME	TOOL LEN	STICKUP	DEPTH REF.
CAL 1	2915	B1003CAL RUN 1	2.08 m	Ø	2.08↓ 2.01↑
ELOG 1	3040	B1003ELOG RUN1 - DATA LOST	2.50 m	Ø	2.50↓ 2.46↑
DEN 1	5174	B1003 HIRAT RUN1	—	Ø	Ø↓ 0.04↑

MAINTENANCE PERFORMED ON SITE: HIRAT CHECKED: HORIZONTAL = 89°, BRUNTON 89°
VERT HANGING = 0.1°
HIRAT COMPASS S = 179° TO BRUNTON 180° (MAGNETIC)
" " N = 4.7° TO BRUNTON 0° (MAGNETIC)
EQUIPMENT PROBLEMS OR FAILURES: B1003ELOG RUN 1 FILE OVER-WRITTEN & LOST.

SUGGESTIONS, ADDITIONS, CHANGES:_____

COMMENTS:_____

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BORING GEOPHYSICS FIELD LOG

SITE: VOGTLE B-1003 DATE: 10 / 3 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 1 OF 2

CONTACT: _____ OFFICE PHONE: _____
_____ PHONE: _____
CONTACT: _____ OFFICE PHONE: _____
_____ PHONE: _____
CONTACT: _____ _____ PHONE: _____
_____ PHONE: _____
CONTACT: _____ _____ PHONE: _____
_____ PHONE: _____
DRILLER: _____ _____ PHONE: _____
COMPANY: _____ _____ PHONE: _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

EA#: _____
BOREHOLE DESIGNATION: B-1003 LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED ____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 10" 0 TO 1065' ; _____, _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED: 1065'
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 88' ; NO ____
DEPTH TO BEDROCK: 1049' DEPTH TO WATER TABLE: _____
BOREHOLE FLUID: WATER ____ ; FRESH WATER MUD ✓ ; SALT WATER MUD ____ ;
OTHER: _____
DEPTH TO BOREHOLE FLUID: _____ TIME SINCE LAST CIRCULATION: 3 HR.

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SITE: VOGTLE B-1003 DATE: 10 / 3 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 2

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED ; BLUE ; WHITE RENTAL
MOBILIZED FROM: DEPARTURE TIME:
ARRIVED ON SITE:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
DEMOBILIZED TO: ARRIVAL TIME:
ADDITIONAL DEMOB TIME: REASON:

WINCH COMPROBE SILVER ✓ OYO

RUN	S/N	FILE NAME	TOOL LEN	STICKUP	DEPTH REF.
ELOG 2	3040	B1003 ELOG RUN 2	2.50m	Ø	2.50 & 2.44

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE

COMMENTS:

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BORING GEOPHYSICS FIELD LOG

SITE: VOGTLE B-1003 DEEP DATE: 11 / 10 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 1 OF 3 4

CONTACT: _____ OFFICE PHONE: _____
PHONE: _____
CONTACT: _____ OFFICE PHONE: _____
PHONE: _____
CONTACT: _____ PHONE: _____
PHONE: _____
CONTACT: _____ PHONE: _____
PHONE: _____
DRILLER: _____ PHONE: _____
COMPANY: _____ PHONE: _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

EA#: _____
BOREHOLE DESIGNATION: B-1003 LOCATION: _____
COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED ____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 6" 0 TO 1054 ; 5" 1054' TO 1338'
BOREHOLE TOTAL DEPTH AS DRILLED: 1338'
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 1054'; NO ____ 6" STEEL
DEPTH TO BEDROCK: 1049' DEPTH TO WATER TABLE: _____
BOREHOLE FLUID: WATER ____; FRESH WATER MUD ✓; SALT WATER MUD ____;
OTHER: _____
DEPTH TO BOREHOLE FLUID: _____ TIME SINCE LAST CIRCULATION: 3 HR

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SITE: VOGTLE B-1003 DEEP DATE: 11 / 10 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 4

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED_____; BLUE_____:WHITE RENTAL
MOBILIZED FROM:_____ DEPARTURE TIME:_____
ARRIVED ON SITE:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
STANDBY TIME:_____ CAUSE:_____
LOGGING STARTED:_____ LOGGING COMPLETED:_____
DEMOBILIZED TO:_____ ARRIVAL TIME:_____
ADDITIONAL DEMOB TIME:_____ REASON:_____

WINCH COMPROBE_____ SILVER ✓ OYO_____

RUN	S/N	FILE NAME	TOOL LEN	STICKUP	DEPTH REF.
CAL 2	2915	B1003 CAL RUN 2	SEE	DRAWING	PG 3
ELOG 3	3040	B1003 ELOG RUN 3	SEE	DRAWING	PG 4

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: NONE

SUGGESTIONS, ADDITIONS, CHANGES: NONE.

COMMENTS: BORING OBSTRUCTED @ 1324'

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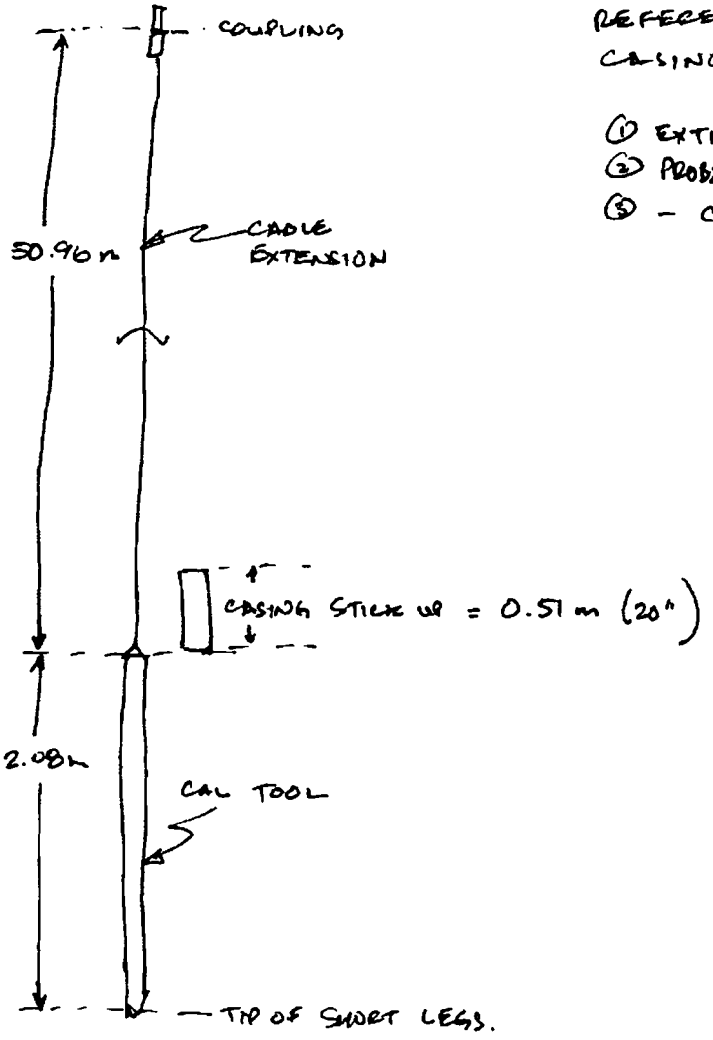
BORING GEOPHYSICS FIELD LOG

SITE: VOGTLE B-1003 DEEP DATE: 11 / 10 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 3 OF 4

CALIPER RUN 2 DEPTH REF.



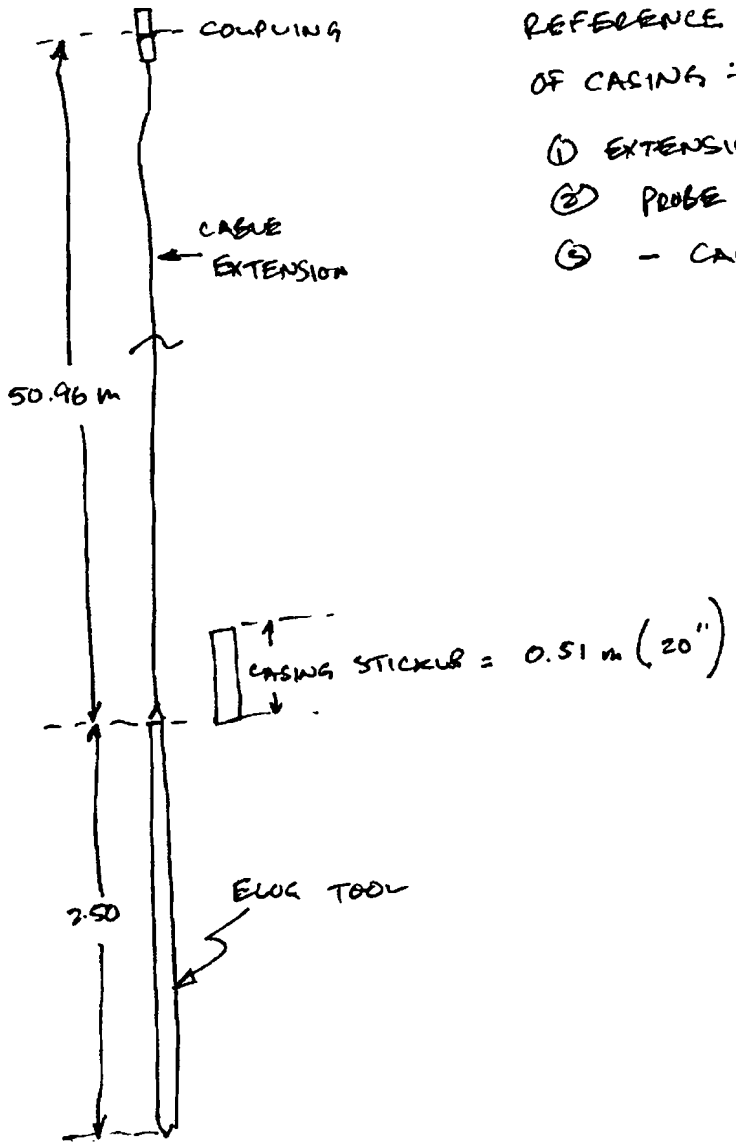
REFERENCE COUPLING AT TOP OF CASING : OFFSET =

① EXTENSION LENGTH	50.96 m
② PROBE LENGTH	2.08 m
③ − CASING STICK-UP	−0.51 m
	52.53 m ↓
OR	172.34 ft ↓
	52.43 ↑
OR.	172.01 ↑

BORING GEOPHYSICS FIELD LOG

SITE: VOGTLE B-1003 DEEP DATE: 11 / 10 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 4 OF 4

ELOG RUN 3 DEPTH REF.



REFERENCE COUPLING AT TOP OF CASING : OFFSET =

① EXTENSION LENGTH 50.96 m
② PROBE LENGTH 2.50 m
③ - CASING STICKUP - 0.51 m

52.95 m ↓
or 173.72 ft ↓

52.80 m ↑
173.23 ft ↑

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BORING GEOPHYSICS FIELD LOG

SITE: VOGTLE B-1004 DATE: 10/4/05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 1 OF 2

CONTACT: OFFICE PHONE:
PHONE:
CONTACT: OFFICE PHONE:
PHONE:
CONTACT: PHONE:
PHONE:
CONTACT: PHONE:
PHONE:
DRILLER: PHONE:
COMPANY: PHONE:

DIRECTIONS TO SITE:

GENERAL SITE CONDITIONS/LOCATION:

EA#:
BOREHOLE DESIGNATION: B-1004 LOCATION:

COUNTY: RANGE: TOWNSHIP: SECTION:
BOREHOLE CONSTRUCTION: CASED ____ UNCASED ✓
DIAMETERS AND DEPTH RANGES: 4" 0 TO 302' ; ____ TO ____
BOREHOLE TOTAL DEPTH AS DRILLED: 302'
CONDUCTOR CASING?: YES ✓ DEPTH TO BOTTOM OF CASING 135'; NO ____
DEPTH TO BEDROCK: NA DEPTH TO WATER TABLE: ____
BOREHOLE FLUID: WATER ____; FRESH WATER MUD ____; SALT WATER MUD ____;
OTHER:
DEPTH TO BOREHOLE FLUID: ____ TIME SINCE LAST CIRCULATION: 1/2 HR

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SITE: VOGTLE B-1004 DATE: 10 / 4 /05
CLIENT: MACTEC JOB: 5492
AUTHOR: R. STELLER PAGE 2 OF 2

LOGGING CREW: R. STELLER
VEHICLE(S) USED AND MILEAGE: RED____; BLUE____; WHITE RENTAL
MOBILIZED FROM: DEPARTURE TIME:
ARRIVED ON SITE:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
STANDBY TIME: CAUSE:
LOGGING STARTED: LOGGING COMPLETED:
DEMOBILIZED TO: ARRIVAL TIME:
ADDITIONAL DEMOB TIME: REASON:

WINCH COMPROBE____ SILVER ✓ OYO____

RUN	S/N	FILE NAME	TOOL LEN	STICKUP	DEPTH REF.
CAL 1		B1004 CAL RUN 1	2.08 m	Ø	2.08↓ 2.07↑
ELOG 1	3040	B1004 ELOG RUN 1	2.50 m	Ø	2.50↓ 2.50↑
ELOG 2	3040	B1004 ELOG RUN 2	2.50 m	Ø	2.50↓ 2.50↑
ELOG 3	3040	B1004 ELOG RUN 3	2.50 m	Ø	2.50↓ 2.50↑
ELOG 4	3040	B1004 ELOG RUN 4	2.50 m	Ø	2.50↓ 2.50↑

MAINTENANCE PERFORMED ON SITE: NONE

EQUIPMENT PROBLEMS OR FAILURES: ALL ELOG RUNS SHOW ANOMOLOUS RESULTS ON SP, QUESTIONABLE RESISTIVITY - SEVERAL GROUND CABLES OBSERVED RUNNING FROM NEAR POWER POLES.

SUGGESTIONS, ADDITIONS, CHANGES:

COMMENTS: CAL HIT BOTTOM @ 92.7 m
ELOG " " @ 92.7 m

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APPENDIX D

FIELD PERMEABILITY TESTING

Narrative of Field Activities
Table of Test Results
Permeability Test Reports
Drilling Logs
Well Construction Logs

FIELD PERMEABILITY TESTING

During the week of September 26 through September 30, 2005, MACTEC conducted in-situ hydraulic conductivity testing in the fifteen new observation wells installed at Plant Vogtle, OW-1001 through OW-1015. A replacement well for OW-1001, was subsequently installed by MACTEC on October 11, 2005. MACTEC developed this well, OW-1001A, on October 13, 2005 and conducted in-situ hydraulic conductivity tests in this well on October 14, 2005. All of these field permeability tests, commonly called "slug tests", were conducted in accordance with Section 8 of ASTM D 4044. Generally, two tests were performed for each well, utilizing both falling head ("slug-in") and rising head ("slug-out") tests to evaluate the hydraulic conductivity of the aquifers screened.

As indicated in Table 1, OW wells 01A, 03, 05, 06, 07, 09, 10, 12, 13, and 15 are screened in the surficial unconfined water table aquifer. The surficial aquifer extends from the water table to the glauconitic silty clay marl confining unit. In these borings, the top of the marl was encountered from 85 to 165 feet below the ground surface (bgs), 132 to 96 feet MSL. The thickness of the marl was quite variable, as recorded in the deeper OW wells, and ranged from 37 to 116 feet thick. OW wells 02, 04, 08, 11, and 14 are screened in the confined sand aquifer beneath the marl. The average thickness of the confined aquifer was estimated to be 200 feet.

Each set of tests were performed in the following manner. The static water level and total depth was measured and recorded immediately prior to conducting the pair of tests (rising and falling head) at each observation well. An InSitu miniTROLL pressure transducer was then placed in the well, at a safe distance below the surface of the water. The accuracy of these transducers is certified to NIST traceable standards. Prior to use, the transducer was field calibrated daily by zeroing the transducer in the open air and monitoring for drift. The transducers zeroed accurately and no drift was observed.

A falling head test was performed by the "instantaneous" insertion of a mechanical slug made of solid PVC rod into the water column of the well, thus raising the water level in the well. This positive displacement of the water head level and subsequent falling of the head back toward the initial static water level (SWL) was internally logged by the pressure transducer and uploaded to a laptop computer via a communications cable. Once the falling head test was complete, a rising head test was conducted. The rising head test was performed by the "instantaneous" removal of the slug, thus lowering the water level in the well. This negative displacement of the water head level and subsequent rise back toward the initial static water level (SWL) was logged by the transducer and uploaded to a lap top computer.

The head displacement versus time data acquired from the field permeability tests was analyzed, using AQTESOLV for Windows, Version 2.0, to estimate the hydraulic conductivity (K) of the aquifer by the Bower and Rice slug test methodology. A data report containing the information required by Section 9 of ASTM D 4044 was prepared presenting the results of each field permeability test. These individual slug test reports are provided herein, along with the boring logs and well construction logs for each well. It should be noted that the screened interval presented on the field permeability test reports is the effective screened interval. The potential effective screened interval consists of the screen length plus the additional extent of the filter pack. However, when sections of very low permeability materials, or impermeable materials, are present within the screened interval, along with sections of material of significantly higher permeability, the effective screened interval must be reduced to equal the thickness of the higher permeability material. For example: if the slotted screen length is 10 feet and the filter pack extends 4 feet above this screen, the potential effective screened interval is 14 feet. However, if

this 14-foot interval consists of 5 feet of clay, 8 feet of sand and 2 feet of marl, the actual effective screened interval will be only 8 feet. This is because the flow of water through the clay or marl will be insignificant compared to the flow through the sand. If the full 14-foot potential screened interval were used in the Bower and Rice equation, significant error in the calculation of K would result.

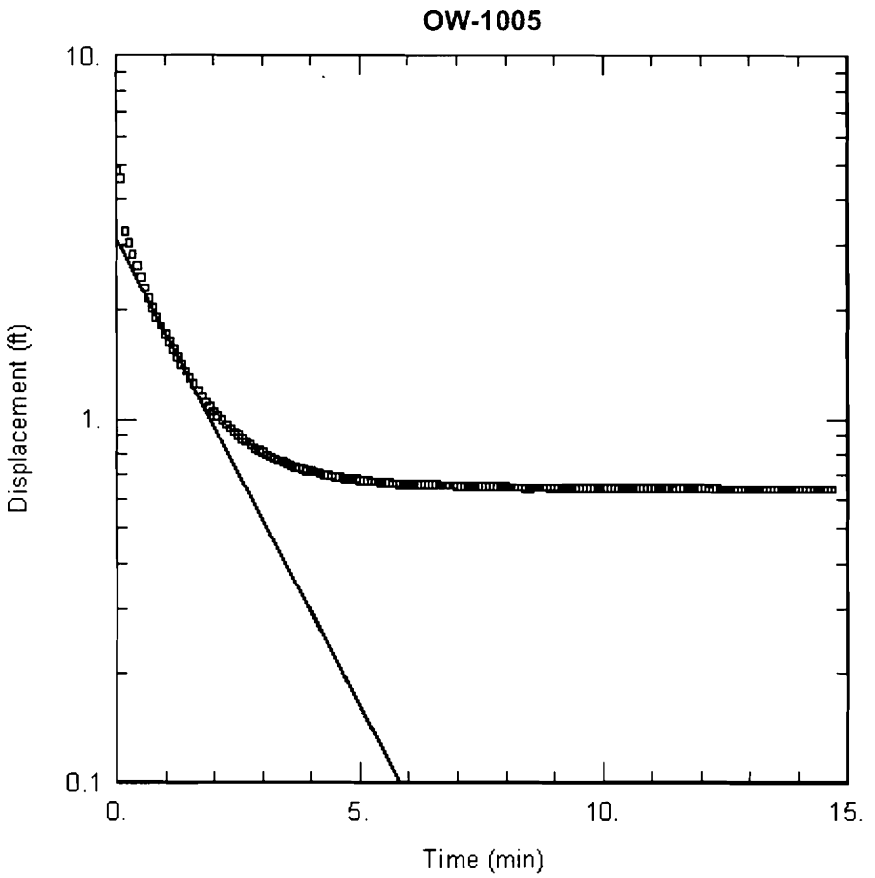
Table 1 summarizes the findings of each field permeability test and provides a calculation of the average hydraulic conductivity for each aquifer tested, i.e., the surficial unconfined aquifer and the confined aquifer, just beneath the surficial aquifer. It is noted that the hydraulic conductivities estimated using the Bower and Rice equation are very reasonable and correlate well with the type of soil logged over the effective screened interval. Where clayey sand or sandy clay is present, K is generally on the order of 10^{-5} centimeters per second (cm/s), whereas, where silty sands or sand and silt are present, K is generally on the order of 10^{-4} cm/s.

It is also noted that the K value calculated for OW-1001 was not included in Table 1 or in the calculation of the average K for the aquifer. This is because OW-1001 was either impacted by grout during installation or installed in the confining unit. OW-1001A was subsequently installed as a replacement for OW-1001. During the development of OW-1001A, the recovery was poor and development was difficult to complete. However, development of the saturated screened interval was considered adequate, as a total of 4½ well volumes of purge water and all of the sediment were removed from the well.

TABLE 1
Plant Vogtle
New Observation Wells
Field Permeability Test Results

Well ID	Lithology in the Screened Interval	Hydraulic Conductivity "K" (cm/s)		
		Falling Head Test	Rising Head Test	Average
Unconfined Aquifer				
OW-1001A	Sandy Clay	2.62E-05	NA	2.62E-05
OW-1003	Clayey Shell to Clayey Sand	5.26E-05	3.50E-05	4.38E-05
OW-1005	Silty Sand	1.63E-04	6.30E-05	1.13E-04
OW-1006	Fine Sand and Coarse Sand	4.63E-04	4.91E-04	4.77E-04
OW-1007	Silty Sand	8.82E-04	9.86E-04	9.34E-04
OW-1009	Silty Sand	2.77E-04	5.20E-04	3.99E-04
OW-1010	Sand and Clayey Silty Sand	3.69E-05	9.07E-05	6.38E-05
OW-1012	Sand and Silt	1.36E-04	1.39E-04	1.38E-04
OW-1013	Sand	1.45E-04	1.21E-04	1.33E-04
OW-1015	Clayey Sand and Sand	1.30E-04	1.78E-04	1.54E-04
		Unconfined Aquifer Average		2.48E-04
Confined Aquifer				
OW-1002	Silty Sand and Fine to Medium Sand	3.15E-04	3.18E-04	3.17E-04
OW-1004	Sand to Silty Sand	1.06E-04	1.44E-04	1.25E-04
OW-1008	Sand	8.19E-04	6.79E-04	7.49E-04
OW-1011	Silty Sand and Coarse Sand	4.32E-04	3.23E-04	3.78E-04
OW-1014	Silty Sand	2.29E-04	1.55E-04	1.92E-04
		Confined Aquifer Average		3.52E-04

Notes:
The field permeability tests were conducted in accordance with ASTM D 4044 -91 for Instantaneous Change in Head (Slug Tests). The Falling Head Test is commonly referred to as a "slug-in" test and the Rising Head Test is commonly referred to as a "slug-out" test.



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW05IN.AQT
Date: 01/06/06 Time: 15:33:32

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1005
Test Date: 9-29-05

AQUIFER DATA

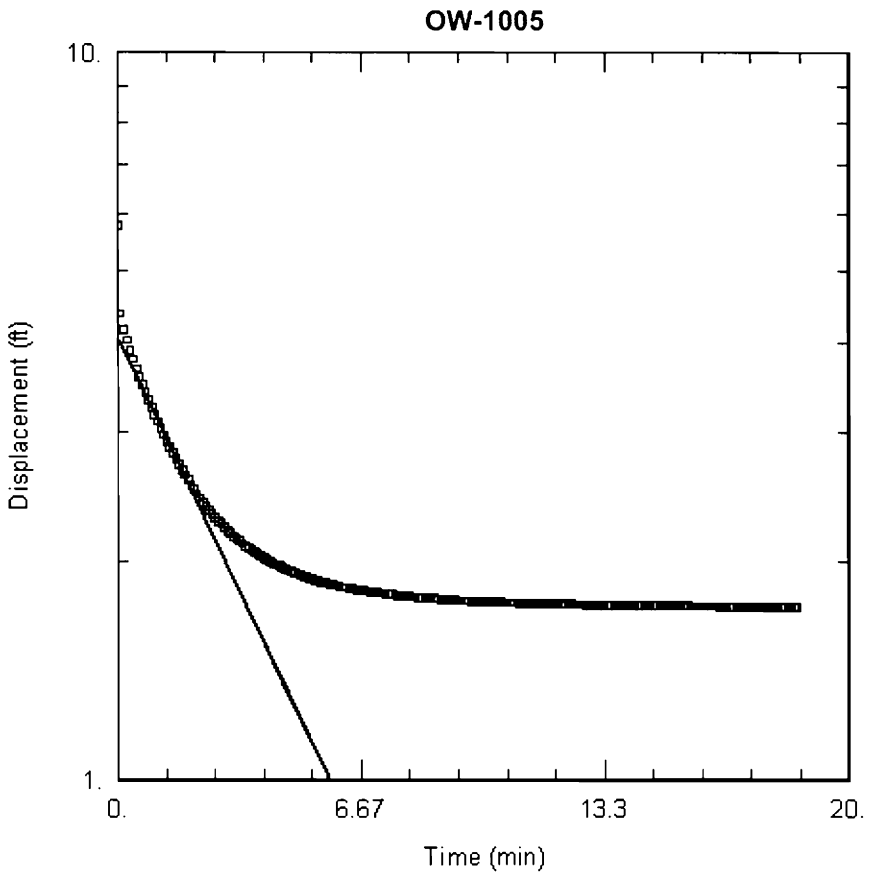
Saturated Thickness: 33.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.8 ft Water Column Height: 34.7 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 21.5 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0003213 ft/min = 1.63 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.109 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW05OUT.AQT
Date: 01/06/06 Time: 15:48:26

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1005
Test Date: 9-29-05

AQUIFER DATA

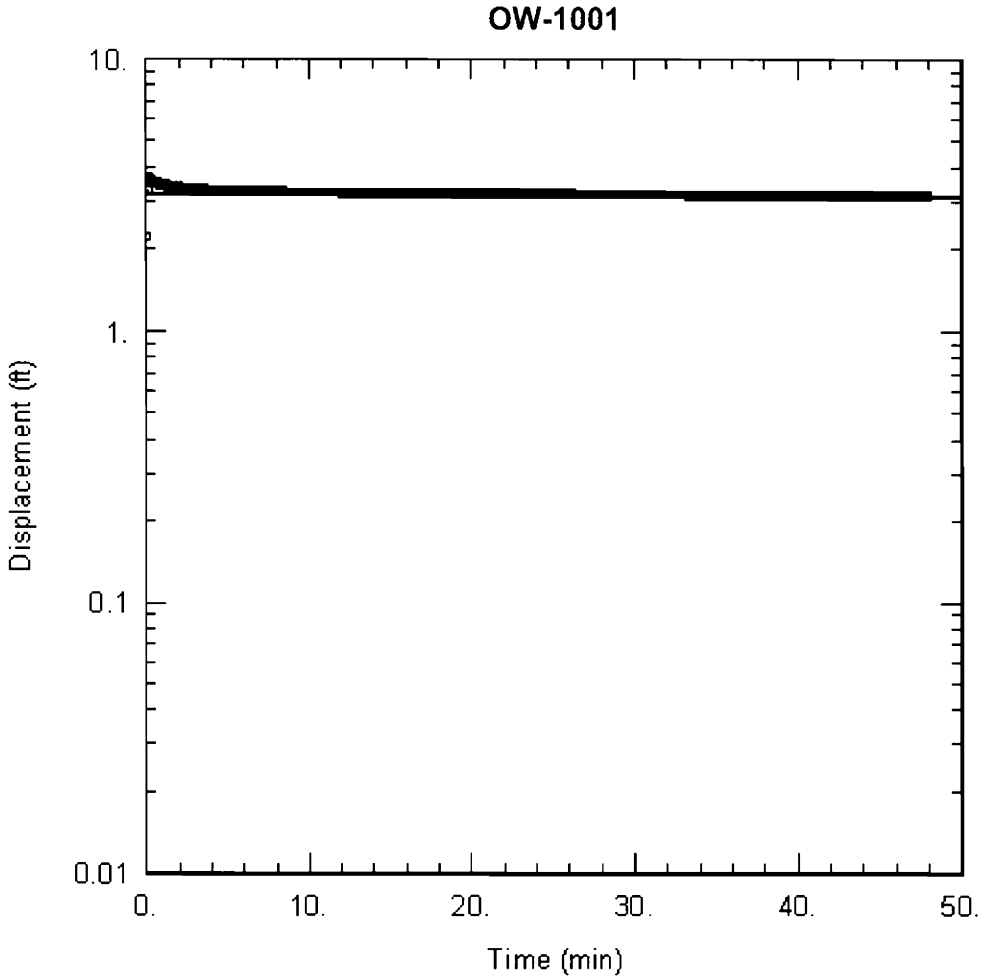
Saturated Thickness: 33.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.8 ft Water Column Height: 34.7 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 21.5 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0001324 ft/min = 6.30 x 10^{-5} cm/s
Solution Method: Bouwer-Rice y0 = 4.061 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW01IN.AQT
Date: 11/02/05 Time: 22:50:45

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1001
Test Date: 9-27-05

AQUIFER DATA

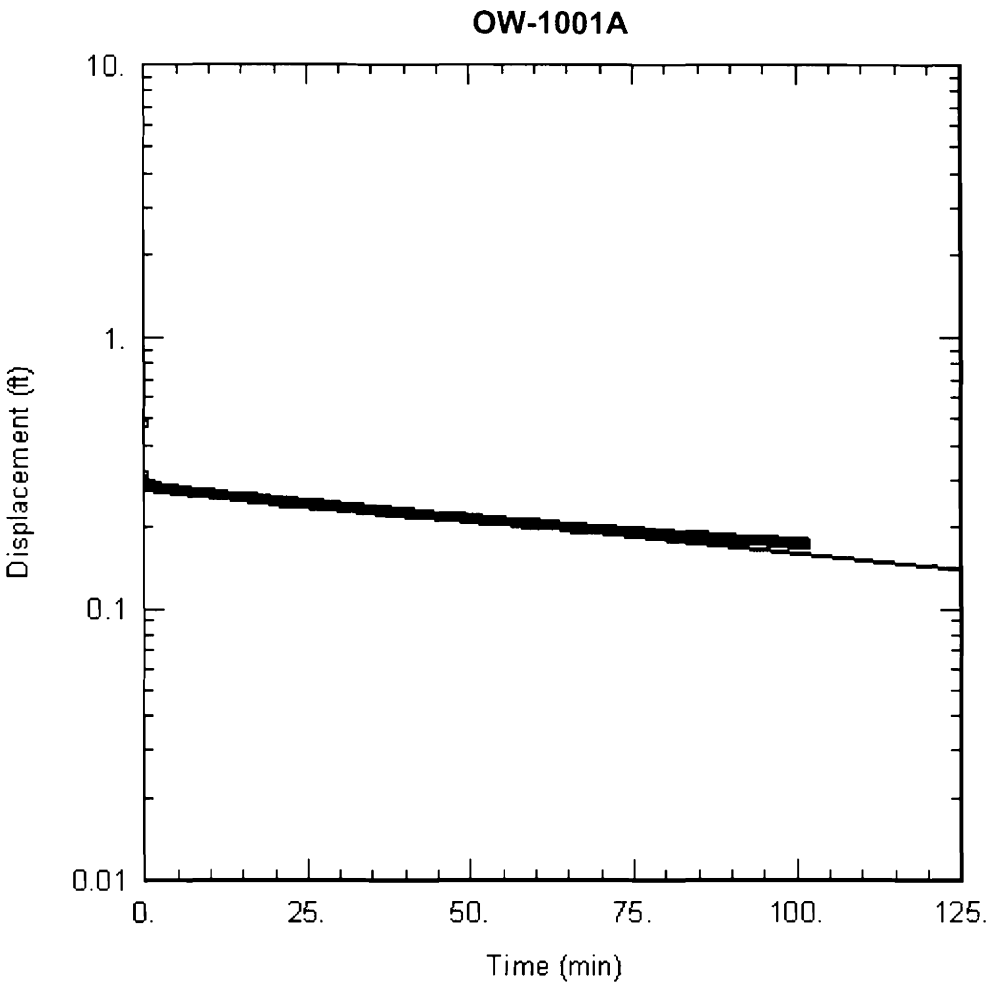
Saturated Thickness: 21.3 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.22 ft Water Column Height: 21.3 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 17. ft

SOLUTION

Aquifer Model: Unconfined K = 5.31E-07 ft/min = 2.70 x 10^{-7} cm/s
Solution Method: Bouwer-Rice y0 = 3.22 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW01AIN.AQT
Date: 11/02/05 Time: 22:46:03

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1001A
Test Date: 10-14-05

AQUIFER DATA

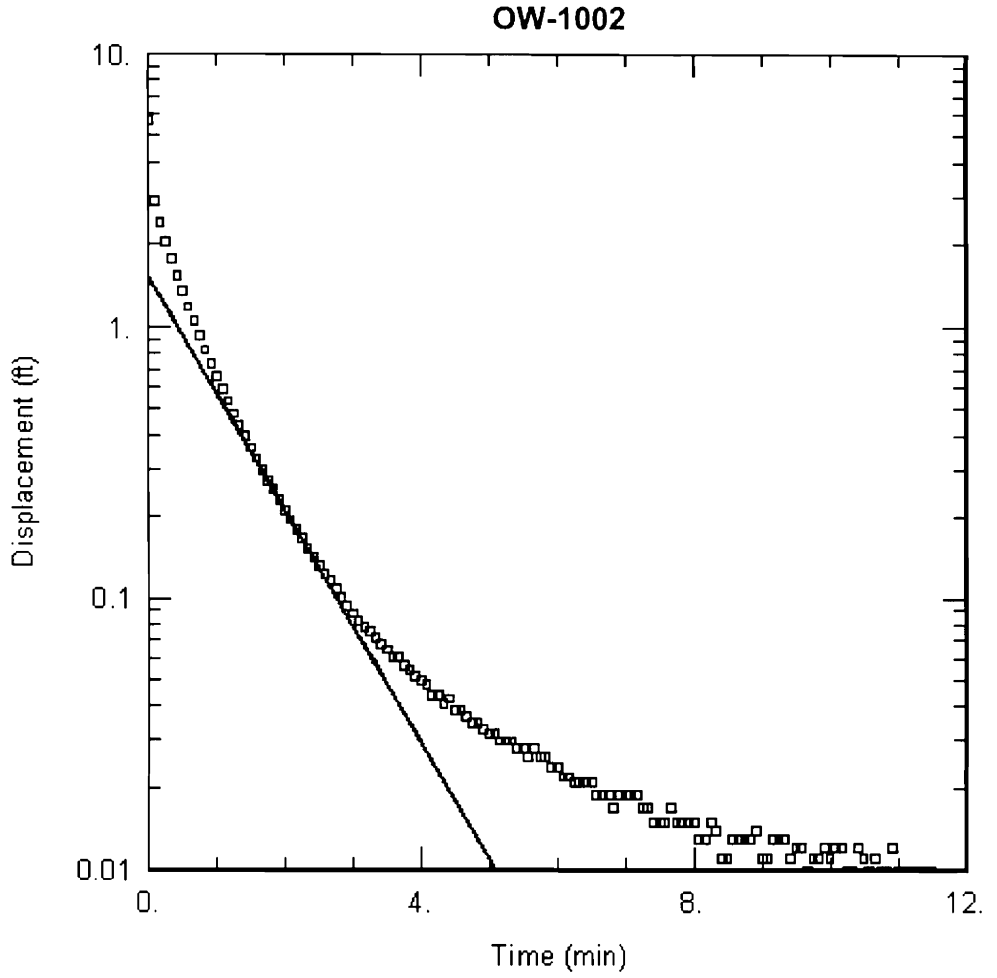
Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 0.481 ft
Casing Radius: 0.083 ft
Screen Length: 3.2 ft
Water Column Height: 3.2 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.156E-05 ft/min = 2.62 x 10^{-5} cm/s
y0 = 0.2843 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW02IN.AQT
Date: 11/11/05 Time: 15:04:56

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1002
Test Date: 9-27-05

AQUIFER DATA

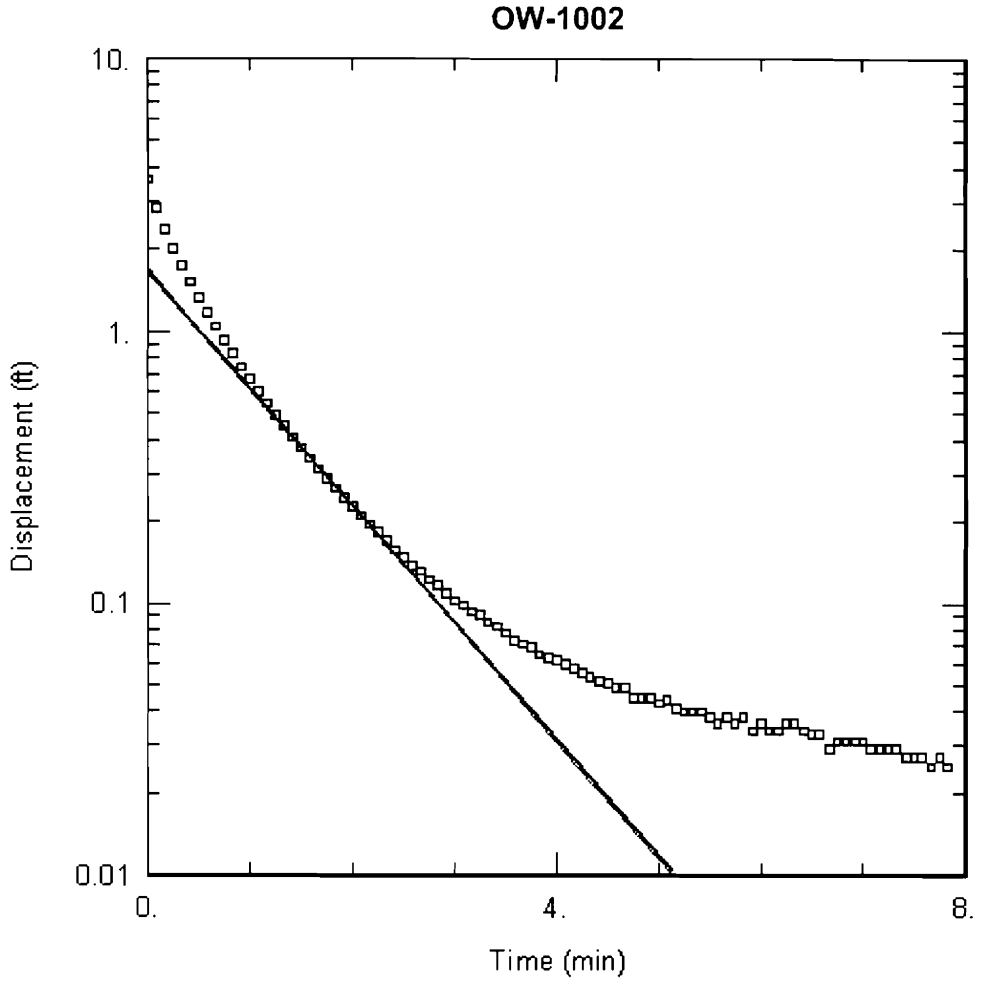
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.75 ft Water Column Height: 127.5 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 20.5 ft

SOLUTION

Aquifer Model: Confined K = 0.0006162 ft/min = 3.13×10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 1.545 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW02OUT.AQT
Date: 11/11/05 Time: 15:08:09

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1002
Test Date: 9-27-05

AQUIFER DATA

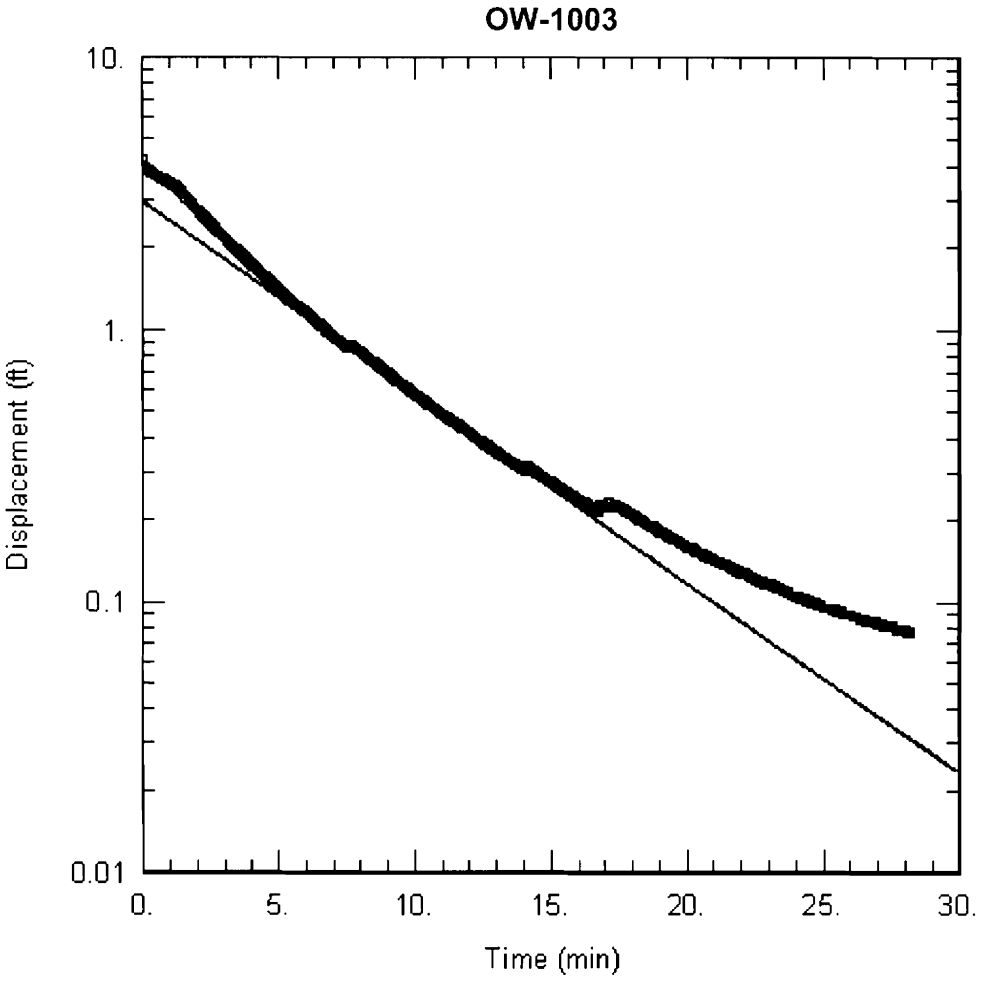
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.62 ft Water Column Height: 127.5 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 20.5 ft

SOLUTION

Aquifer Model: Confined K = 0.0006247 ft/min = 3.17 x 10^{-4}cm/s
Solution Method: Bouwer-Rice y0 = 1.694 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW03IN.AQT
Date: 11/10/05 Time: 15:19:24

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1003
Test Date: 9-27-05

AQUIFER DATA

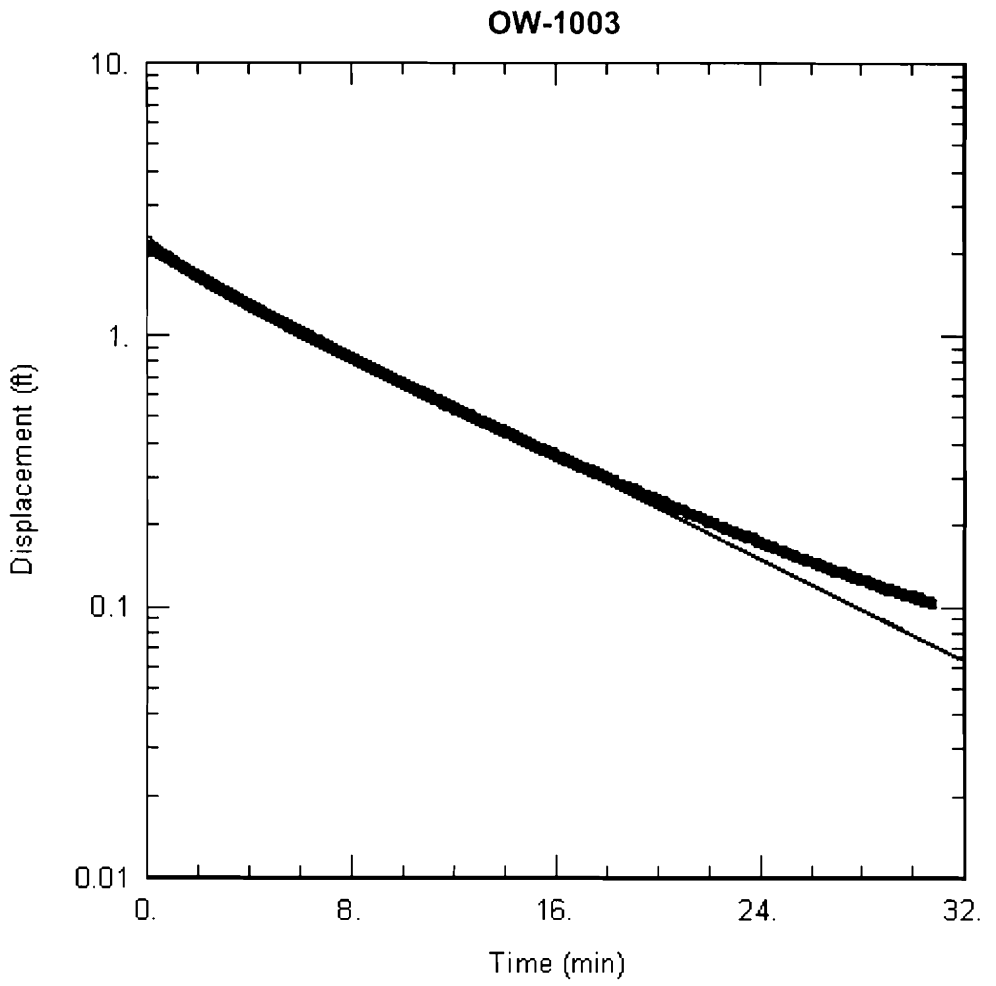
Saturated Thickness: 22.32 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.25 ft Water Column Height: 22.32 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 16.5 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0001036 ft/min = 5.26×10^{-5} cm/s
Solution Method: Bouwer-Rice y0 = 2.954 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW03OUT.AQT
Date: 11/10/05 Time: 15:28:44

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1003
Test Date: 9-27-05

AQUIFER DATA

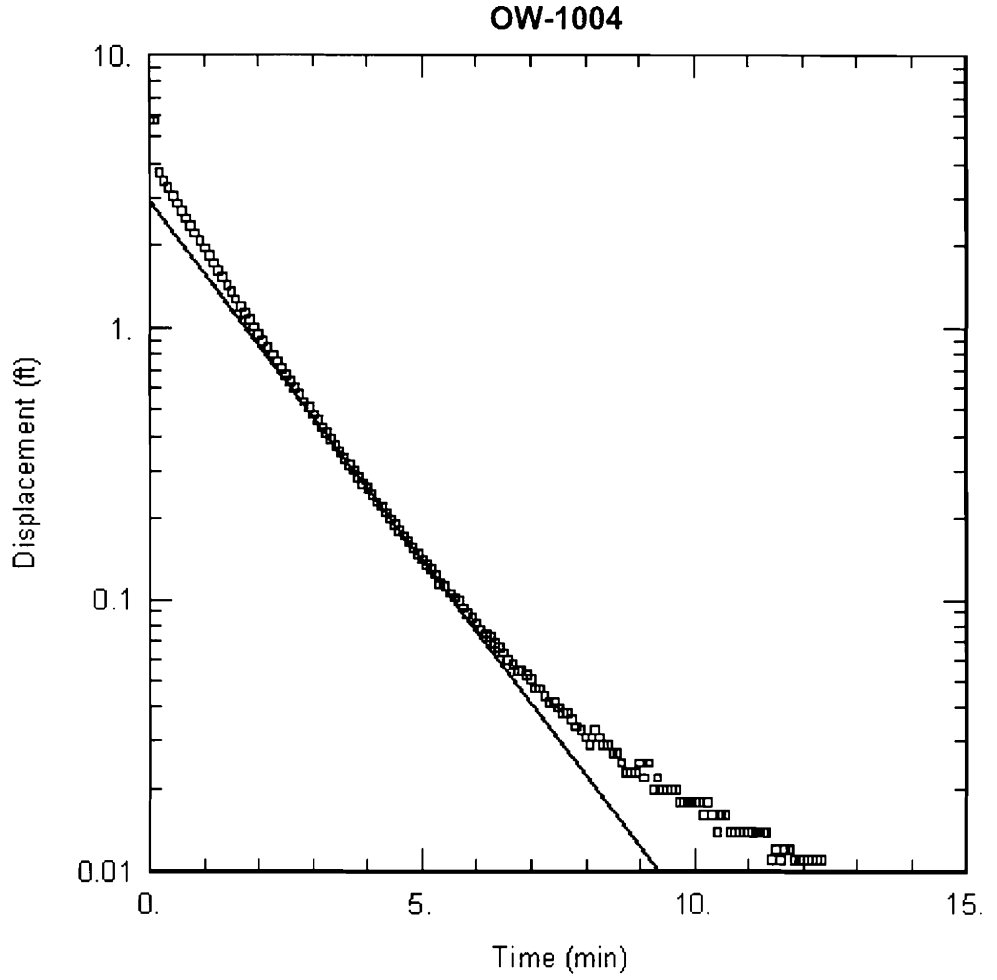
Saturated Thickness: 22.32 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.19 ft Water Column Height: 22.32 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 16.5 ft

SOLUTION

Aquifer Model: Unconfined K = 6.881E-05 ft/min = 3.50 x 10^{-5} cm/s
Solution Method: Bouwer-Rice y0 = 1.961 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW04IN.AQT
Date: 11/10/05 Time: 15:36:38

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1004
Test Date: 9-28-05

AQUIFER DATA

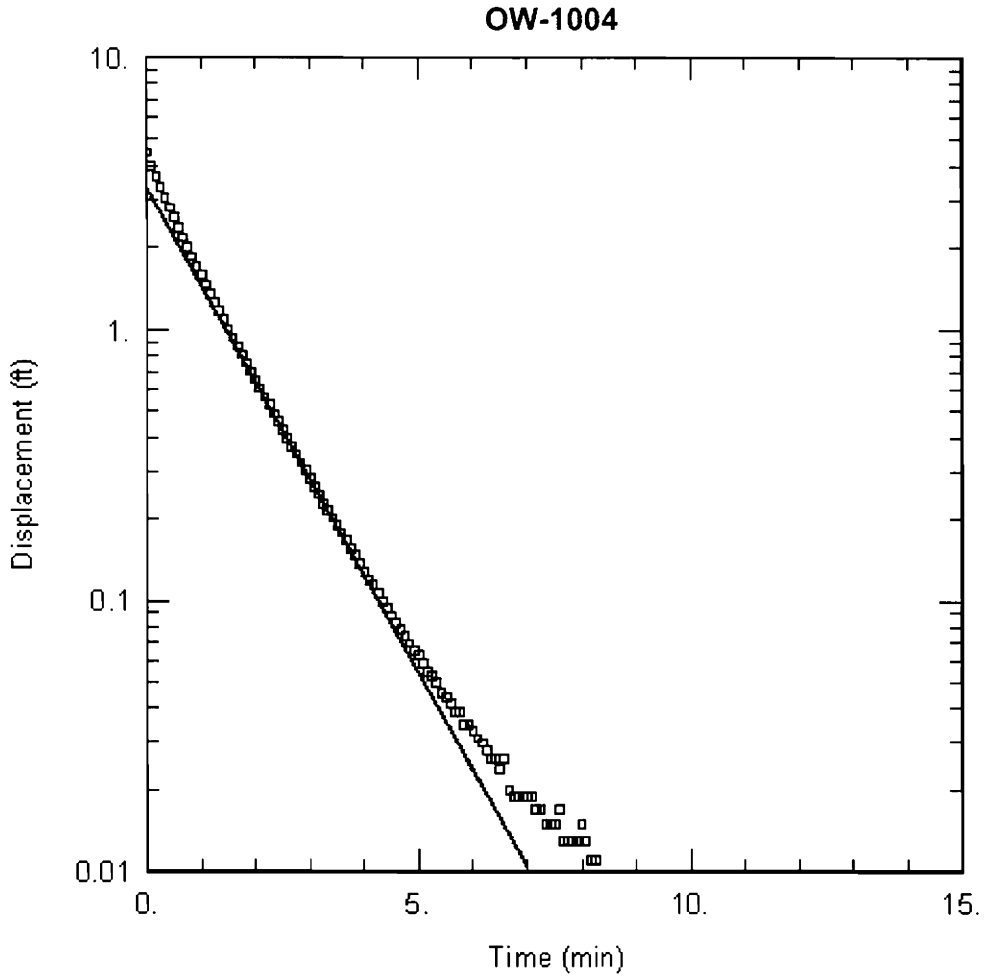
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.8 ft Water Column Height: 68.3 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 37. ft

SOLUTION

Aquifer Model: Confined K = 0.0002092 ft/min = 1.06 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 2.926 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW04OUT.AQT
Date: 11/10/05 Time: 15:44:48

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1004
Test Date: 9-28-05

AQUIFER DATA

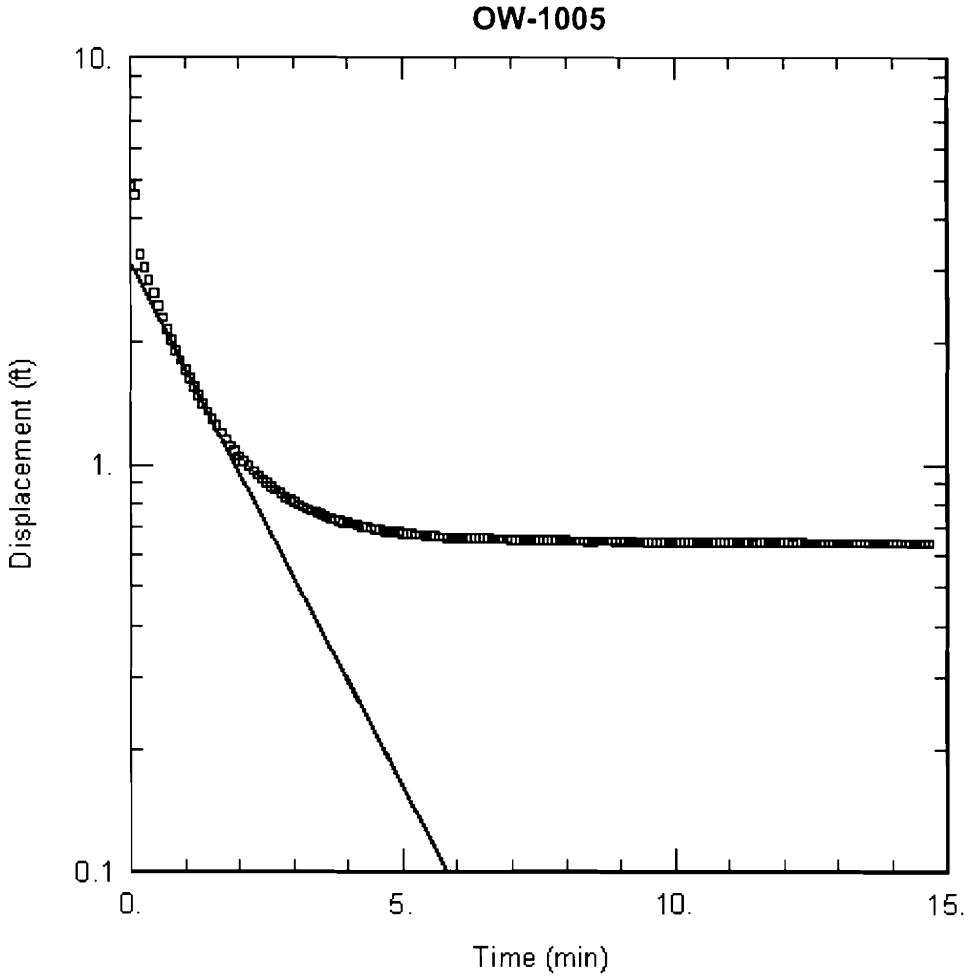
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.5 ft Water Column Height: 68.3 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 37. ft

SOLUTION

Aquifer Model: Confined K = 0.0002839 ft/min = 1.44 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.317 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW05IN.AQT
Date: 01/06/06 Time: 15:33:32

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1005
Test Date: 9-29-05

AQUIFER DATA

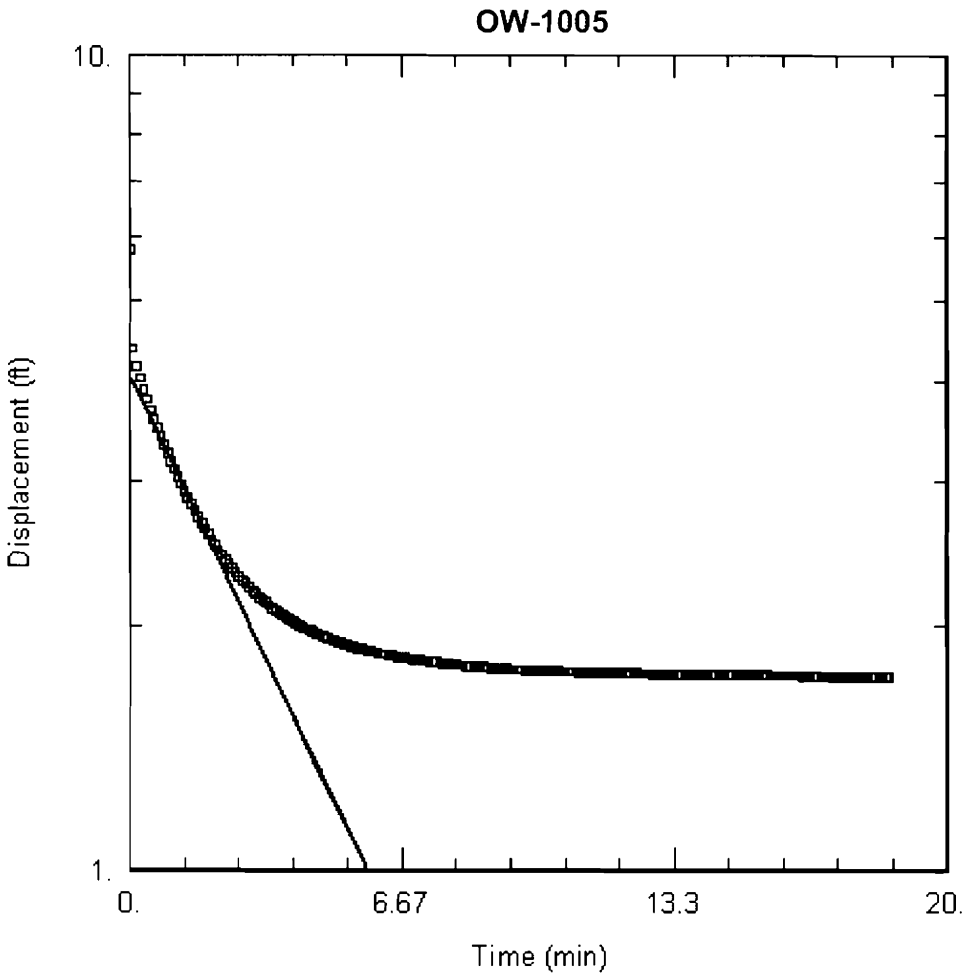
Saturated Thickness: 33.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.8 ft Water Column Height: 34.7 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 21.5 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0003213 ft/min = 1.63 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.109 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW05OUT.AQT
Date: 01/06/06 Time: 15:48:26

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1005
Test Date: 9-29-05

AQUIFER DATA

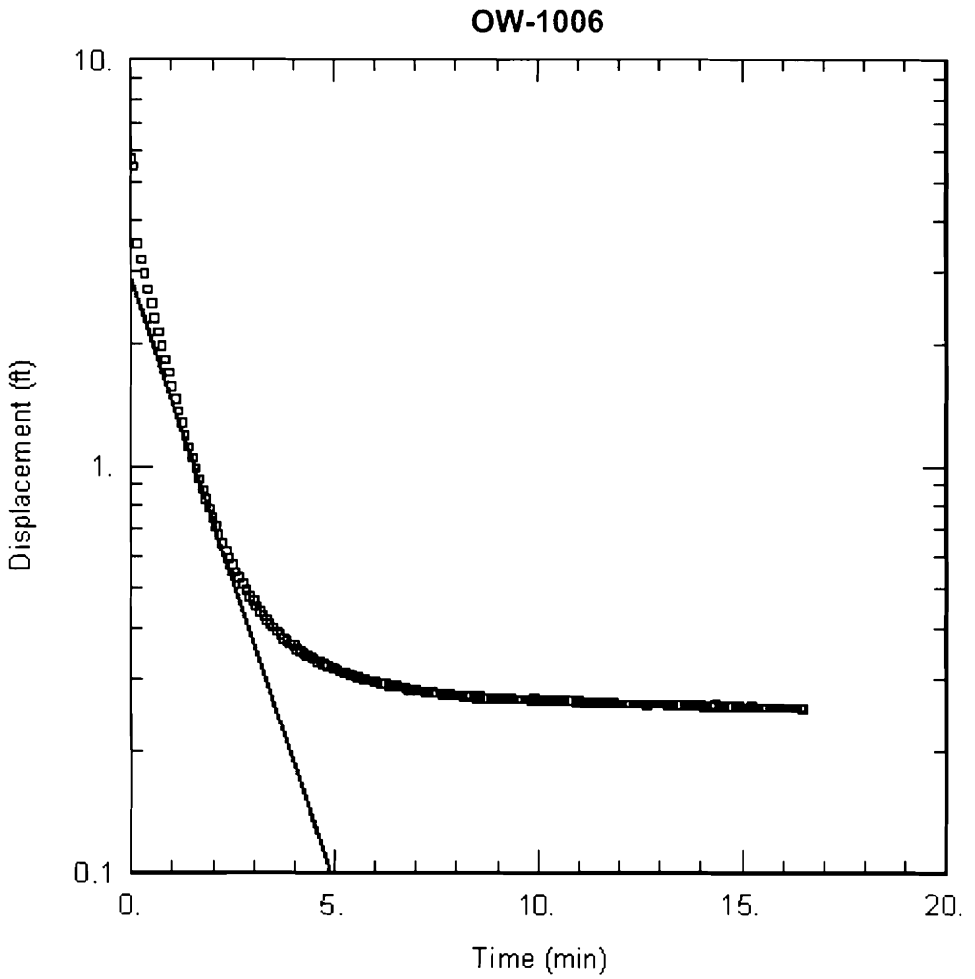
Saturated Thickness: 33.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.8 ft Water Column Height: 34.7 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 21.5 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0001324 ft/min = 6.30 x 10^{-5} cm/s
Solution Method: Bouwer-Rice y0 = 4.061 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW06IN.AQT
Date: 11/11/05 Time: 13:28:38

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1006
Test Date: 9-29-05

AQUIFER DATA

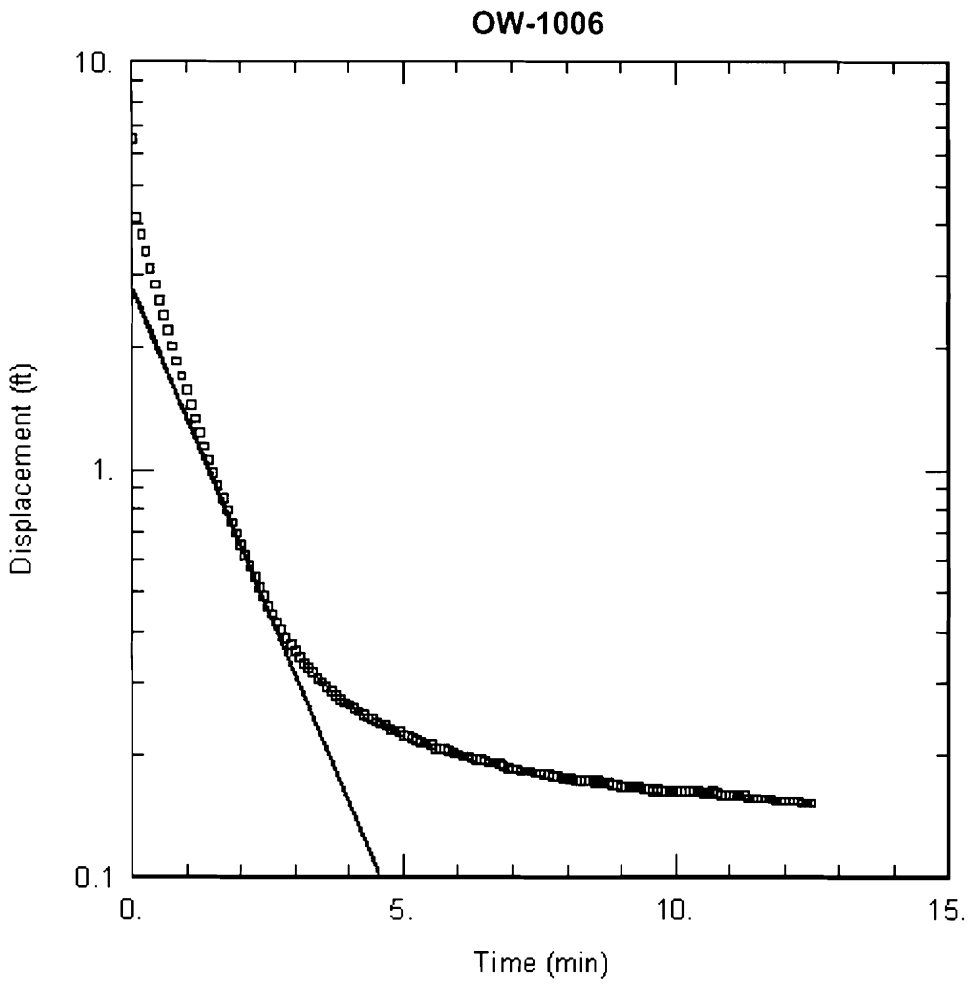
Saturated Thickness: 52. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.7 ft Water Column Height: 52. ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 8.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.000911 ft/min = 4.63 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 2.923 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW06OUT.AQT
Date: 11/11/05 Time: 13:30:51

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1006
Test Date: 9-29-05

AQUIFER DATA

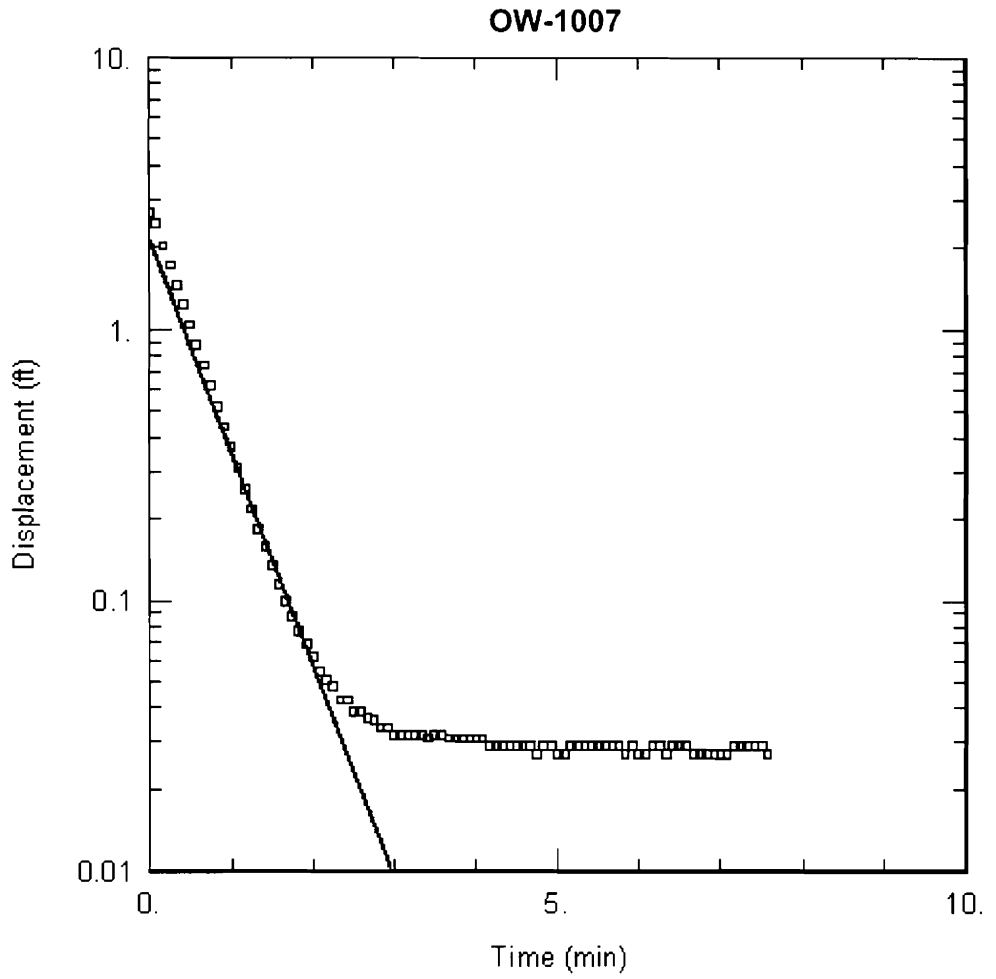
Saturated Thickness: 52. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 6.5 ft Water Column Height: 52. ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 8.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0009672 ft/min = 4.91 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 2.847 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW07IN.AQT
Date: 11/11/05 Time: 13:49:53

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1007
Test Date: 9-29-05

AQUIFER DATA

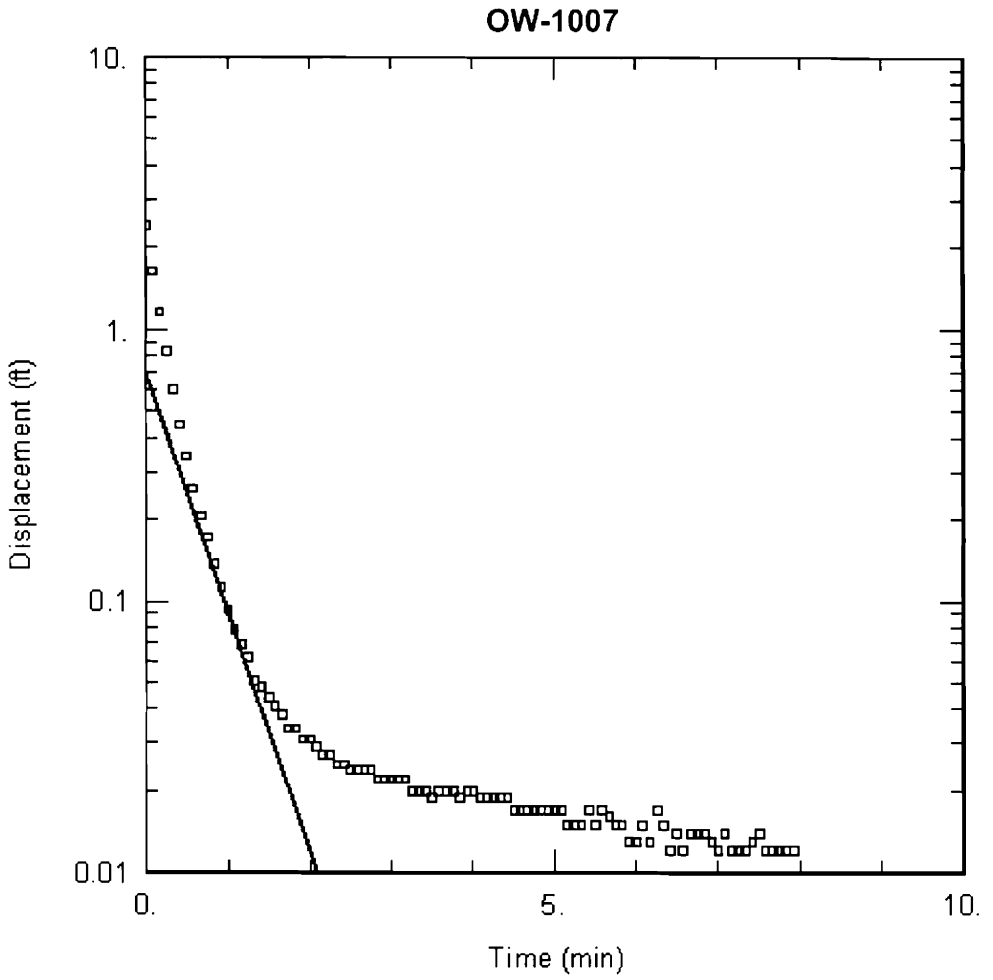
Saturated Thickness: 53.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.7 ft Water Column Height: 53.2 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 12.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.001737 ft/min = 8.82 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 2.196 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW07OUT.AQT
Date: 11/11/05 Time: 13:53:18

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1007
Test Date: 9-29-05

AQUIFER DATA

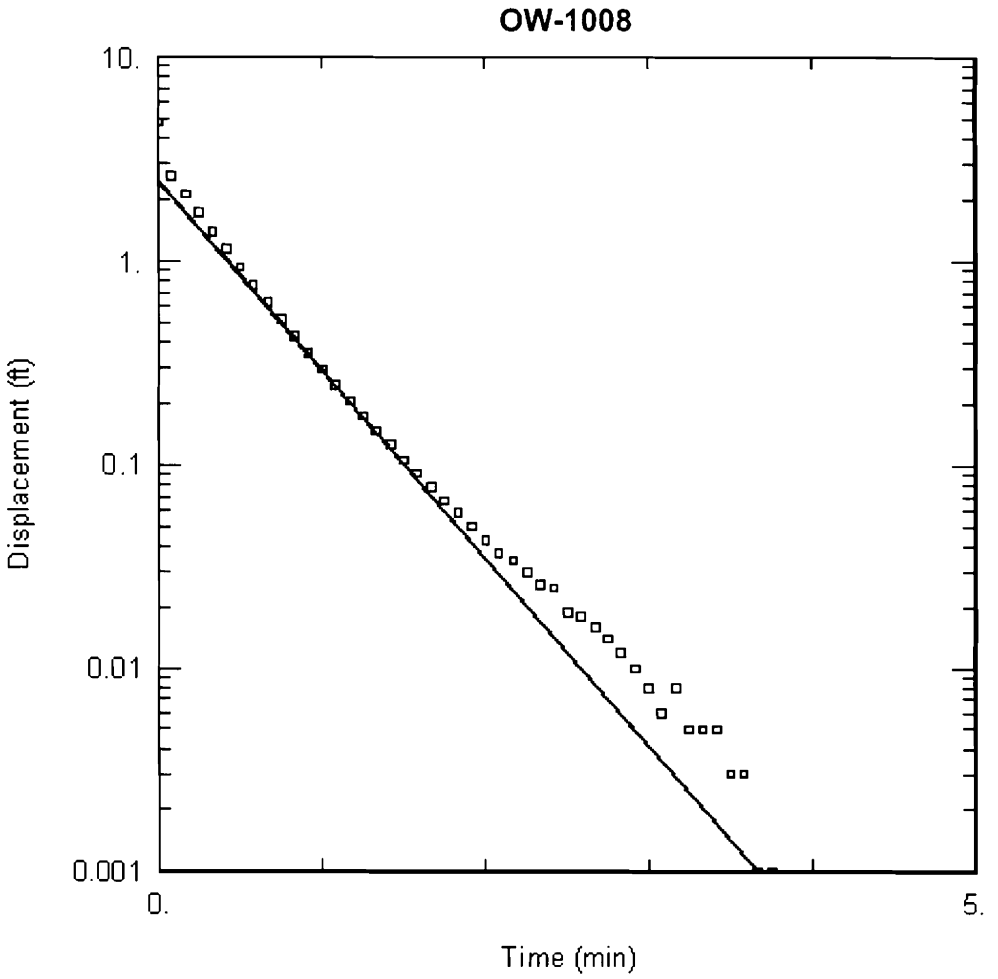
Saturated Thickness: 53.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.4 ft Water Column Height: 53.2 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 12.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.001941 ft/min = 9.86 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 0.7073 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW08IN.AQT
Date: 11/10/05 Time: 16:25:12

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1008
Test Date: 9-29-05

AQUIFER DATA

Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

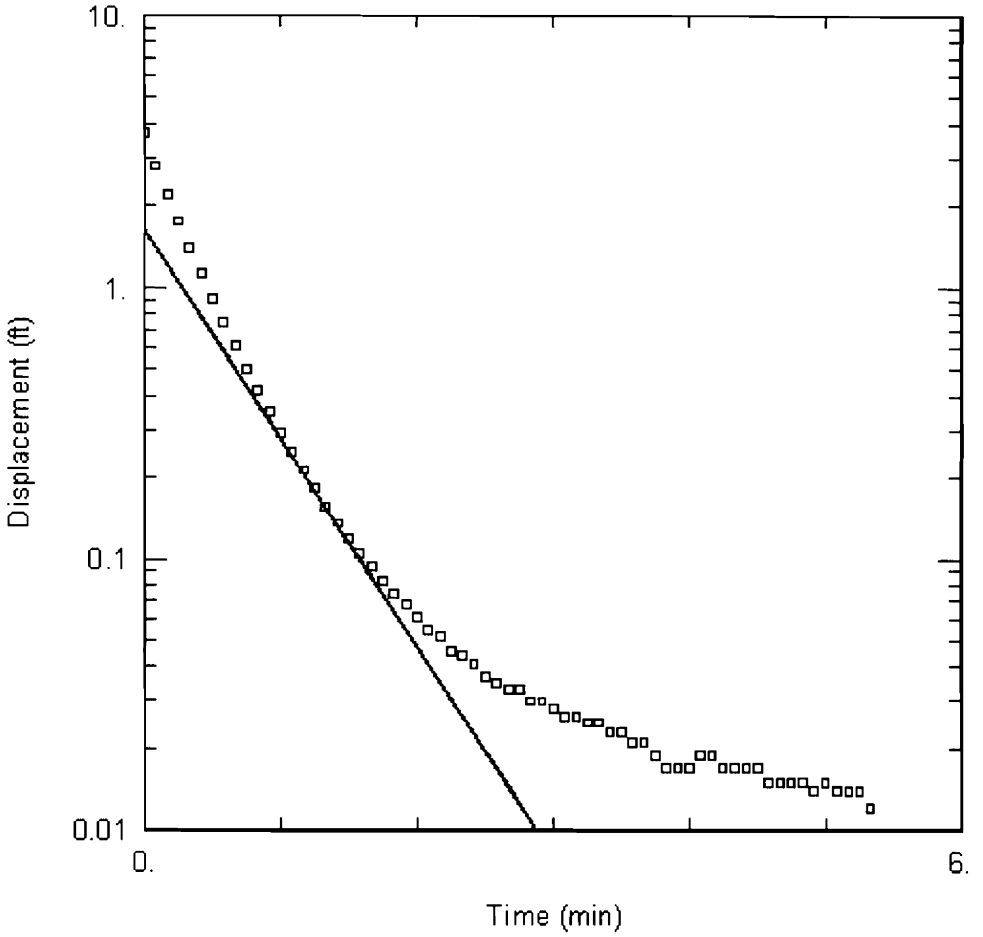
WELL DATA

Initial Displacement: 4.8 ft Water Column Height: 154. ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 17. ft

SOLUTION

Aquifer Model: Confined K = 0.001612 ft/min = 8.19x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 2.511 ft

OW-1008



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW08OUT.AQT
Date: 11/10/05 Time: 16:38:48

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1008
Test Date: 9-29-05

AQUIFER DATA

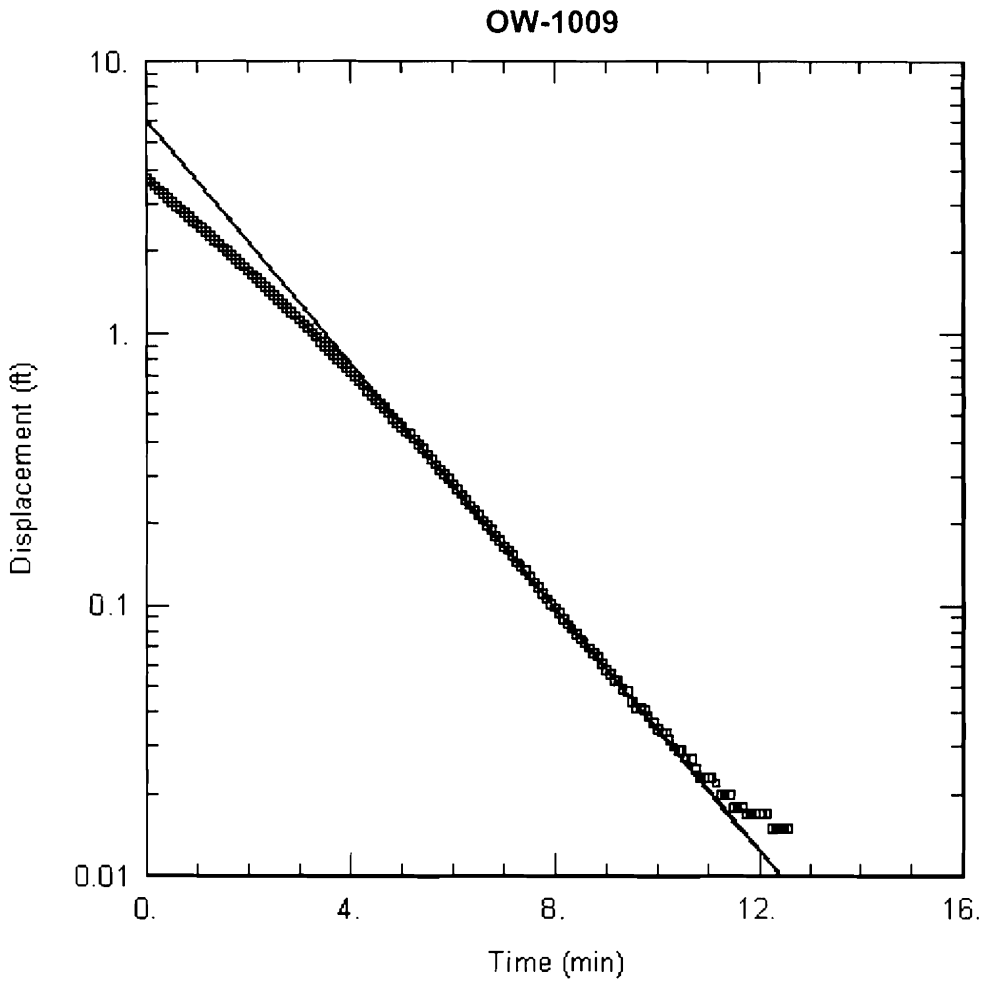
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.7 ft Water Column Height: 154. ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 17. ft

SOLUTION

Aquifer Model: Confined K = 0.001337 ft/min = 6.79 x 10^{-4}cm/s
Solution Method: Bouwer-Rice y0 = 1.654 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW09IN.AQT
Date: 11/10/05 Time: 16:41:45

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1009
Test Date: 9-29-05

AQUIFER DATA

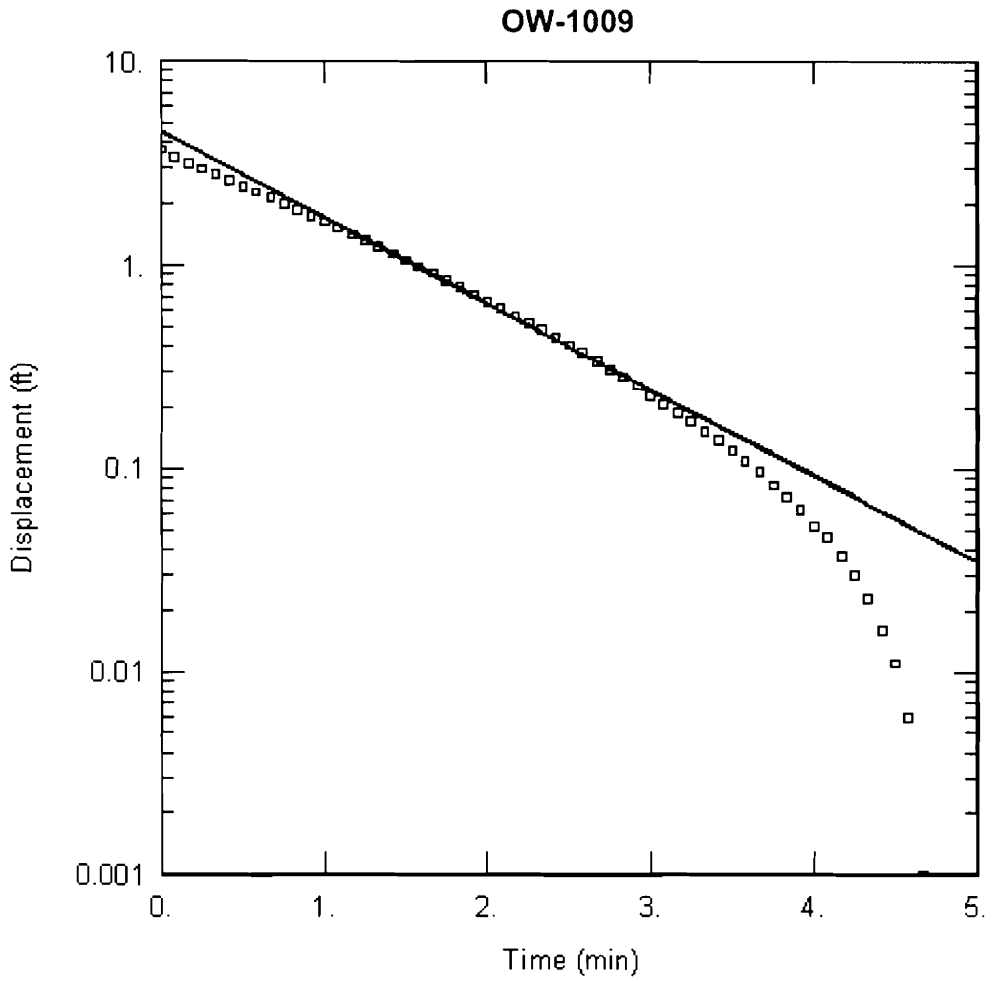
Saturated Thickness: 38.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.7 ft Water Column Height: 38.9 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 10.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0005458 ft/min = 2.77x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 6.13 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW09OUT.AQT
Date: 11/10/05 Time: 16:45:32

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1009
Test Date: 9-29-05

AQUIFER DATA

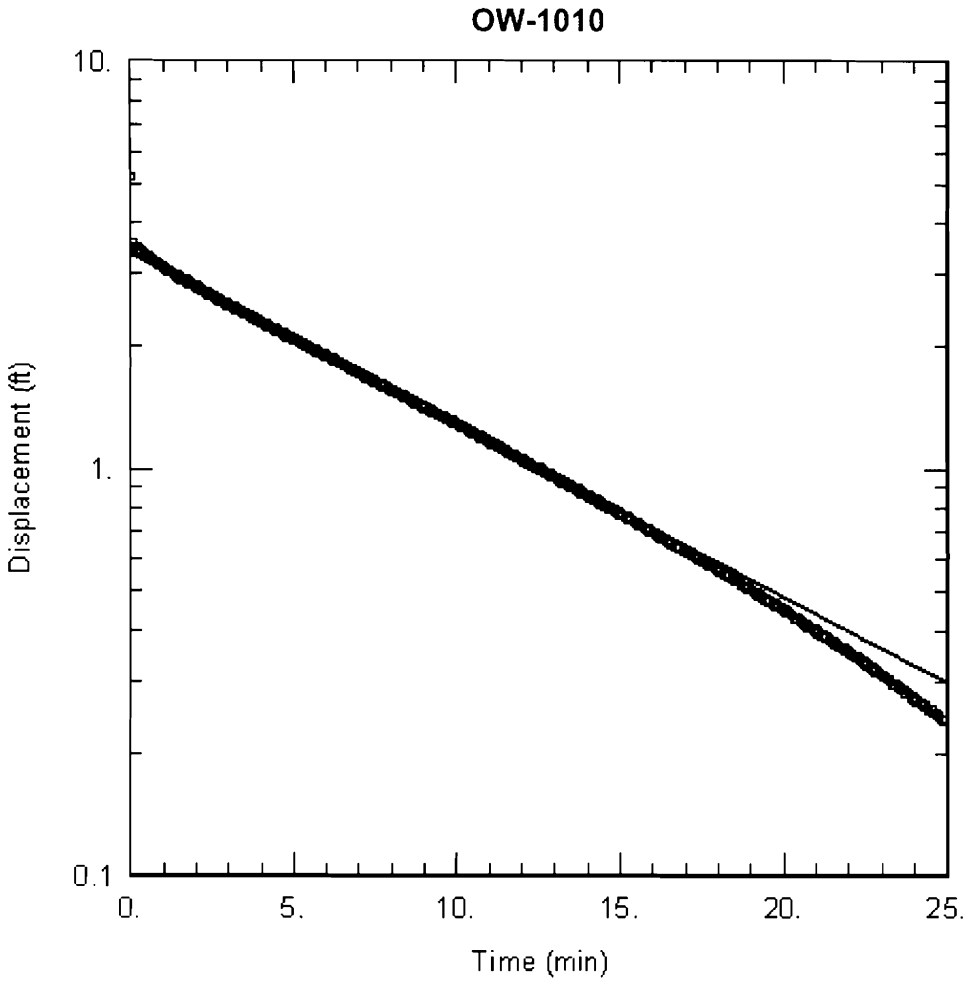
Saturated Thickness: 38.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.7 ft Water Column Height: 38.9 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 10.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.001024 ft/min = 5.20 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 4.584 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW10IN.AQT
Date: 11/10/05 Time: 16:48:09

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1010
Test Date: 9-30-05

AQUIFER DATA

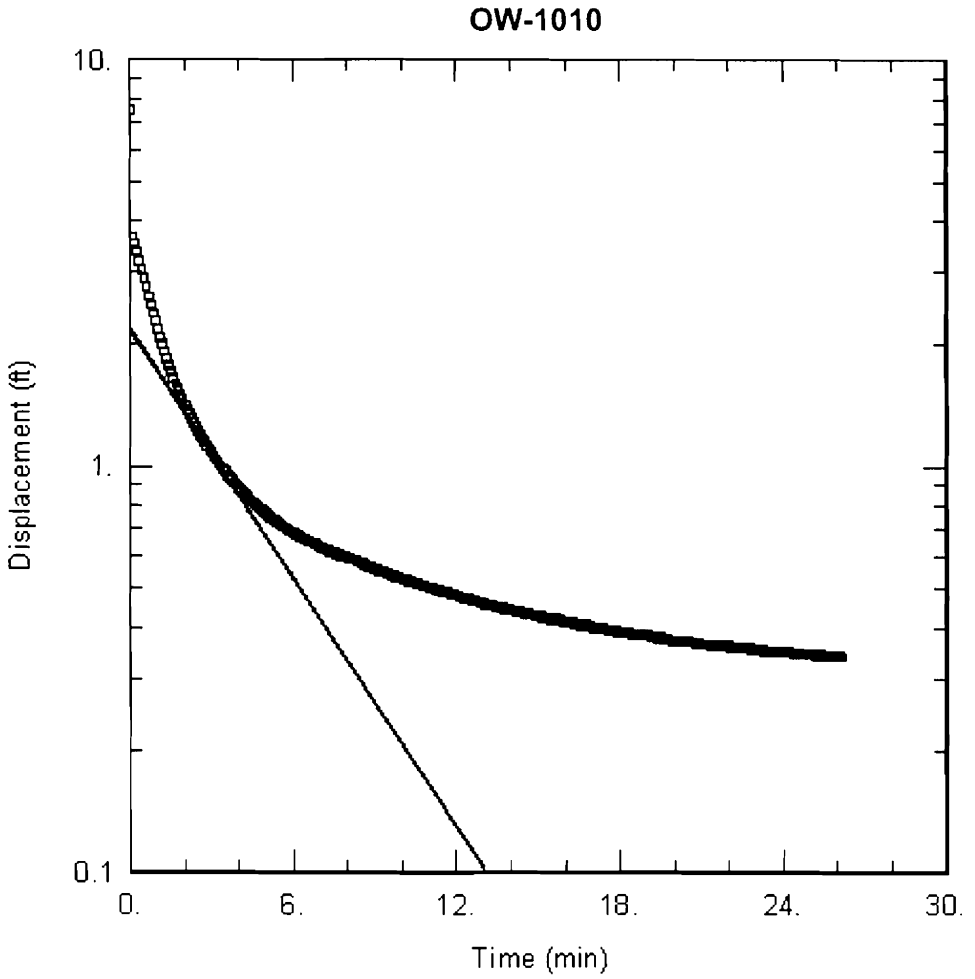
Saturated Thickness: 32. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.2 ft Water Column Height: 32. ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 15. ft

SOLUTION

Aquifer Model: Unconfined K = 7.271E-05 ft/min = 3.69 x 10^{-5} cm/s
Solution Method: Bouwer-Rice y0 = 3.352 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW10OUT.AQT
Date: 11/10/05 Time: 16:51:38

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1010
Test Date: 9-30-05

AQUIFER DATA

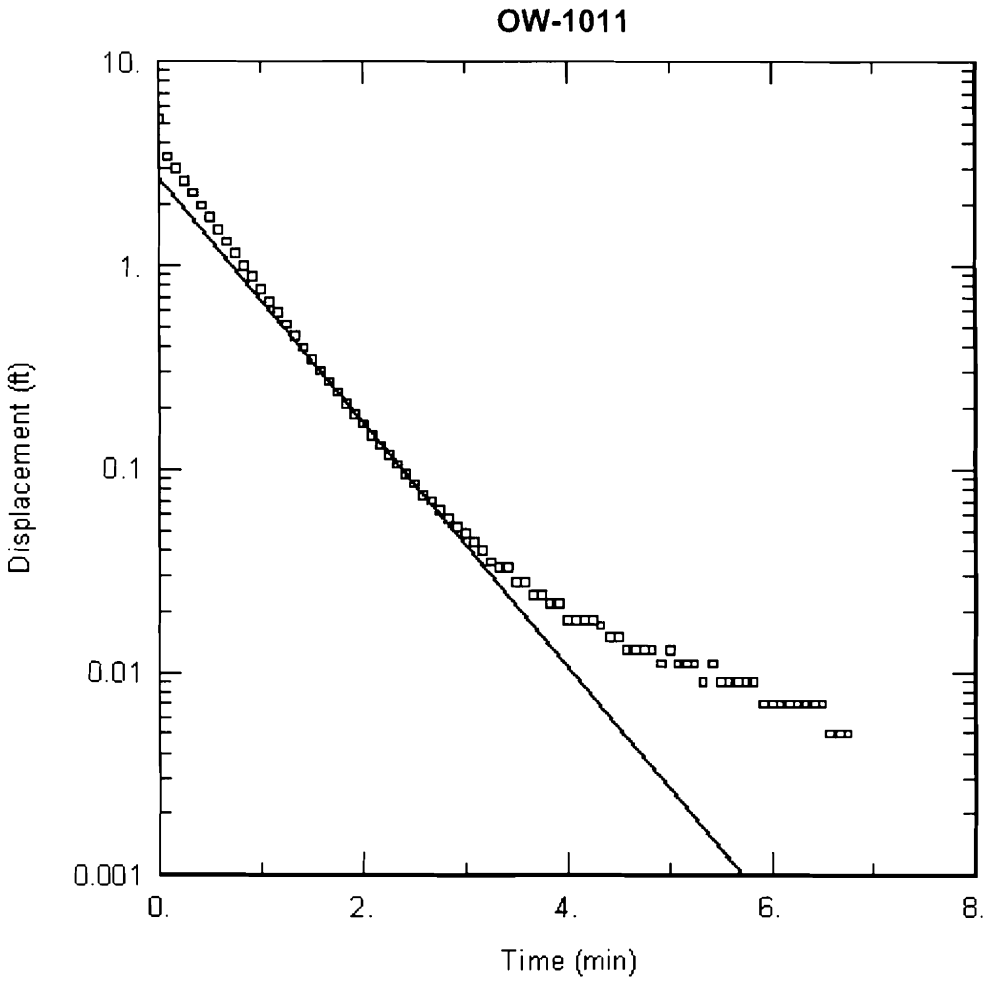
Saturated Thickness: 32. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 7.5 ft Water Column Height: 32. ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 15. ft

SOLUTION

Aquifer Model: Unconfined K = 0.0001785 ft/min = 9.07 x 10^{-5} cm/s
Solution Method: Bouwer-Rice y0 = 2.205 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW11IN.AQT
Date: 11/10/05 Time: 16:54:31

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1011
Test Date: 9-30-05

AQUIFER DATA

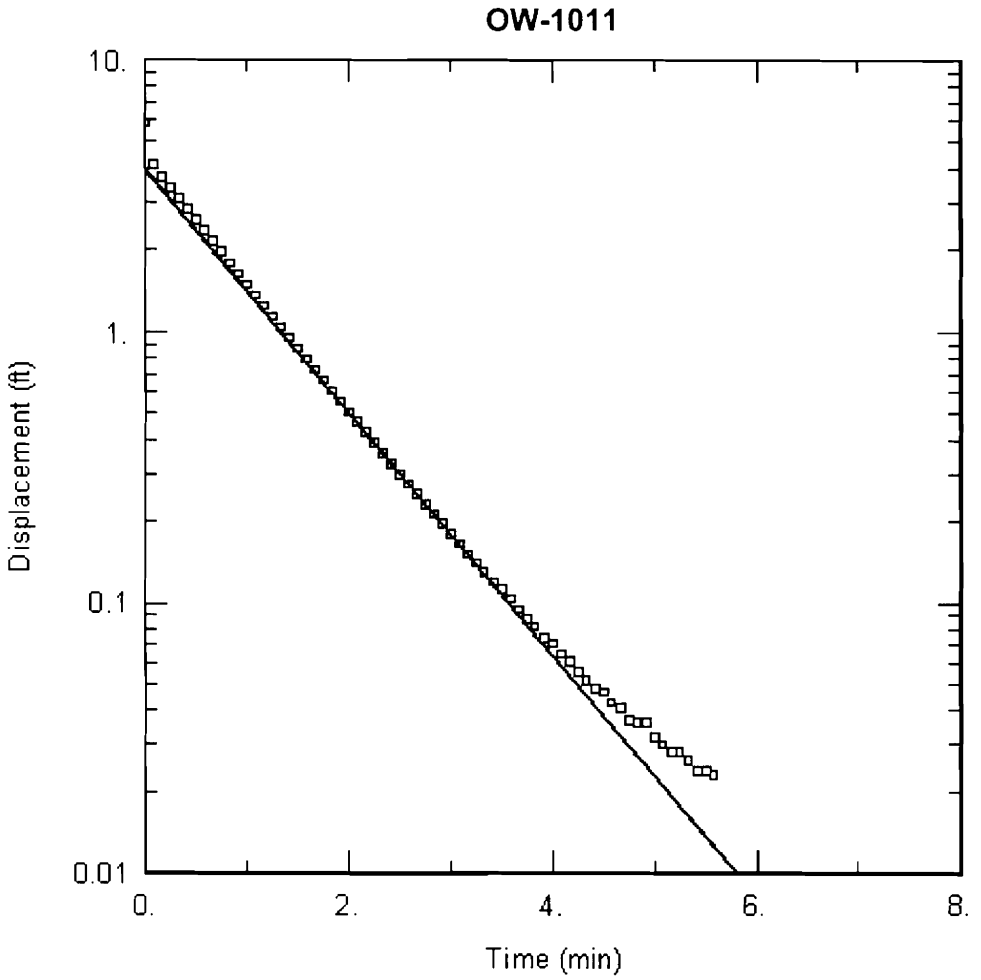
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.2 ft Water Column Height: 131.8 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 21. ft

SOLUTION

Aquifer Model: Confined K = 0.0008497 ft/min = 4.32 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 2.679 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW11OUT.AQT
Date: 11/10/05 Time: 16:57:30

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1011
Test Date: 9-30-05

AQUIFER DATA

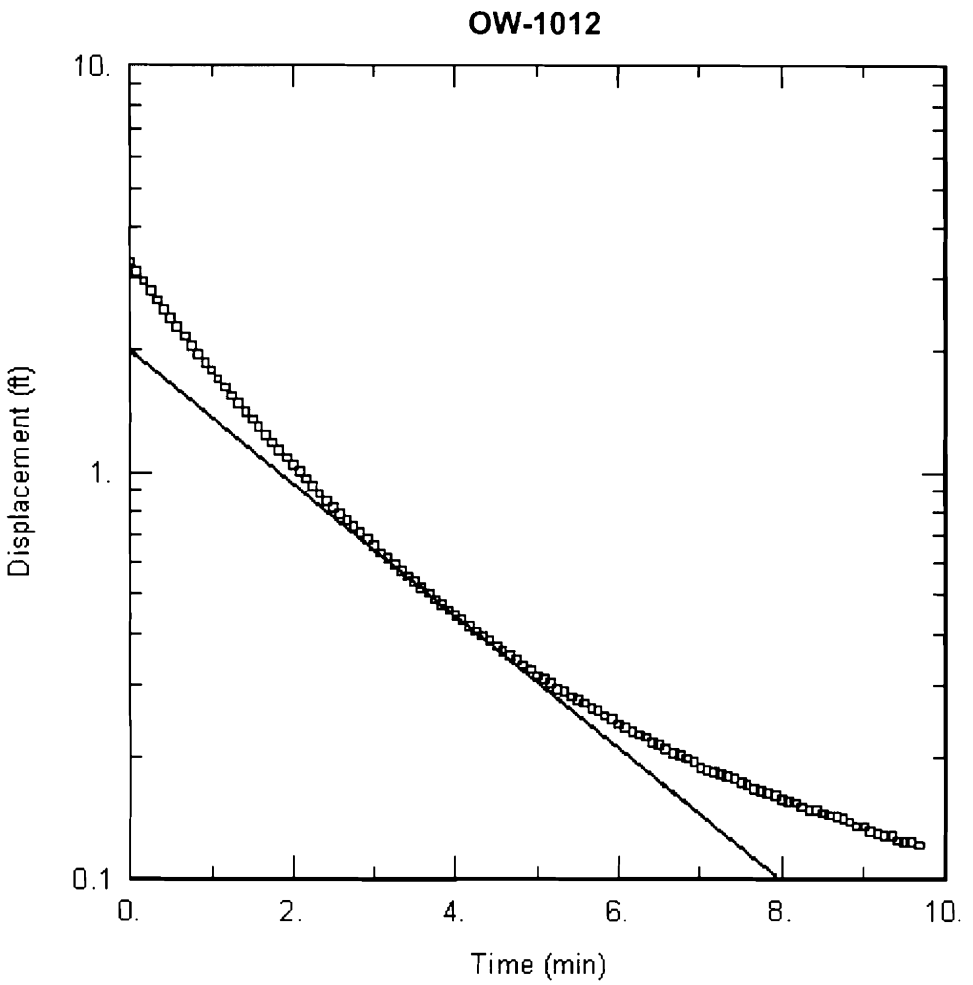
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5.9 ft Water Column Height: 131.8 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 21. ft

SOLUTION

Aquifer Model: Confined K = 0.0006362 ft/min = 3.23 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 4.018 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW12IN.AQT
Date: 11/10/05 Time: 17:00:04

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1012
Test Date: 9-30-05

AQUIFER DATA

Saturated Thickness: 45.2 ft Anisotropy Ratio (Kz/Kr): 1.

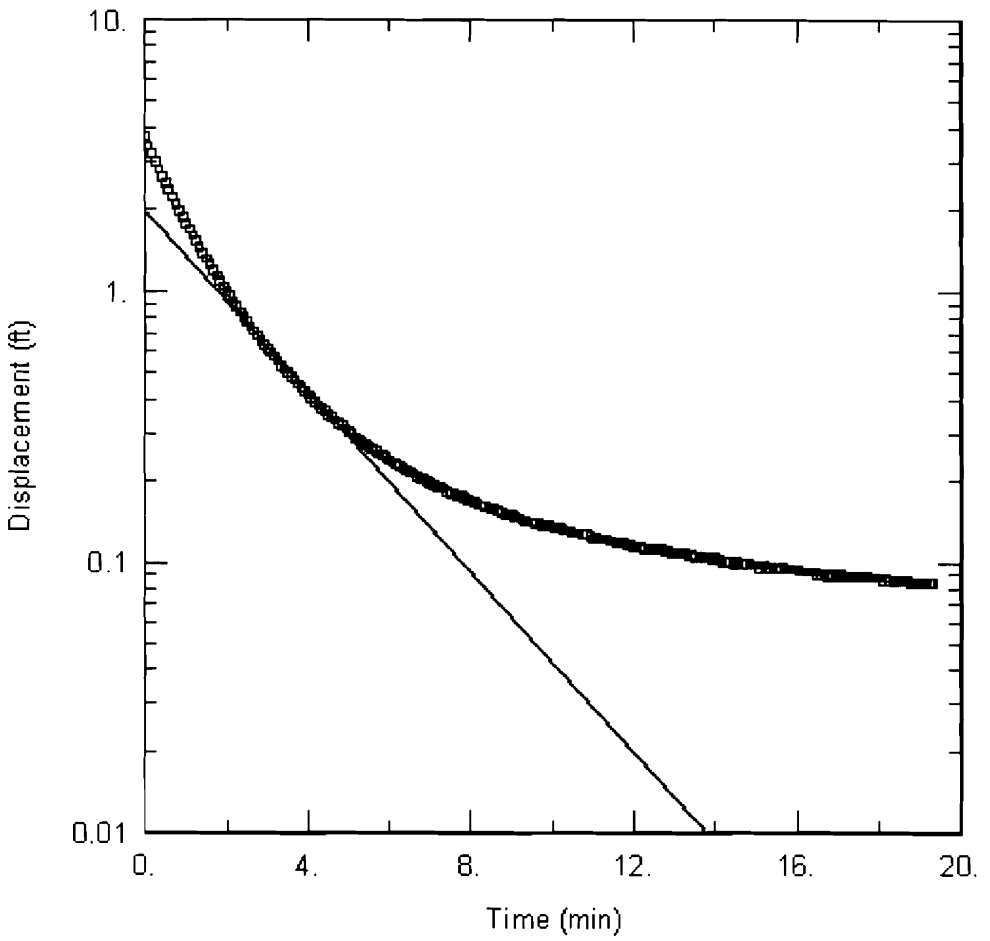
WELL DATA

Initial Displacement: 3.3 ft Water Column Height: 45.2 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 17. ft

SOLUTION

Aquifer Model: Unconfined K = 0.0002679 ft/min = 1.36 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 1.988 ft

OW-1012



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW12OUT.AQT
Date: 11/10/05 Time: 17:02:05

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1012
Test Date: 9-30-05

AQUIFER DATA

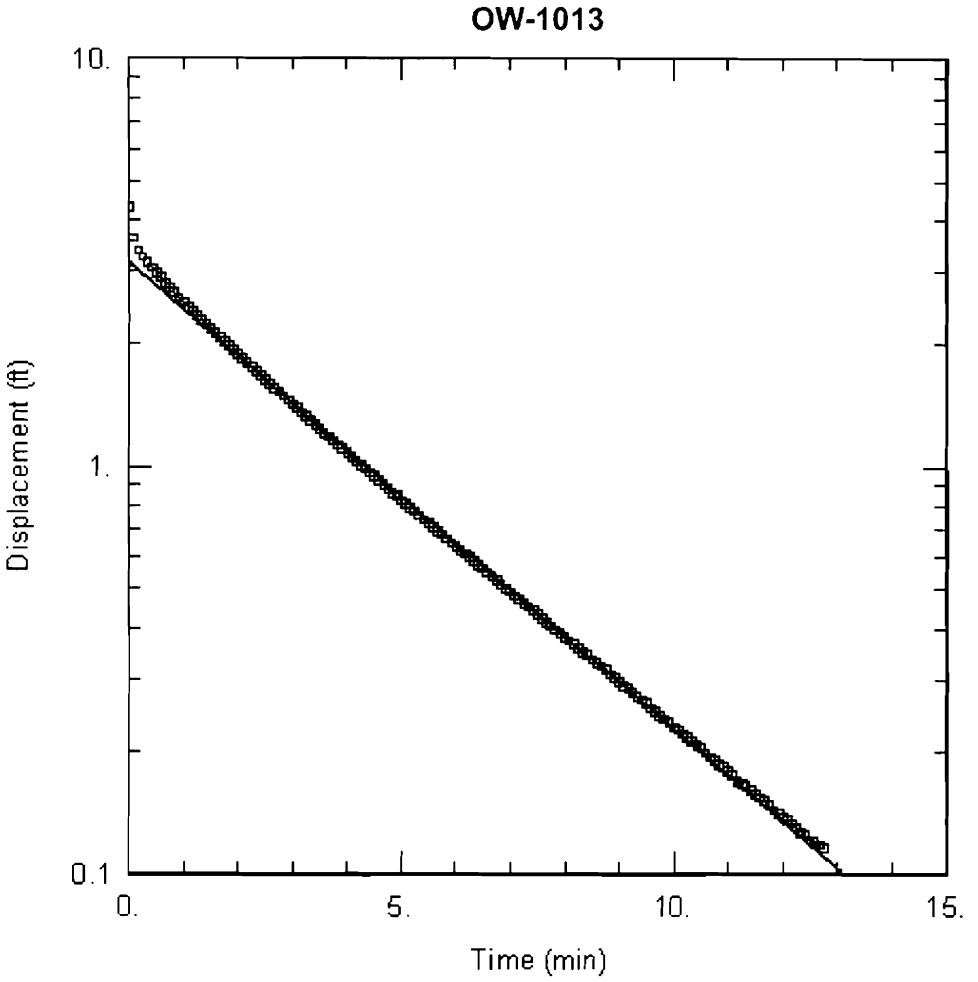
Saturated Thickness: 45.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.7 ft Water Column Height: 45.2 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 17. ft

SOLUTION

Aquifer Model: Unconfined K = 0.0002736 ft/min = 1.39 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 1.979 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW13IN.AQT
Date: 11/10/05 Time: 17:03:55

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1013
Test Date: 9-29-05

AQUIFER DATA

Saturated Thickness: 47.8 ft Anisotropy Ratio (Kz/Kr): 1.

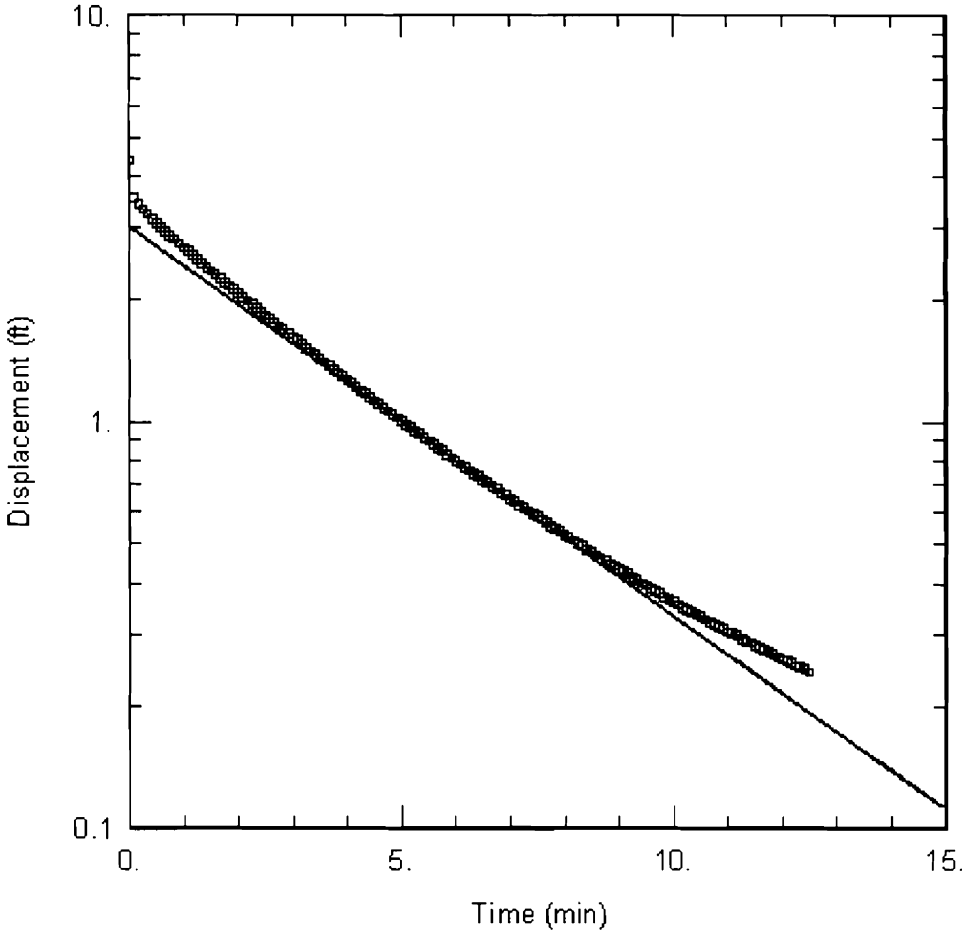
WELL DATA

Initial Displacement: 4.3 ft Water Column Height: 47.8 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 10.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0002863 ft/min = 1.45 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.151 ft

OW-1013



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW13OUT.AQT
Date: 11/10/05 Time: 17:06:18

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1013
Test Date: 9-29-05

AQUIFER DATA

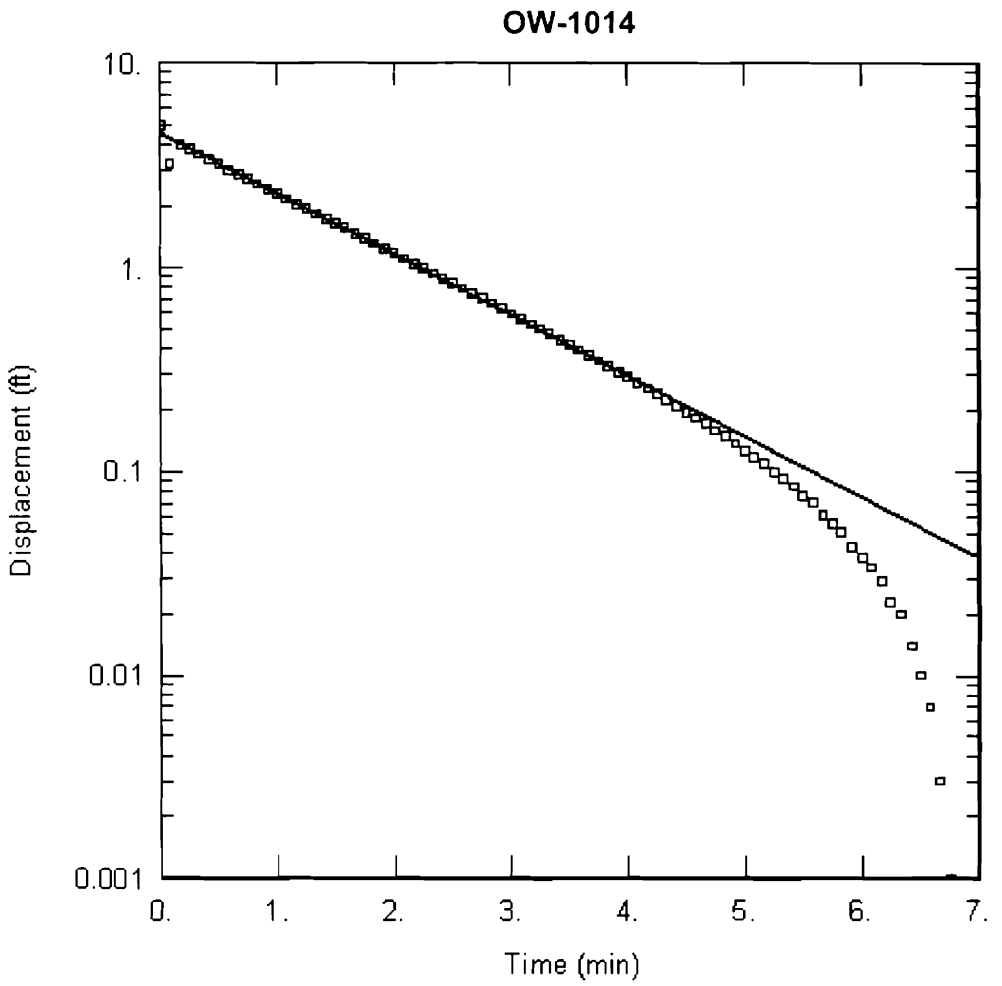
Saturated Thickness: 47.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.4 ft Water Column Height: 47.8 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 10.75 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0002389 ft/min = 1.21 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.005 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW14IN.AQT
Date: 11/11/05 Time: 14:57:04

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1014
Test Date: 9-28-05

AQUIFER DATA

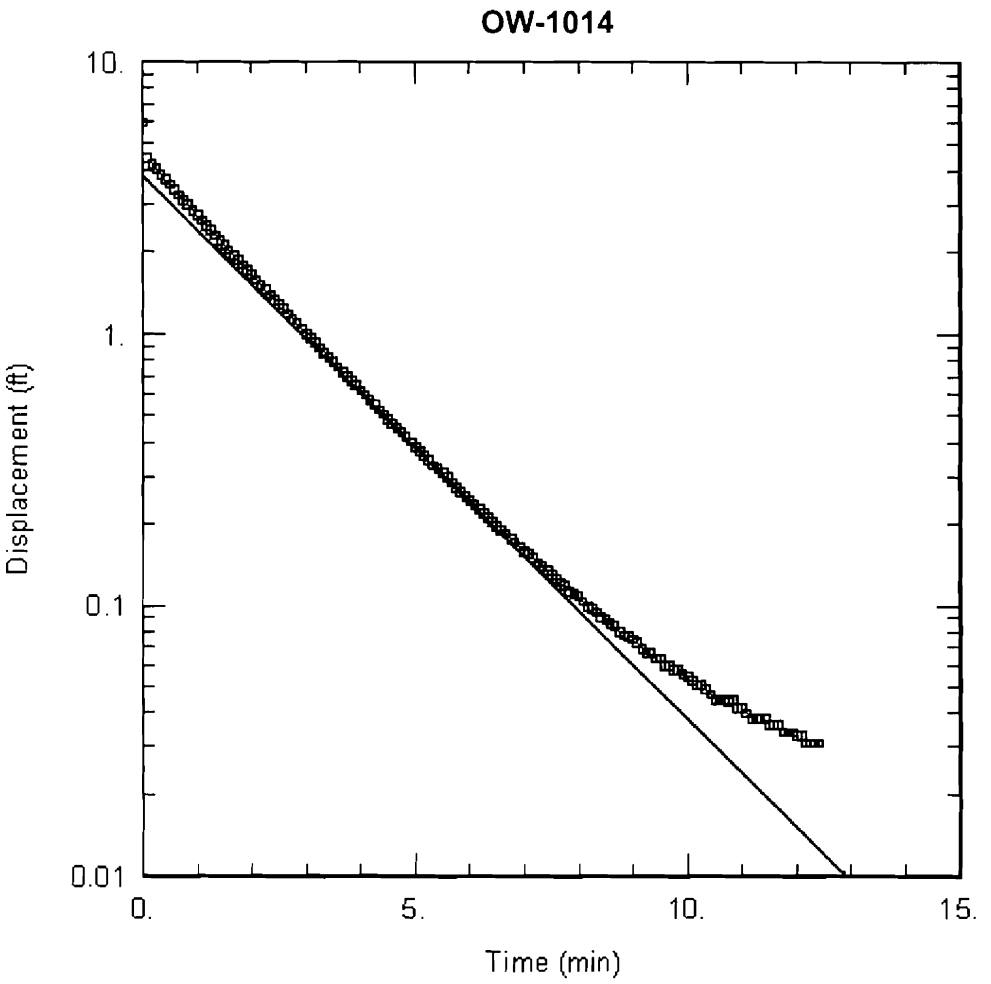
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 5. ft Water Column Height: 83.7 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 18. ft

SOLUTION

Aquifer Model: Confined K = 0.0004509 ft/min = 2.29 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 4.575 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW14OUT.AQT
Date: 11/10/05 Time: 17:11:19

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1014
Test Date: 9-28-05

AQUIFER DATA

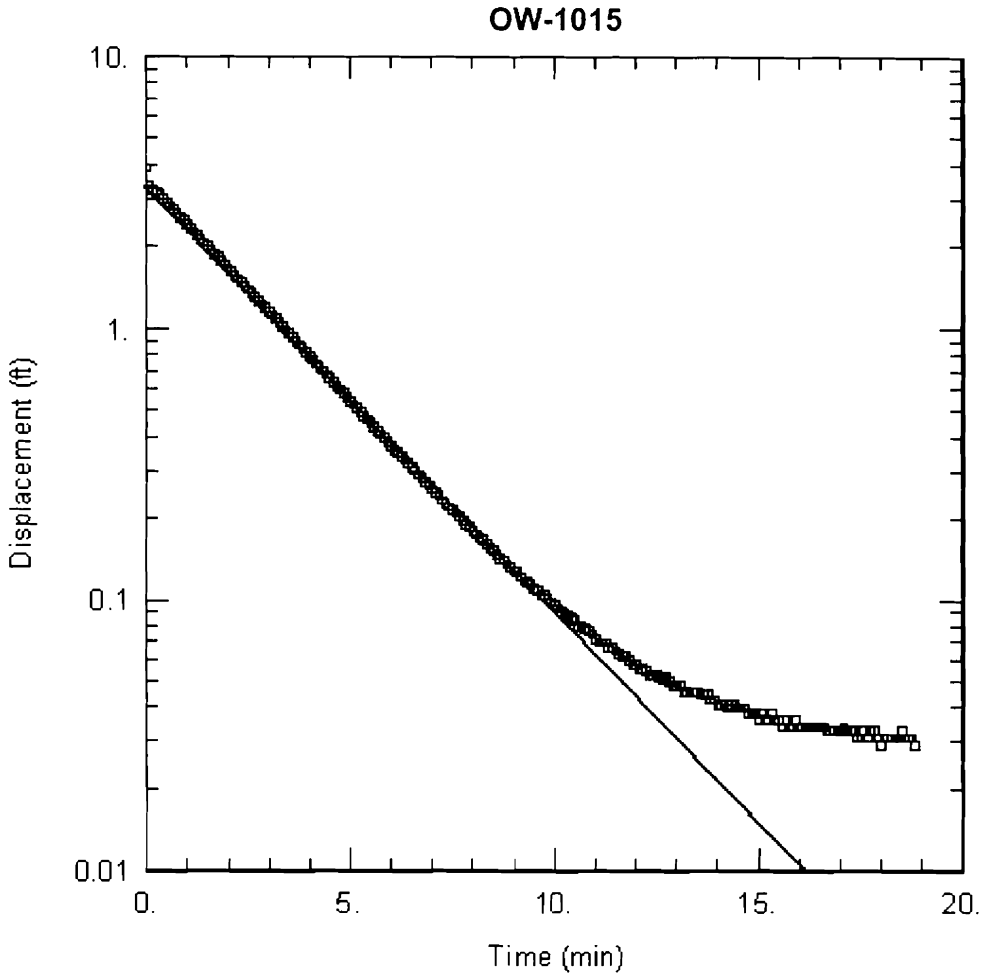
Saturated Thickness: 200. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 6. ft Water Column Height: 83.7 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.25 ft
Screen Length: 18. ft

SOLUTION

Aquifer Model: Confined K = 0.0003036 ft/min = 1.548 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.843 ft



FALLING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW15IN.AQT
Date: 11/10/05 Time: 17:13:34

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1015
Test Date: 9-28-05

AQUIFER DATA

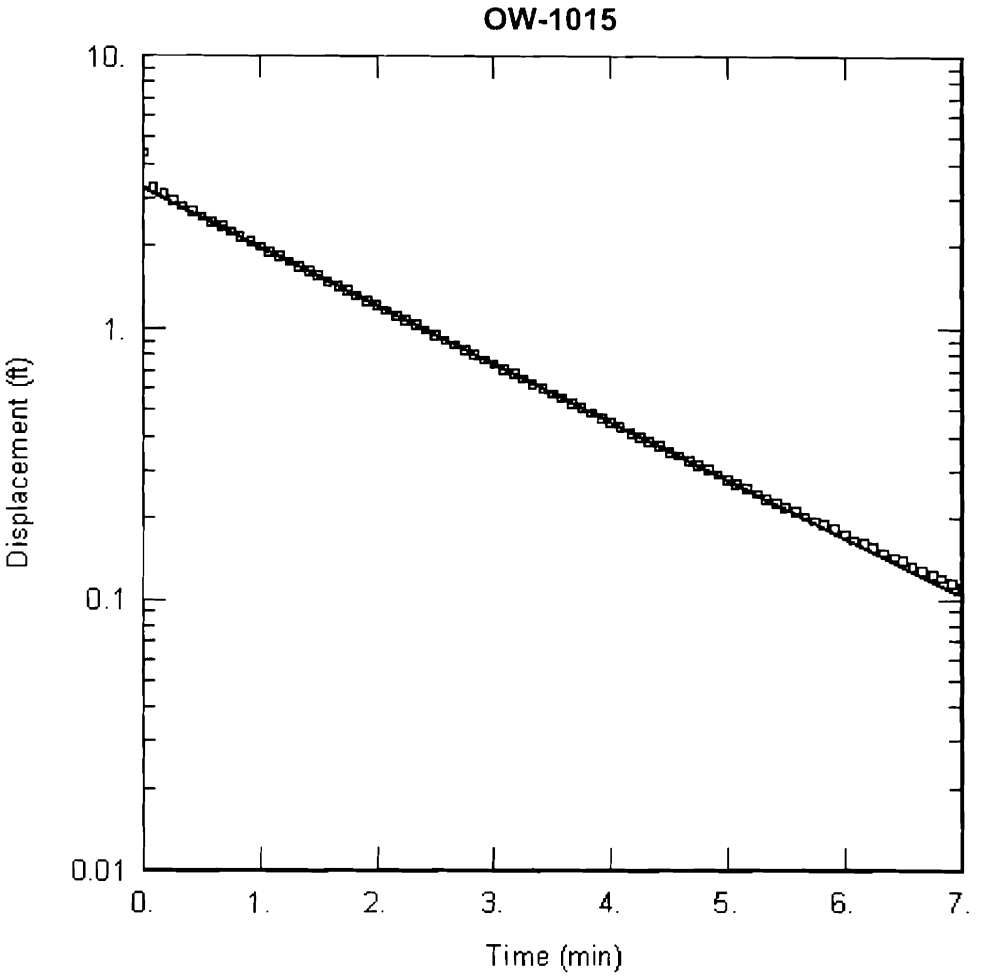
Saturated Thickness: 46.6 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.9 ft Water Column Height: 46.6 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 17.4 ft

SOLUTION

Aquifer Model: Unconfined K = 0.0002518 ft/min = 1.30 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.276 ft



RISING HEAD SLUG TEST

Data Set: C:\VOGTLE~1\OW15OUT.AQT
Date: 11/10/05 Time: 17:15:44

PROJECT INFORMATION

Company: Southern Nuclear
Test Location: Plant Vogtle
Test Well: OW-1015
Test Date: 9-28-05

AQUIFER DATA

Saturated Thickness: 46.6 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.4 ft Water Column Height: 46.6 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.375 ft
Screen Length: 17.4 ft

SOLUTION

Aquifer Model: Unconfined K = 0.000346 ft/min = 1.78 x 10^{-4} cm/s
Solution Method: Bouwer-Rice y0 = 3.265 ft

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1001

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **140'** SURF.ELEV. 230.854

Depth FT.	Elev. FT.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments
121	109.85	Buff sandy COQUINA					
122	108.85						
123	107.85						
124	106.85	No recovery, auger used to grind through interval		123.5-125	50/0"	50/0"	
125	105.85						
126	104.85						
127	103.85						
128	102.85						
129	101.85	Dark grey LIMESTONE 2" layer	3	128.5-130	50/2"	50/2"	
130	100.85						
131	99.85						
132	98.85						
133	97.85						
134	96.85		4	133.5-135	18-19-25	44	
135	95.85	Approximately 3" of dark greenish grey MARL in spoon					
136	94.85						
137	93.85						
138	92.85	Greenish gray MARL		136.5-138	50/2"	50/2"	
139	91.85						
140	90.85			138.5-140	50/2"	50/2"	
141	89.85	Boring Terminated at 140'					
142	88.85						1500 gallons of water lost cleaning bottom of hole. Pumped at 60 gpm.
143	87.85						
144	86.85						
145	85.85						
146	84.85						
147	83.85						
148	82.85						
149	81.85						
150	82.86						
151	79.85						
152	78.85						

Form GS9901 7-26-2004

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1002

Sheet 8 of 8

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **237** SURF.ELEV. 227.442

Depth Ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments
217	10.44						
218	9.44	6" grey CLAY layer					
219	8.44		27	218.5 - 220	NA	NA	
220	7.44						
221	6.44	Light greenish grey fine- to medium-grained, silty glauconitic SAND (SM)					
223	4.44						
224	3.44		28	223.5 - 225	NA	NA	
225	2.44						
226	1.44						
227	0.44						
228	-0.56				NA	NA	
229	-1.56		29	228.5 - 230			
230	-2.56						
231	-3.56						
232	-4.56						
233	-5.56						
234	-6.56		30	233.5 - 235	NA	NA	
235	-7.56						
236	-8.56						
237	-9.56						
238	-10.56	Boring terminated at 237'. Well OW-1002 installed in this borehole.					
239	-11.56						
240	-12.56						
241	-13.56						
242	-14.56						
243	-15.56						
244	-16.56						
245	-17.56						
246	-18.56						
247	-20.19						
248	-20.56						
249	-21.56						

Form GS9901 7-26-2004

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DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1003

SITE	Vogtle ALWR SSAR	HOLE DEPTH	90	SURF.ELEV.	NA
LOCATION	Burke County, Georgia	COORDINATES N	NA	E	NA
ANGLE	NA	BEARING	NA	CONTRACTOR	S&ME
DRILL NO.	CME 550	DRILLING METHOD	31/4" HSA	NO. SAMPLES	18
NO. U.D. SAMPLES	NA	WATER TABLE DEPTH	63.6'	ELEV.	NA
TIME AFTER COMP.	NA	DATE TAKEN	5/25/2005	TYPE GROUT	NA
QUANTITY	NA	MIX	NA	DRILLING START DATE	5/24/2005
DRILLER	TIM	RECORDER	Steve Bearce	APPROVED	NA
DRILLING COMP. DATE	5/24/2005				

Depth Ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments
0							
1							
2							
3		Red-brown silty-clayey SAND (SM-SC) fine- to medium-grained, moist					
4							
5			1	3.5-5	7-13-17	30	
6							
7							
8							
9		Light brown, silty SAND, (SM) to SAND (SW) fine- to medium-grained					
10			2	8.5-10	9-6-6	12	
11							
12							
13							
14		Red-brown silty-clayey SAND (SM-SC), fine-grained					
15			3	13.5-15	8-11-13	24	

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1004

Sheet 6 of 7

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **187** SURF.ELEV. 222.92

Depth Ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments
153	69.92	grades to fine- to medium-grained dark grey SAND w/ organics, cohesive leaving core barrel, wet, poorly graded with silt (SP-SM)	14	153.5 - 155	NA	NA	
154	68.92						
155	67.92						
156	66.92						
157	65.92						
158	64.92		15	158.5 - 169	NA	NA	
159	63.92						
160	62.92						
161	61.92						
162	60.92						
163	59.92	Light grey, becomes loose coming out of core barrel fine-grained SAND (SP) with clay and silt	16	163.5 - 170	NA	NA	
164	58.92						
165	57.92						
166	56.92						
167	55.92						
168	54.92						
169	53.92		17	168.5 - 170	NA	NA	
170	52.92						
171	51.92						
172	50.92						
173	49.92						
174	48.92		18	173.5 - 175	NA	NA	
175	47.92	Dark grey organic, silty SAND (SM)					
176	46.92						
177	45.92						
178	44.92		19	178.5 - 180	NA	NA	
179	43.92						
180	42.92						
181	41.92						
182	36.39						
183	39.92		20	183.5 - 185	NA	NA	
184	34.39						

Form GS9901 7-26-2004

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1005

Sheet 6 of 6

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **170** SURF.ELEV. 264.389

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments
153	111.39						
154	110.39	Pale yellow, silty SAND, calcareous (SM), fine- to coarse-grained with shell pieces	18B	153.5-155	12-33-50/2	33/ 50/2"	
155	109.39						
156	108.39						
157	107.39						
158	106.39						
159	105.39						
160	104.39	Same as above, slightly more consolidated	19B	158.5-160	25-22-44	66	Boring paused to procure more auger 6/04/05
161	103.39						
162	102.39						
163	101.39						
164	100.39			163.5-165	25-50/2"	25/ 50/2"	
165	99.39	Dark greenish grey MARL					
166	98.39						
167	97.39						
168	96.39						
169	95.39	Boring Terminated at 168.5		168.5 - 170	NA	NA	
170	94.39						
171	93.39						
172	92.39						
173	91.39						
174	90.39						
175	89.39						
176	88.39						
177	87.39						
178	86.39						
179	85.39						
180	84.39						
181	83.39						
182	81.76						
183	81.39						
184	80.39						

Form GS9901 7-26-2004

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1006

Sheet 5 of 5

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **135** SURF.ELEV. 227.121

Depth ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To ft.	Blows	N	Comments
121	106.12						
122	105.12						
123	104.12						
124	103.12	Tan sandy and shelly CLAY (CH), saturated	2	123.5-125	NA	NA	No SPTs
125	102.12						Pushed because of drilling problems
126	101.12						
127	100.12						
128	99.12						
129	98.12	Light tan, fine-coarse grained SAND with shell (SW)	3	128.5-130	NA	NA	
130	97.12						
131	96.12						
132	95.12						
133	94.12						
134	93.12	Greenish grey MARL	4	133.5-135	NA	NA	
135	92.12						last sample at 135.0'
136	91.12	Boring terminated at 133.5					~six 150 gallon tubs of water used during drilling
137	90.12						
138	89.12						
139	88.12						
140	87.12						
141	86.12						
142	85.12						
143	84.12						
144	83.12						
145	82.12						
146	81.12						
147	80.12						
148	79.12						
149	78.12						
150	76.49						
151	76.12						
152	75.12						

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. OW-1007
Sheet 4 of 5

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **122** SURF.ELEV. 216.91

Depth Ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments
89	127.91						
90	126.91						
91	125.91						
92	124.91						
93	123.91						
94	122.91						
95	121.91						
96	120.91						
97	119.91						
98	118.91	Drilling begins at 98.5'					
99	117.91		1	98.5-100	WOR		
100	116.91						
101	115.91						
102	114.91						
103	113.91						
104	112.91	Tan fine-grained silty SAND (SM), saturated					
105	111.91		2	103.5-105	2-4-6	10	
106	110.91						
107	109.91						
108	108.91						
109	107.91	Very light tan silty SAND (SM) becoming shelly	3	108.5-110	50/5"	50/5"	
110	106.91						
111	105.91						
112	104.91						
113	103.91						
114	102.91	light olive grey CLAY(CH)	4	113.5-115	80/3"	50/3"	
115	101.91						
116	100.91						
117	99.91						
118							
119	97.91	Greenish grey MARL					
120	96.91		5	118.5-120	NA	NA	

Form GS9901 7-26-2004

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1008

Sheet 8 of 8

SITE **Vogtle ALWR SSAR** TAL DEPTH SURF.ELEV. 216.65

Depth ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To ft.	Blows	N (bpf)	Comments
217	-0.35						
218	-1.35	Dark grey silty SAND, (SM) fine-grained SAND with some zones (1-2) feet of fine- to coarse-grained silty SAND (SM)	21	218.5-220	NA	NA	
219	-2.35						
220	-3.35						
221	-4.35						
223	-6.35		22	223.5-225	NA	NA	
224	-7.35						
225	-8.35						
226	-9.35						
227	-10.35	Gradual change to grey fine SAND (SW)					
228	-11.35	Light grey fine SAND (SW)	23	228.5-230	NA	NA	
229	-12.35						
230	-13.35						
231	-14.35						
232	-15.35						
233	-16.35		24	233.5-235	NA	NA	
234	-17.35						
235	-18.35						
236	-19.35						
237	-20.35						
238	-21.35	Grey silty SAND (SM)	25	238.5-240	NA	NA	
239	-22.35						
240	-23.35						
241	-24.35						
242	-25.35						
243	-26.35						
244	-27.35	Abrupt change to light grey siliceous clay, (CL), to weak SHALE	26	243.5-245	NA	NA	
245	-28.35						
246	-29.35						
247	-30.98						
248	-31.35	Boring terminated at 247'. Well OW-1008 installed in this borehole.					
249	-32.35						

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. OW-1009

SITE **Vogtle ALWR SSAR** OTAL DEPTH **100** SURF.ELEV. 220.887

Depth Ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments	% Rec	RQD
89	131.89								
90	130.89	Tan LIMESTONE shell hash, very light tan silty SAND (SM)	18	88.5-90	50/1"	100+			
91	129.89								
92	128.89								
93	127.89								
94	126.89								
95	125.89	Brown silty CLAY	19	93.5-95	6-18-3	21			
96	124.89								
97	123.89								
98	122.89								
99	121.89								
100	120.89	Green MARL	20	98.5-100	13 / 50/.2	100+			
101	119.89	Boring terminated at 100' OW-1009 installed in this borehole.							
102	118.89								
103	117.89								
104	116.89								
105	115.89								
106	114.89								
107	113.89								
108	112.89								
109	111.89								
110	110.89								
111	109.89								
112	108.89								
113	107.89								
114	106.89								
115	105.89								
116	104.89								
117	103.89								
118	102.26								
119	101.89								
120	100.89								

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. OW-1010

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **93.5** SURF.ELEV. 216.895

Depth Ft.	Elev.Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments
57	159.90						
58	158.90						6/1/2005
59	157.90	Mottled white to brown clayey SAND, medium-grained (SP), medium dense	12	58.5-60	2-7-7	14	▼ 58.5' from ground surface
60	156.90						
61	155.90						
62	154.90						
63	153.90						
64	152.90						
65	151.90	Strong brown clayey SAND, fine- to medium-grained (SC)	13	63.5-65	WOR-2-3	5	
66	150.90						
67	149.90						
68	148.90						
69	147.90						
70	146.90	Brownish yellow silty SAND, medium-grained, (SM)	14	68.5-70	WOH/18"	WHO/ 18"	
71	145.90						
72	144.90						
73	143.90						
74	142.90						
75	141.90	Tan poorly graded SAND with silt (SP-SM)	15	73.5-75	WOR 2'	WOR/ 2'	
76	140.90						

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1011

Sheet 7 of 7

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **217** SURF.ELEV. 205.785

Depth ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To ft.	Blows	N BPF	Comments
185	20.79		20	183.5-185	NA	NA	
186	19.79						
187	18.79						
188	17.79						
189	16.79	Dark grey sandy CLAY					
190	15.79		21	188.5-190	NA	NA	
191	14.79						
192	13.79						
193	12.79						
194	11.79	Dark grey clayey fine SAND grading to					
195	10.79		22	193.5-195	NA	NA	
196	9.79	Clayey medium-grained SAND					
197	8.79						
198	7.79						
199	6.79	Dark bluish-gray silty fine- to medium-grained SAND very moist					
200	5.79		23	198.5-200	NA	NA	
201	4.79						
202	3.79						
203	2.79						
204	1.79						
205	0.78	Gray poorly graded sand with silt (SP-SM)	24	203.5-205	NA	NA	
206	-0.22						
206	-0.22						
208	-2.22						
209	-3.22						
210	-4.22	Gray poorly graded sand with silt (SP-SM)	25	208.5-210	NA	NA	
211	-5.22	Silty gravelly SAND with fossils, shark teeth					
212	-6.22						
213	-7.22						
214	-8.85	Dark bluish gray medium- to coarse-grained SAND					
215	-9.22		26	213.5	215	NA	
216	-10.22	Boring terminated at 217'					

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. OW-1012

Sheet 3 of 4

SITE **Vogtle ALWR SSAR** **93.6** SURF.ELEV. 205.355

Depth Ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments
57	148.36						
58	147.36						
59	146.36						
60	145.36	Pale yellow CLAY (CL), slightly sandy	12	58.5-60	1-1-2	3	
61	144.36						
62	143.36						
63	142.36						
64	141.36						
65	140.36		13	63.5-65	2-1-3	4	
66	139.36						
67	138.36						
68	137.36						
69	136.36	Pale yellow sandy CLAY, soft (CL)					
70	135.36		14	68.5-70	WOH/	WHO/1	
71	134.36				WOH/ 1		
72	133.36						
73	132.36	Brown SAND, fine- to medium-grained with pale yellow silt (SM)					
74	131.36						
75	130.36		15	73.5-75	WOH/		
76	129.36				WOH/ 1	WOH/ 1	

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. OW-1013
Sheet 4 of 4

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **103.5** SURF.ELEV. 216.869

Depth ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To Ft.	Blows	N BPF	Comments
89	127.87	Light olive tan calcareous silty fine-grained SAND (SP - SM)					
90	126.87		18	88.5-90	6-7-9	16	
91	125.87						
92	124.87						
93	123.87						
94	122.87	light olive tan calcareous CLAY (CL), wet but not saturated					
95	121.87		19	93.5-95	4-19-15	24	
96	120.87						
97	119.87						
98	118.87						
99	117.87						
100	116.87	Greenish gray MARL	20	98.5-100	13-28-50/3"	28/ 50/3"	
101	115.87						
102	114.87						
103	113.87						
104	112.87	Boring terminated at 103.5' Well OW-1013 installed in this borehole.					
105	111.87						
106	110.87						
107	109.87						
108	108.87						
109	107.87						
110	106.87						
111	105.87						
112	104.87						
113	103.87						
114	102.87						
115	101.87						
116	100.87						
117	99.87						
118							
119	97.87						
120	96.87						

Form GS9901 7-26-2004

DRILLING LOG

GEOLOGICAL SERVICES

Hole No. OW-1014

Sheet 7 of 7

SITE **Vogtle ALWR SSAR** TOTAL DEPTH **197.4** SURF.ELEV. 220.867

Depth ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To ft.	Blows	N BPF	Comments
185	35.87	Light grey, silty, fine-grained SAND (SM), saturated	18	183.5-185	NA	NA	
186	34.87	Dark grey fine sandy SILT (ML)					
187	33.87						
188	32.87						
189	31.87						
190	30.87	Grey poorly graded SAND with silt (SP-SM)	19	188.5-190	NA	NA	
191	29.87						
192	28.87						
193	27.87						
194	26.87						
195	25.87		20	193.5-195	NA	NA	
196	24.87						
197	23.87		21	195-197.4	NA	NA	
198	22.87	Boring terminated at 197.4'					
199	21.87	Well OW-1014 installed in this borehole.					
200	20.87						
201	19.87						
202	18.87						
203	17.87						
204	16.87						
205	15.87						
206	14.87						
206	14.87						
208	12.87						
209	11.87						
210	10.87						
211	9.87						
212	8.87						
213	7.87						
214							
215	5.87						
216	4.87						

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. OW-1015
Sheet 4 of 4

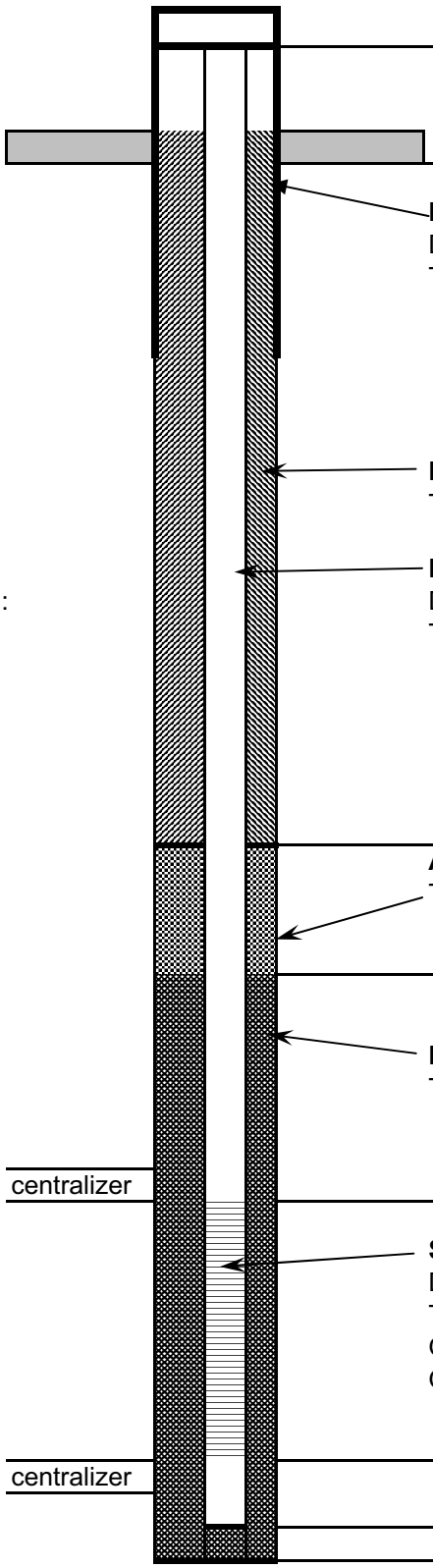
SITE **Vogtle ALWR SSAR** TOTAL DEPTH **120** SURF.ELEV. 220.427

Depth ft.	Elev. Ft.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To ft.	Blows	N BPF	Comments
89	131.43						
90	130.43	Yellow brown clayey SAND (SC) saturated	18	88.5-90	4-9-6	15	
91	129.43						
92	128.43						
93	127.43	Greyish white, fine- to medium-grained SAND (SP) saturated					
94	126.43						sand flowed up into augers.
95	125.43		19	93.5-95	13-26-39	65	used water and SuperGel X to attempt to flush.
96	124.43						
97	123.43						
98	122.43						
99	121.43						
100	120.43	Very light tan poorly graded SAND with silt (SP-SM)	20	98.5-100	10-13-6	19	
101	119.43						
102	118.43						
103	117.43						
104	116.43	Tan shelly (coarse) fine to medium grained clayey SAND (SC)					
105	115.43		21	103.5-105	8-9-16	25	
106	114.43						
107	113.43						
108	112.43						
109	111.43	Greenish Gray MARL					
110	110.43		22	108.5-110	6-12-33	45	
111	109.43						
112	108.43						Boring Terminated at 120'. Mixed fluid to clean auger and stabilize hole. Bentonite was additive. Approx. the volume of the ID of 125' of 4 1/4" ID auger was allowed to sit overnight. Cleaned hole with fresh water to remove mud. Volume of water used in hole was 200 gallons.
113	107.43						
114	106.43						
115	105.43		23	113.5-115	NA	NA	
116	104.43						
117	103.43						
118							
119	101.43						
120	100.43	Boring terminated at 120'	24	118.5-120	20-30-50/3"	30/ 50/3"	

Form GS9901 7-26-2004

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1142888.724 E 620148.556	LOCATION	Burke County, Georgia	
DATE INSTALLED	5/29/2005		PREPARED 7/18/2005	**OW-1001**



	DEPTH (ft.)	ELEVATION (ft.)
Top of 2" PVC Casing		233.494
3' X 3' CONCRETE PAD 4-6" THICK GROUND SURFACE	0	230.854
PROTECTIVE CASING DIA 4" x 4" x 4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
TOP OF SEAL	113	117.854
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP Of FILTER PACK	116	114.854
FILTER PACK TYPE: JC50FS by Unimen		
BOTTOM OF RISER/ TOP OF SCREEN	121	109.854
SCREEN DIA 2" TYPE Sch 40 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE machine slotted		
BOTTOM OF SCREEN	130	100.854
BOTTOM OF CASING	133	97.854
BOTTOM OF HOLE	133	97.854

STANDUP CASING:
hinge lid, welded

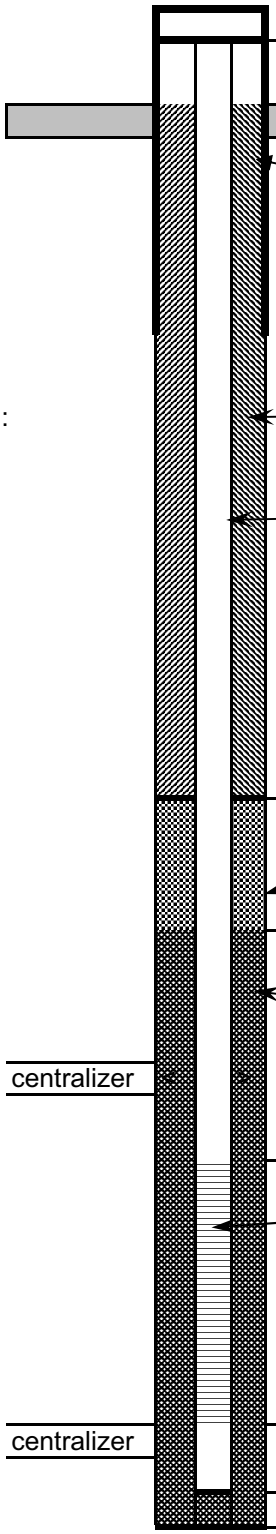
centralizer

centralizer

HOLE DIA: 9"

MACTEC ENGINEERING AND CONSULTING

WELL CONSTRUCTION LOG	PROJECT	Vogtle ALWR ESP	WELL NO.
Coords	LOCATION	Burke County, Georgia	
DATE INSTALLED 10/11/2005		PREPARED 12/05/2005	**OW-1001A**

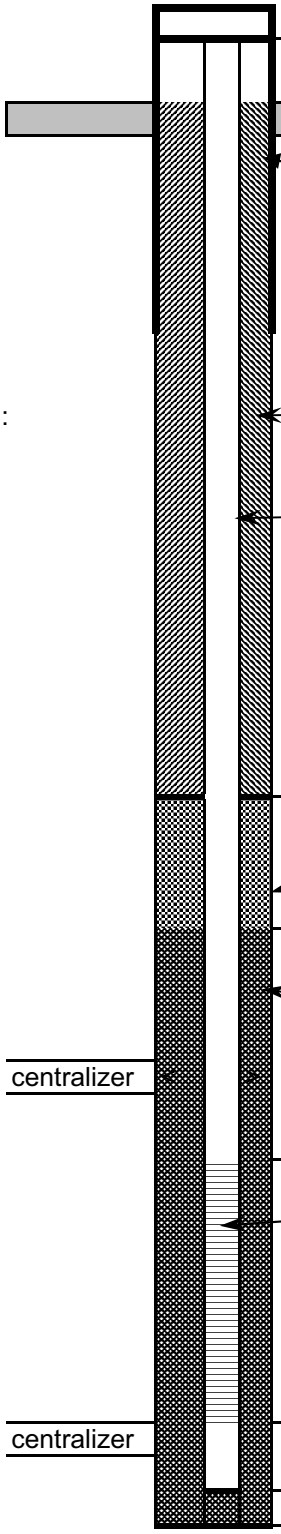


	DEPTH	ELEVATION
Top of 2" PVC casing		TBA
3' X 3' CONCRETE PAD 4-6" THICK		
GROUND SURFACE	0	NA
PROTECTIVE CASING DIA 4"x4"x4' TYPE Plated steel		
STANDUP CASING: hinge lid, welded **BACKFILL MATERIAL** TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
TOP OF SEAL	74	NA
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP Of FILTER PACK	77	NA
FILTER PACK TYPE: 1A by DSI centralizer		
BOTTOM OF RISER/ TOP OF SCREEN	80.25	NA
SCREEN DIA 2" TYPE Sch 40 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE machine slotted		
BOTTOM OF SCREEN	90.25	NA
centralizer		
BOTTOM OF CASING	93.25	NA
BOTTOM OF HOLE	93.25	NA

HOLE DIA: 7 7/8"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1142887.782 E 620189.341	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/6/2005		PREPARED 7/18/2005	**OW-1002**

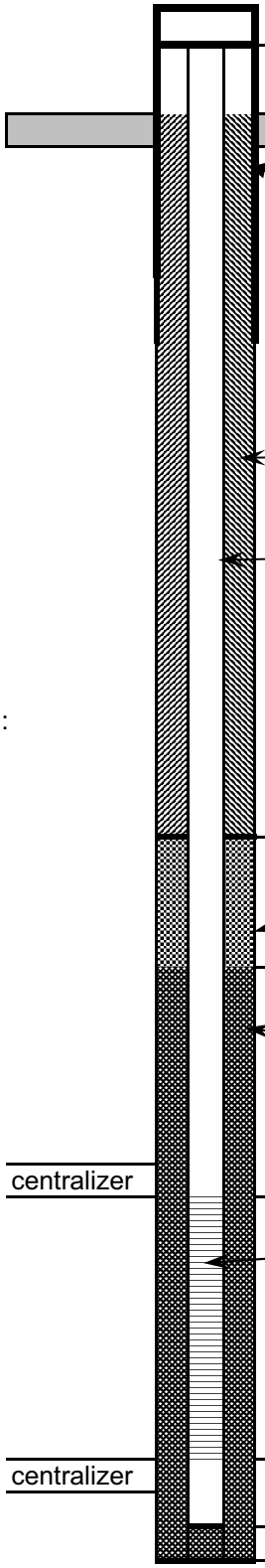


		DEPTH	ELEVATION
	Top of 2" PVC casing		230.502
3' X 3' CONCRETE PAD 4-6" THICK			
	GROUND SURFACE	0	227.442
PROTECTIVE CASING			
DIA	4"x4"x4'		
TYPE	Plated steel		
STANDUP CASING: hinge lid, welded			
BACKFILL MATERIAL			
TYPE	Cement/bentonite grout		
RISER CASING			
DIA	2"		
TYPE	Sch 80 PVC		
	TOP OF SEAL	212	15.442
ANNULAR SEAL			
TYPE	Cetco Goldseal 3/8" chips		
	TOP Of FILTER PACK	216	11.442
FILTER PACK			
TYPE:	1A by DSI		
	BOTTOM OF RISER/ TOP OF SCREEN	219	8.442
SCREEN			
DIA	2"		
TYPE	Sch 80 PVC		
OPENING WIDTH	0.01" spaced 0.125"		
OPENING TYPE	machine slotted		
	BOTTOM OF SCREEN	229	-1.558
	BOTTOM OF CASING	237	-9.558
	BOTTOM OF HOLE	237	-9.558

HOLE DIA: 6"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1142864.05 E 621884.337	LOCATION	Burke County, Georgia	
DATE INSTALLED	5/26/2005		PREPARED 7/16/2005	**OW-1003**

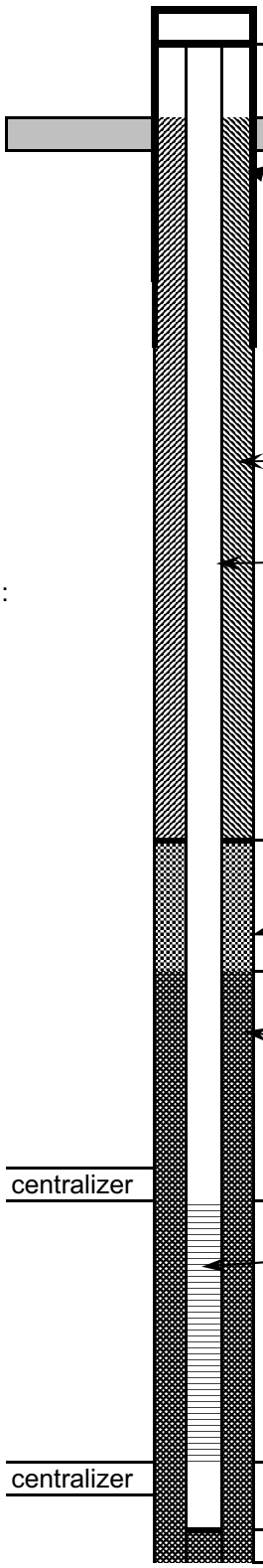


	DEPTH (ft.)	ELEVATION (ft.)
Top of 2" PVC casing		226.284
3' X 3' CONCRETE PAD 4-6" THICK GROUND SURFACE	0	223.044
PROTECTIVE CASING DIA 4"x4"x4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
STANDUP CASING: hinge lid, welded		
TOP OF SEAL	68.5	154.544
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	72	151.044
FILTER PACK TYPE: 1A by DSI		
centralizer BOTTOM OF RISER/ TOP OF SCREEN	75.5	147.544
SCREEN DIA 2" TYPE Sch 40 PVC OPENING WITH 0.01" spaced 0.125" OPENTING TYPE machine slotted		
BOTTOM OF SCREEN	84.8	138.244
centralizer BOTTOM OF CASING	90.5	132.544
BOTTOM OF HOLE	90.5	132.544

HOLE DIA: 9"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1142842.17 E 621880.794	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/10/2005		PREPARED 7/18/2005	**OW-1004**



	DEPTH (ft.)	ELEVATION (ft.)
Top of 2" PVC CASING		225.671
3' X 3' CONCRETE PAD 4-6" THICK GROUND SURFACE	0	222.92
PROTECTIVE CASING DIA 4"X4"X4' TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 80 PVC		
TOP OF SEAL	147	75.92
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	150	72.92
FILTER PACK TYPE: 1A by DSI		
BOTTOM OF RISER/ TOP OF SCREEN	153	69.92
SCREEN DIA 2" TYPE Sch 80 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted		
BOTTOM OF SCREEN	163	59.92
BOTTOM OF CASING	169	53.92
BOTTOM OF HOLE	187	35.92

STANDUP CASING:
hinge lid, welded

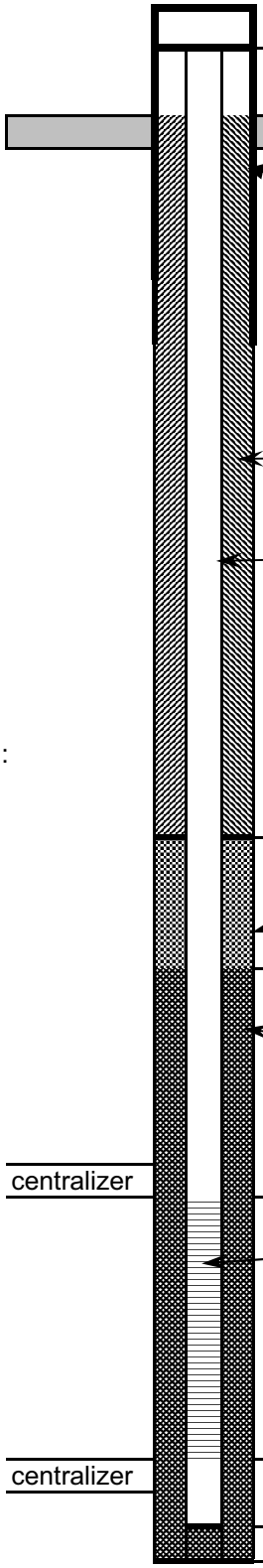
centralizer

centralizer

HOLE DIA 6"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1144047.86 E 620408.765	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/7/2005		PREPARED 7/18/2005	**OW-1005**

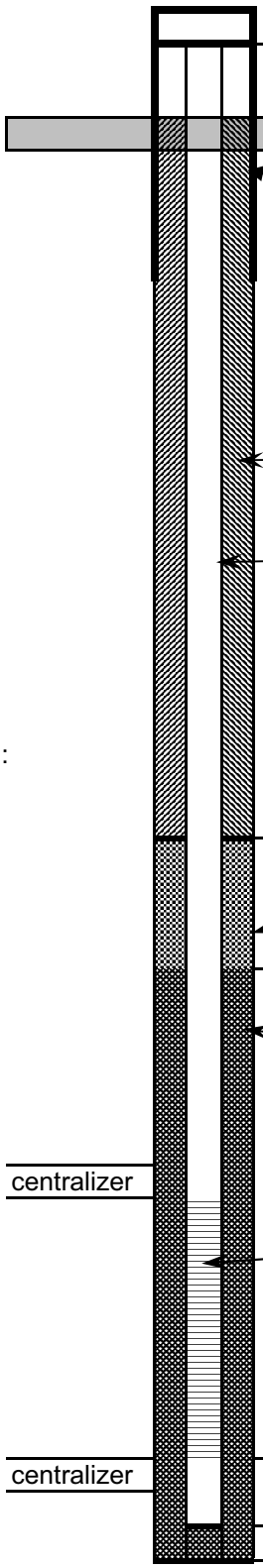


		DEPTH (ft.)	ELEVATION (ft.)
	TOP OF 2" PVC CASING		267.289
3' X 3' CONCRETE PAD 4-6" THICK	GROUND SURFACE	0	264.389
PROTECTIVE CASING DIA TYPE	 4"X4"X4" Plated steel		
BACKFILL MATERIAL TYPE	 Cement/bentonite grout		
RISER CASING DIA TYPE	 2" Sch 80 PVC		
STANDUP CASING: hinge lid, welded	TOP OF SEAL	140	124.389
ANNULAR SEAL TYPE	 Cetco Goldseal 3/8" chips		
	TOP OF FILTER PACK	143	121.389
FILTER PACK TYPE:	 1A by DSI		
BOTTOM OF RISER/ centralizer	TOP OF SCREEN	149	115.389
SCREEN DIA TYPE OPENING WIDTH OPENING TYPE	 2" Sch 80 PVC 0.01" spaced 0.125" Machine slotted		
	BOTTOM OF SCREEN	159	105.389
centralizer	BOTTOM OF CASING	168.5	95.889
	BOTTOM OF HOLE	168.5	95.889

HOLE DIA: 9"

SOUTHERN COMPANY GENERATION

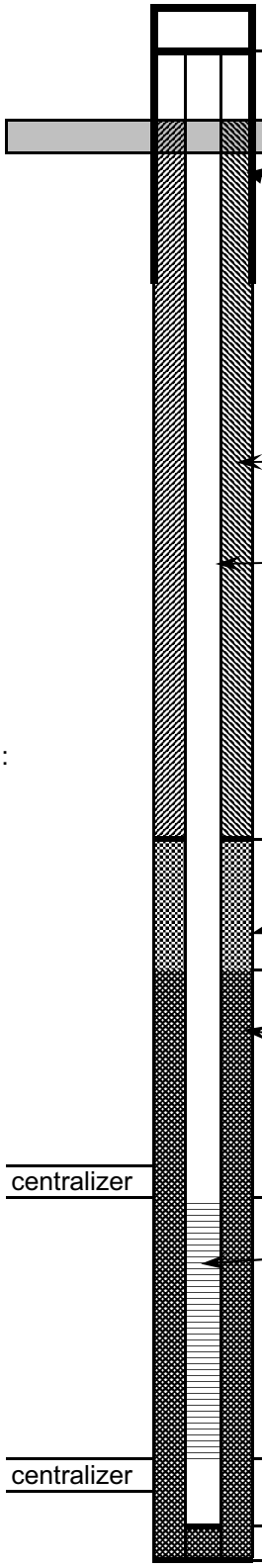
WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1143817.85 E 619179.749	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/14-15/2005		PREPARED 7/18/2005	**OW-1006**



	DEPTH (ft.)	ELEVATION (ft.)
TOP OF 2" PVC CASING		230.601
3' X 3' CONCRETE PAD 4-6" THICK GROUND SURFACE	0	227.121
PROTECTIVE CASING DIA 4"X4"X4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 80 PVC		
STANDUP CASING: hinge lid, welded		
TOP OF SEAL	110	117.121
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	113	114.121
FILTER PACK TYPE: 1A by DSI		
centralizer BOTTOM OF RISER/ TOP OF SCREEN	116	111.121
SCREEN DIA 2" TYPE Sch 80 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted		
BOTTOM OF SCREEN	126	101.121
centralizer BOTTOM OF CASING	136	91.121
BOTTOM OF HOLE	136	91.121
HOLE DIA: 9"		

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1142383.76 E 619301.009	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/7/2005		PREPARED 7/18/2005	**OW-1007**



	DEPTH (Ft.)	ELEVATION (ft.)
TOP OF 2" PVC CASING		219.96
3' X 3' CONCRETE PAD 4-6" THICK GROUND SURFACE	0	216.91
PROTECTIVE CASING DIA 4"X4"X4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
TOP OF SEAL	96	120.91
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	99	117.91
FILTER PACK TYPE: 1A by DSI		
BOTTOM OF RISER/ TOP OF SCREEN	102	114.91
SCREEN DIA 2" TYPE Sch 40 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted		
BOTTOM OF SCREEN	112	104.91
BOTTOM OF CASING	120	96.91
BOTTOM OF HOLE	120	96.91

STANDUP CASING:
hinge lid, welded

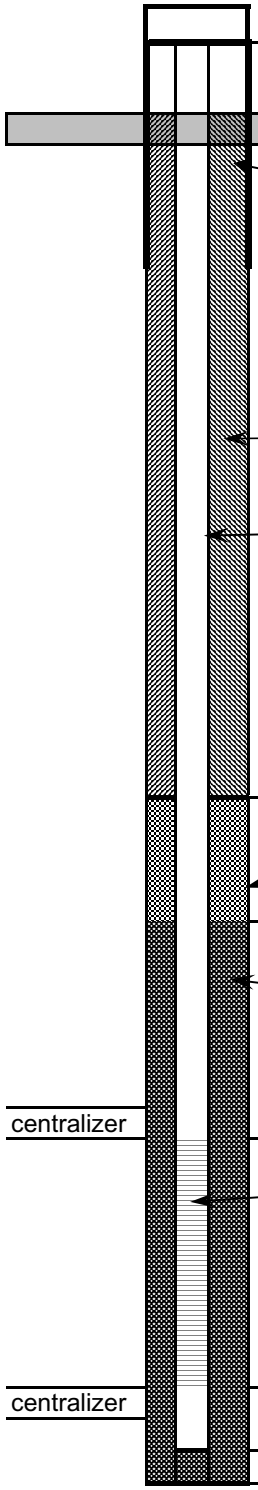
centralizer

centralizer

HOLE DIA: 9"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1142347.93 E 619306.686	LOCATION	Burke County, Georgia	
DATE STARTED	6/1/2005		PREPARED 7/18/2005	**OW-1008**

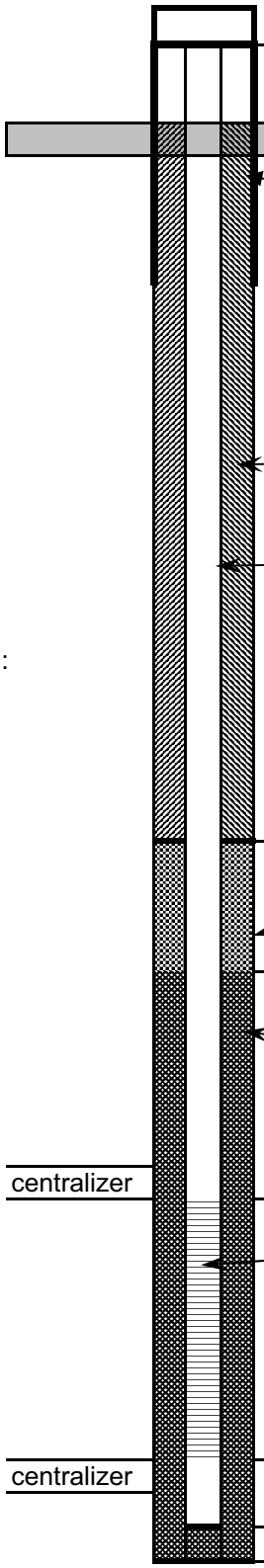


		DEPTH (ft.)	ELEVATION (ft.)
	TOP OF 2" PVC CASING		219.71
3' X 3' CONCRETE PAD 4-6" THICK	GROUND SURFACE	0	216.65
PROTECTIVE CASING DIA TYPE	 4"X4"X4" Plated steel		
BACKFILL MATERIAL TYPE	 Cement/bentonite grout		
RISER CASING DIA TYPE	 2" Sch 80 PVC		
STANDUP CASING: hinge lid, welded	TOP OF SEAL	224	-7.35
ANNULAR SEAL TYPE	 Cetco Goldseal 3/8" chips		
	TOP OF FILTER PACK	226	-9.35
FILTER PACK TYPE:	 1A by DSI		
centralizer	BOTTOM OF RISER/ TOP OF SCREEN	230	-13.35
SCREEN DIA TYPE OPENING WIDTH OPENING TYPE	 2" Sch 80 PVC 0.01" spaced 0.125" Machine slotted		
	BOTTOM OF SCREEN	240	-23.35
centralizer	BOTTOM OF CASING	245	-28.35
	BOTTOM OF HOLE	247	-30.35

HOLE DIA: 6"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1141891.64 E 620888.608	LOCATION	Burke County, Georgia	
DATE INSTALLED	5/27/2005		PREPARED 7/18/2005	**OW-1009**



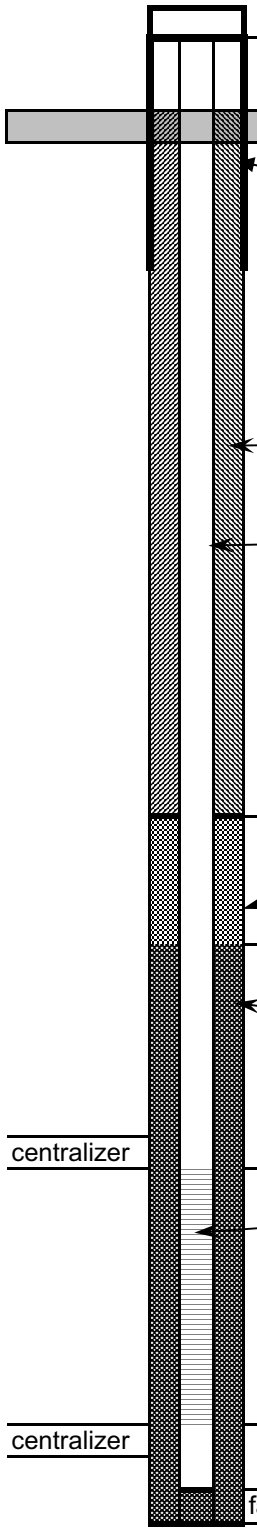
	DEPTH (ft.)	ELEVATION (ft.)
TOP OF 2" PVC CASING		223.647
3' X 3' CONCRETE PAD 4-6" THICK GROUND SURFACE	0	220.887
PROTECTIVE CASING DIA 4"X4"X4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
TOP OF SEAL	78	142.887
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	81	139.887
FILTER PACK TYPE: 1A by DSI		
centralizer BOTTOM OF RISER/ TOP OF SCREEN	84	136.887
SCREEN DIA 2" TYPE Sch 40 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted		
BOTTOM OF SCREEN	94	126.887
centralizer BOTTOM OF CASING	98	122.887
BOTTOM OF HOLE	98	122.887

STANDUP CASING:
hinge lid, welded

HOLE DIA: 9"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1140808.98 E 620051.708	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/1/2005		PREPARED 7/18/2005	**OW-1010**

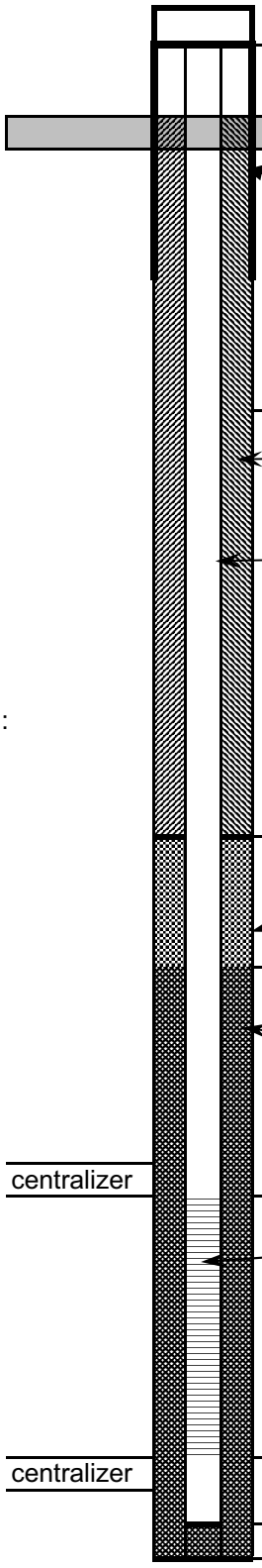


	DEPTH (ft.)	ELEVATION (ft.)
TOP OF 2" PVC CASING		219.905
3' X 3' CONCRETE PAD 4-6" THICK GROUND SURFACE	0	216.895
PROTECTIVE CASING DIA 4"X4"X4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
STANDUP CASING: hinge lid, welded		
TOP OF SEAL	67.0	149.895
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	70.1	146.795
FILTER PACK TYPE: 1A by DSI		
BOTTOM OF RISER/ TOP OF SCREEN (centralizer)	73	143.895
SCREEN DIA 2" TYPE Sch 40 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted		
BOTTOM OF SCREEN (centralizer)	83	133.895
BOTTOM OF CASING	92	124.895
fall-in BOTTOM OF HOLE	94	122.895

HOLE DIA: 9"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1139956.24 E 621033.045	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/13/2005		PREPARED 7/18/2005	**OW-1011**

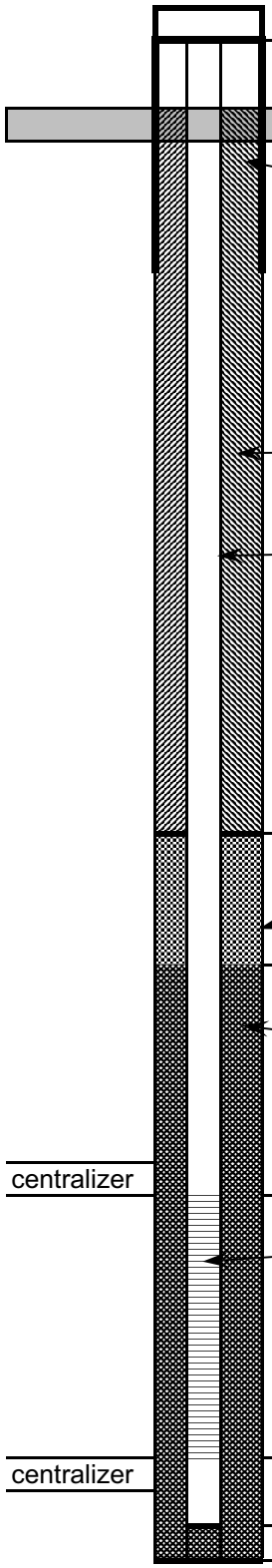


		DEPTH (ft.)	ELEVATION (ft.)
	TOP OF 2" PVC CASING		209.043
3' X 3' CONCRETE PAD 4-6" THICK	GROUND SURFACE	0	205.785
PROTECTIVE CASING DIA TYPE	4"X4"X4" Plated steel		
BACKFILL MATERIAL TYPE	Cement/bentonite grout		
RISER CASING DIA TYPE	2" Sch 80 PVC		
STANDUP CASING: hinge lid, welded	TOP OF SEAL	193	12.785
ANNULAR SEAL TYPE	Cetco Puregold med chips		
	TOP Of FILTER PACK	197	8.785
FILTER PACK TYPE:	Foster Dixiana		
centralizer	BOTTOM OF RISER/ TOP OF SCREEN	200	5.785
SCREEN DIA TYPE OPENING WIDTH OPENING TYPE	2" Sch 80 PVC 0.01" spaced 0.125" Machine slotted		
	BOTTOM OF SCREEN	210	-4.215
centralizer	BOTTOM OF CASING	218	-12.215
	BOTTOM OF HOLE	218	-12.215

HOLE DIA: 6"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1139969.49 E 621045.924	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/1/2005		PREPARED 7/18/2005	**OW-1012**

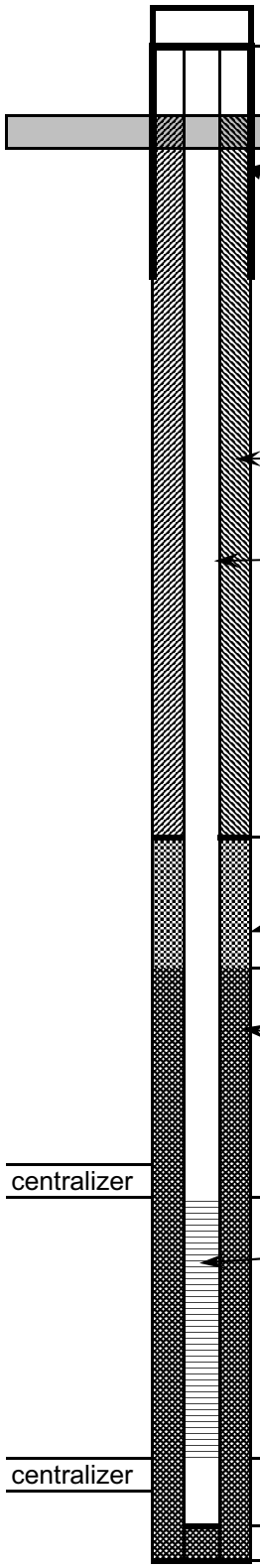


	DEPTH (ft.)	ELEVATION (ft.)
TOP OF 2" PVC CASING		208.684
3' x 3' CONCRETE PAD 4 - 6" THICK GROUND SURFACE	0	205.355
PROTECTIVE CASING DIA 4"X4"X4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
TOP OF SEAL	67.0	138.355
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	71	134.355
FILTER PACK TYPE: 1A BY DSI		
BOTTOM OF RISER/ TOP OF SCREEN	74.0	131.355
SCREEN DIA TYPE 2" TYPE Sch 40 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted		
BOTTOM OF SCREEN	83	122.355
BOTTOM OF CASING	94	111.355
BOTTOM OF HOLE	94	111.355

HOLE DIA: 9"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1140805.4 E 621715.032	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/10/2005		PREPARED 7/18/2005	**OW-1013**

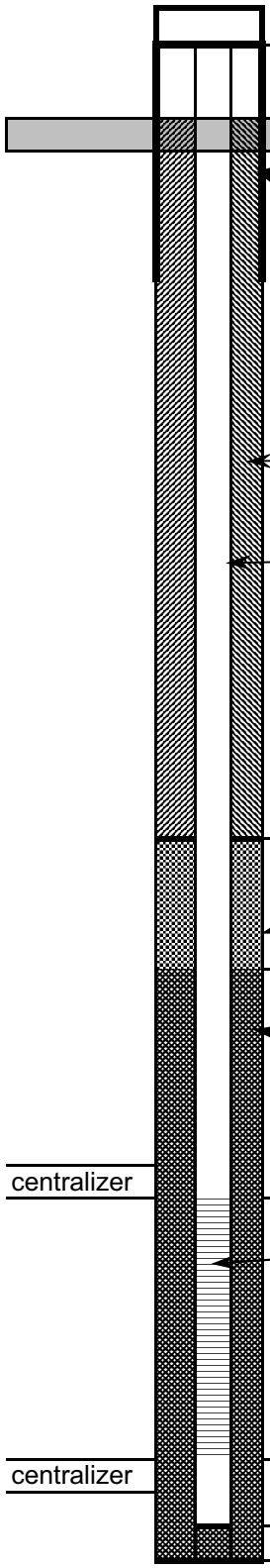


		DEPTH (ft.)	ELEVATION (ft.)
	TOP OF 2" PVC CASING		219.809
3' x 3' CONCRETE PAD 4 - 6" THICK	GROUND SURFACE	0	216.869
PROTECTIVE CASING DIA TYPE	 4"X4"X4" Plated steel		
BACKFILL MATERIAL TYPE	 Cement/bentonite grout		
RISER CASING DIA TYPE	 2" Sch 40		
STANDUP CASING hinge lid, welded	TOP OF SEAL	78	139.369
ANNULAR SEAL TYPE	 Cetco Goldseal 3/8" chips		
	TOP OF FILTER PACK	81.0	135.869
FILTER PACK TYPE:	 1A by DSI		
centralizer	BOTTOM OF RISER/ TOP OF SCREEN	84	133.369
SCREEN DIA TYPE OPENING WIDTH OPENING TYPE	 2" Sch 40 PVC 0.01" spaced 0.125" Machine slotted		
	BOTTOM OF SCREEN	94	122.869
centralizer			
	BOTTOM OF CASING	104	112.869
	BOTTOM OF HOLE	104	112.869

HOLE DIA: 9"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1140565.502 E 623070.234	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/11/2005		PREPARED 7/18/2005	**OW-1014**

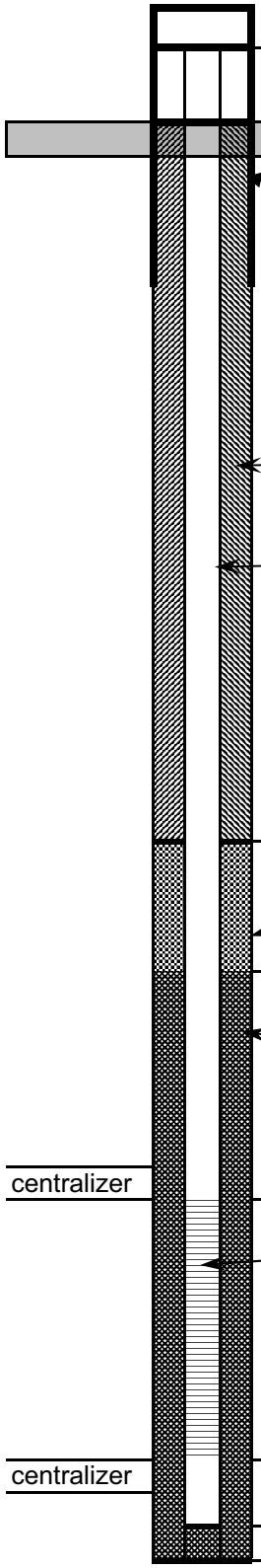


	DEPTH (ft.)	ELEVATION (ft.)
TOP OF 2" PVC CASING		223.856
3' x 3' CONCRETE PAD 4 - 6" THICK GROUND SURFACE	0	220.867
PROTECTIVE CASING DIA 4"X4"X4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 80 PVC		
STANDUP CASING hinge lid, welded TOP OF SEAL	176	44.867
ANNULAR SEAL TYPE Cetco Puregold 3/8" chips TOP Of FILTER PACK	179	41.867
FILTER PACK TYPE: Foster Dixiana Filter Sand BOTTOM OF RISER/ centralizer TOP OF SCREEN	182	38.867
SCREEN DIA 2" TYPE Sch 80 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted BOTTOM OF SCREEN	192	28.867
centralizer BOTTOM OF CASING	197	23.867
BOTTOM OF HOLE	197	23.867

HOLE DIA: 6"

SOUTHERN COMPANY GENERATION

WELL CONSTRUCTION LOG		PROJECT	Vogtle ALWR SSAR	WELL NO.
Coords	N 1140550.57 E 623086.318	LOCATION	Burke County, Georgia	
DATE INSTALLED	6/3/2005		PREPARED 7/18/2005	**OW-1015**



	DEPTH (ft.)	ELEVATION (ft.)
TOP OF 2" PVC CASING		223.157
3' x 3' CONCRETE PAD 4 - 6" THICK GROUND SURFACE	0	220.427
PROTECTIVE CASING DIA 4"X4"X4" TYPE Plated steel		
BACKFILL MATERIAL TYPE Cement/bentonite grout		
RISER CASING DIA 2" TYPE Sch 40 PVC		
TOP OF SEAL	86	134.427
ANNULAR SEAL TYPE Cetco Goldseal 3/8" chips		
TOP OF FILTER PACK	89.6	130.827
FILTER PACK TYPE: 1A BY DSI		
BOTTOM OF RISER/ TOP OF SCREEN	93	127.427
SCREEN DIA 2" TYPE Sch 40 PVC OPENING WIDTH 0.01" spaced 0.125" OPENING TYPE Machine slotted		
BOTTOM OF SCREEN	103	117.427
BOTTOM OF CASING	120	100.427
BOTTOM OF HOLE	120	100.427

STANDUP CASING
hinge lid, welded

centralizer

centralizer

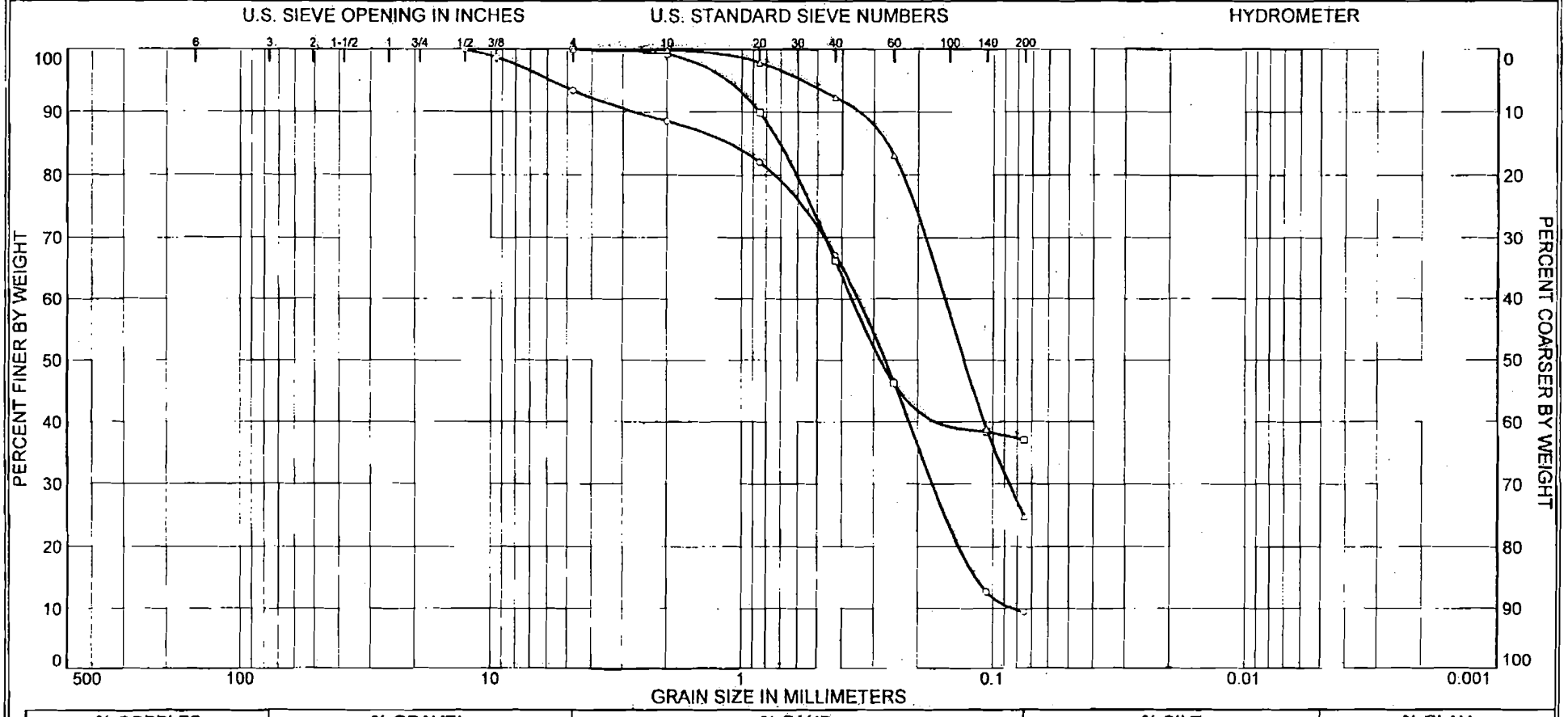
HOLE DIA: 9"

APPENDIX E

LABORATORY TEST RESULTS

Summary of Lab Test Results
Grain Size Curves (61)
Atterberg Limits (27)
Unconsolidated Undrained Triaxial Compression Tests (11)
Unit Weight (19)

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	6.6	84.0	9.4	
□	0.0	0.0	62.9	37.1	
△	0.0	0.0	75.1	24.9	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1002	6	7.5'/214.28'		SP-SM	Poorly graded sand with silt	6.2		
□	B-1002	11	18.5'/203.48'		SM	Silty sand	24.4		
△	B-1002	13	28.5'/193.48'		SM	Silty sand	31.8		

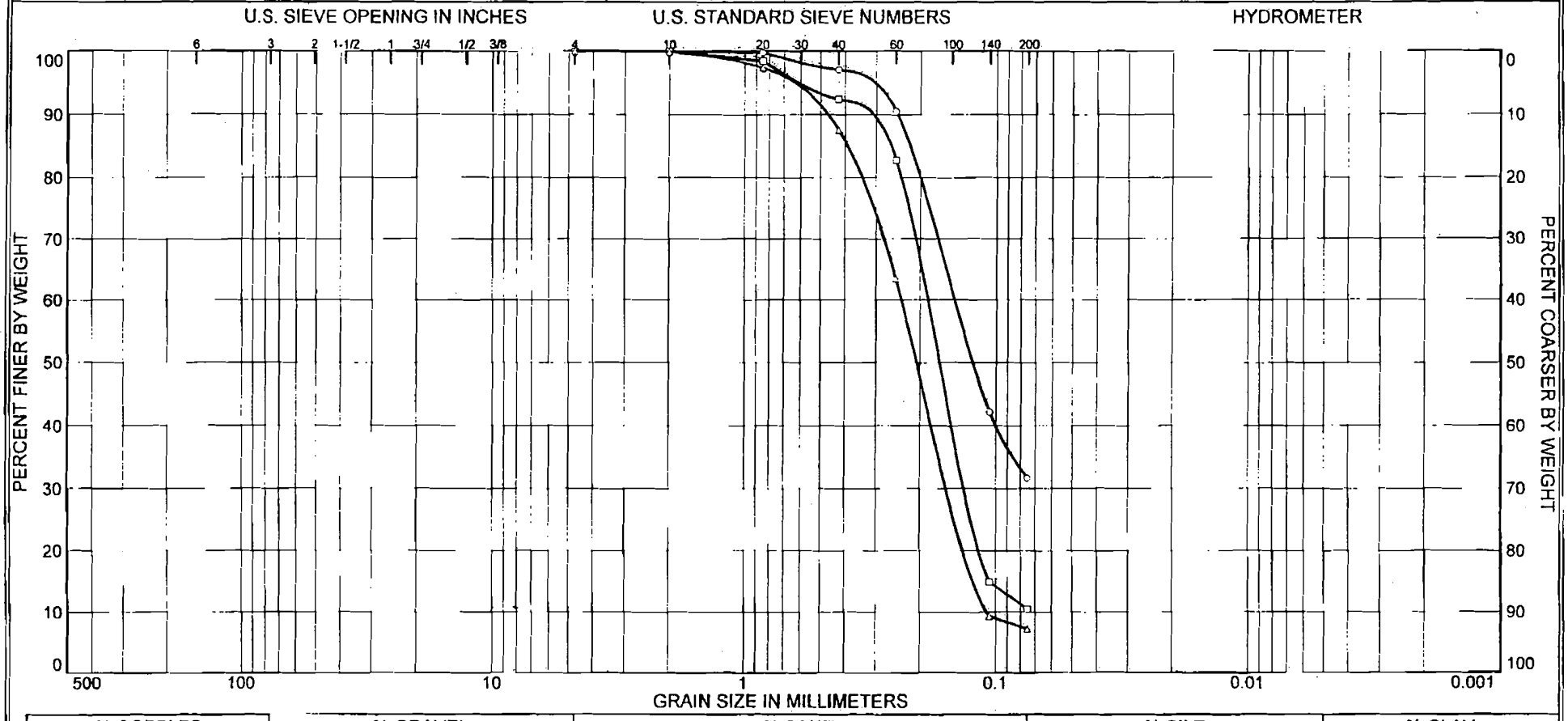
Client Southern Nuclear Co.
Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: BM
Reviewed by: JM
□ Tested by: BM
Reviewed by: JM
△ Tested by: BM
Reviewed by: JM

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	68.4	31.6	
□	0.0	0.0	89.5	10.5	
△	0.0	0.0	92.8	7.2	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1002	14	33.5'/188.48'		SM	Silty sand	58.8		
□	B-1002	18	53.5'/168.48'		SP-SM	Poorly graded sand with silt	42.9		
△	B-1002	20	63.5'/158.48'		SP-SM	Poorly graded sand with silt	29.3		

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MACTEC ENGINEERING AND CONSULTING, INC.

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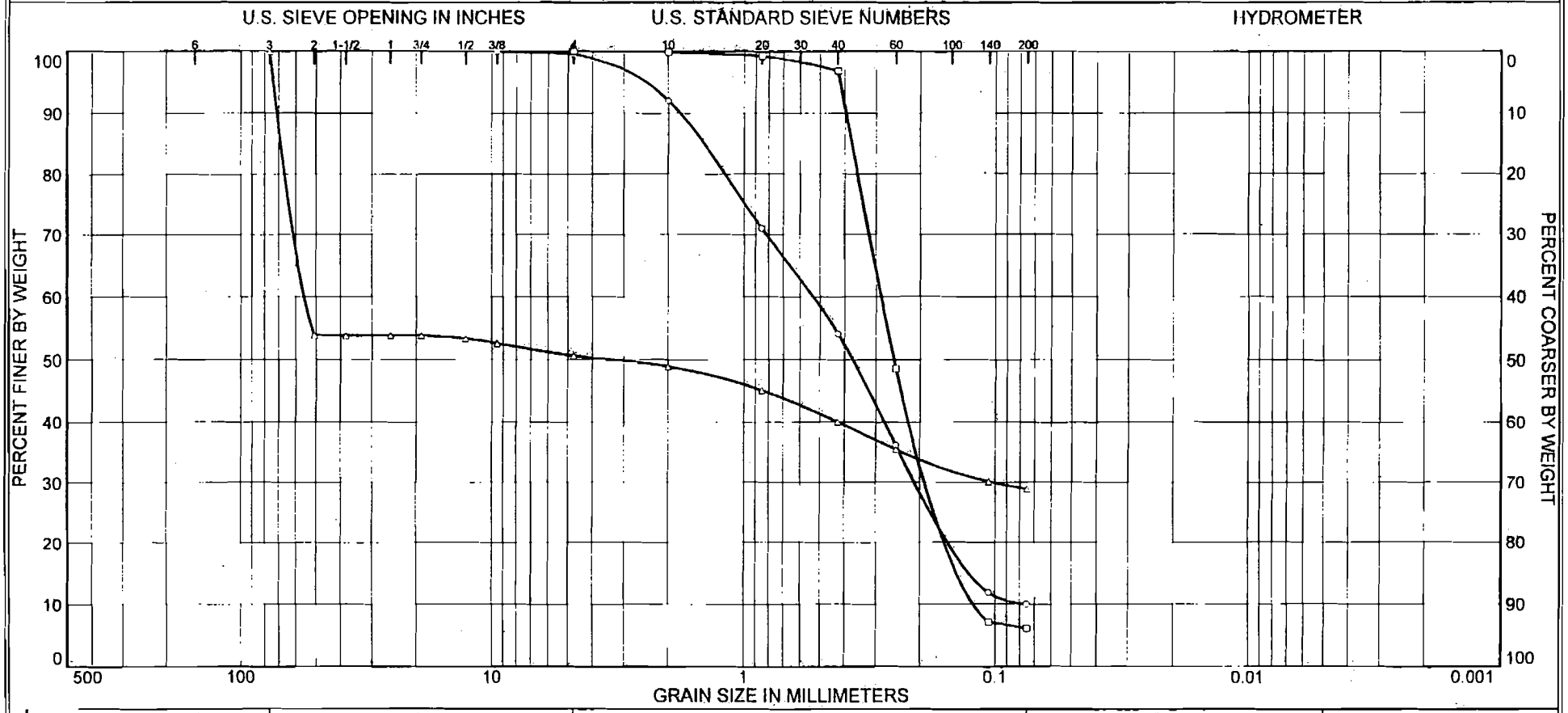
Reviewed by: JM

□ Tested by: BM
Reviewed by: JM

△ Tested by: BM
Reviewed by: JM

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.4	89.6	10.0	
□	0.0	0.0	93.9	6.1	
△	0.0	49.4	21.7	28.9	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1002	22	73.5'/148.48'		SW-SM	Well-graded sand with silt	24.5		
□	B-1002	24	83.5'/138.48'		SP-SM	Poorly graded sand with silt	27.6		
△	B-1002	UD-1 Upper	92.0'/129.98'		GM	Silty Gravel with Sand	52.1	72	37

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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Reviewed by: JM
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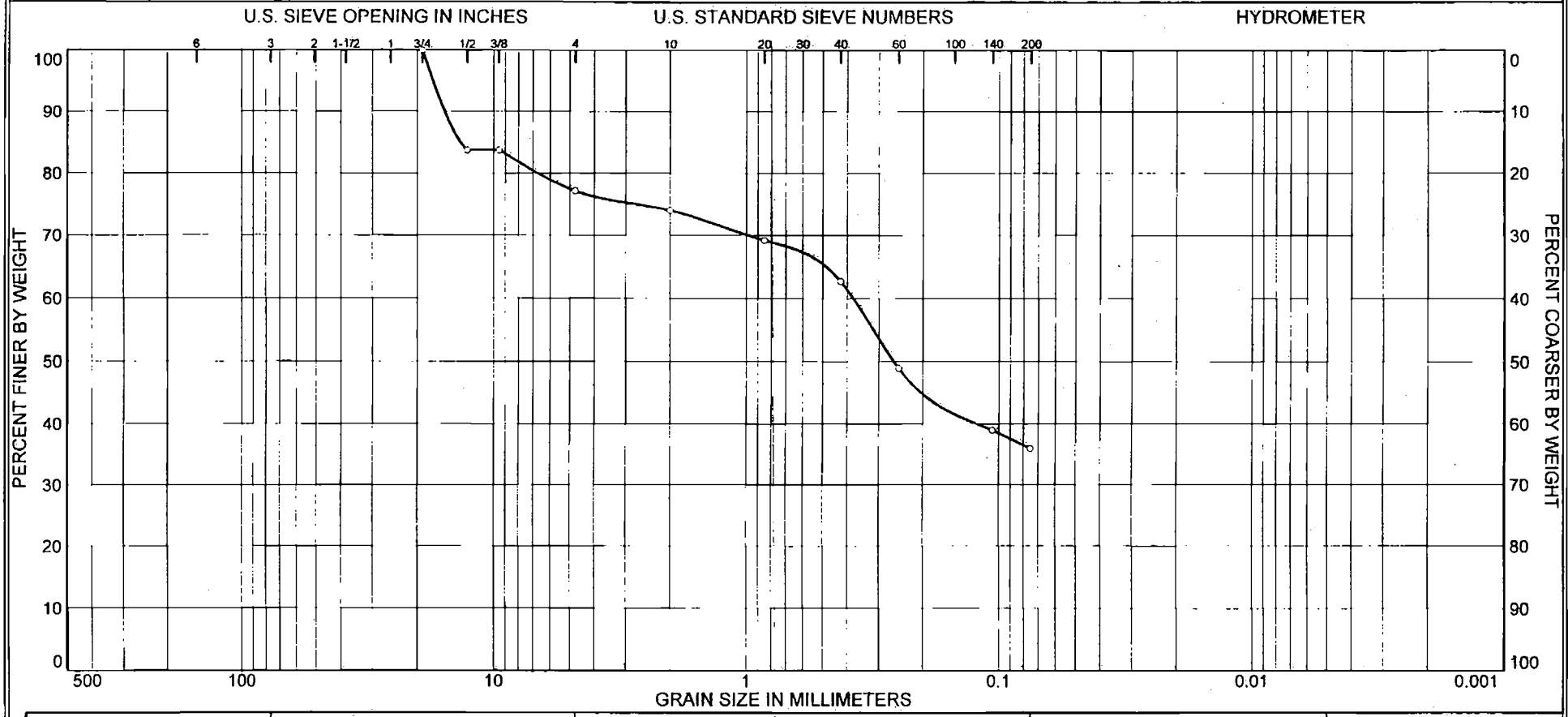
Reviewed by: JM
△ Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	22.9	41.2	35.9	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1002	UD-2	103.5'/ 118.48'		SC	Clayey sand with gravel	56.5	34	22

Client Southern Nuclear Co.

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Project No. 6141-05-0227.16

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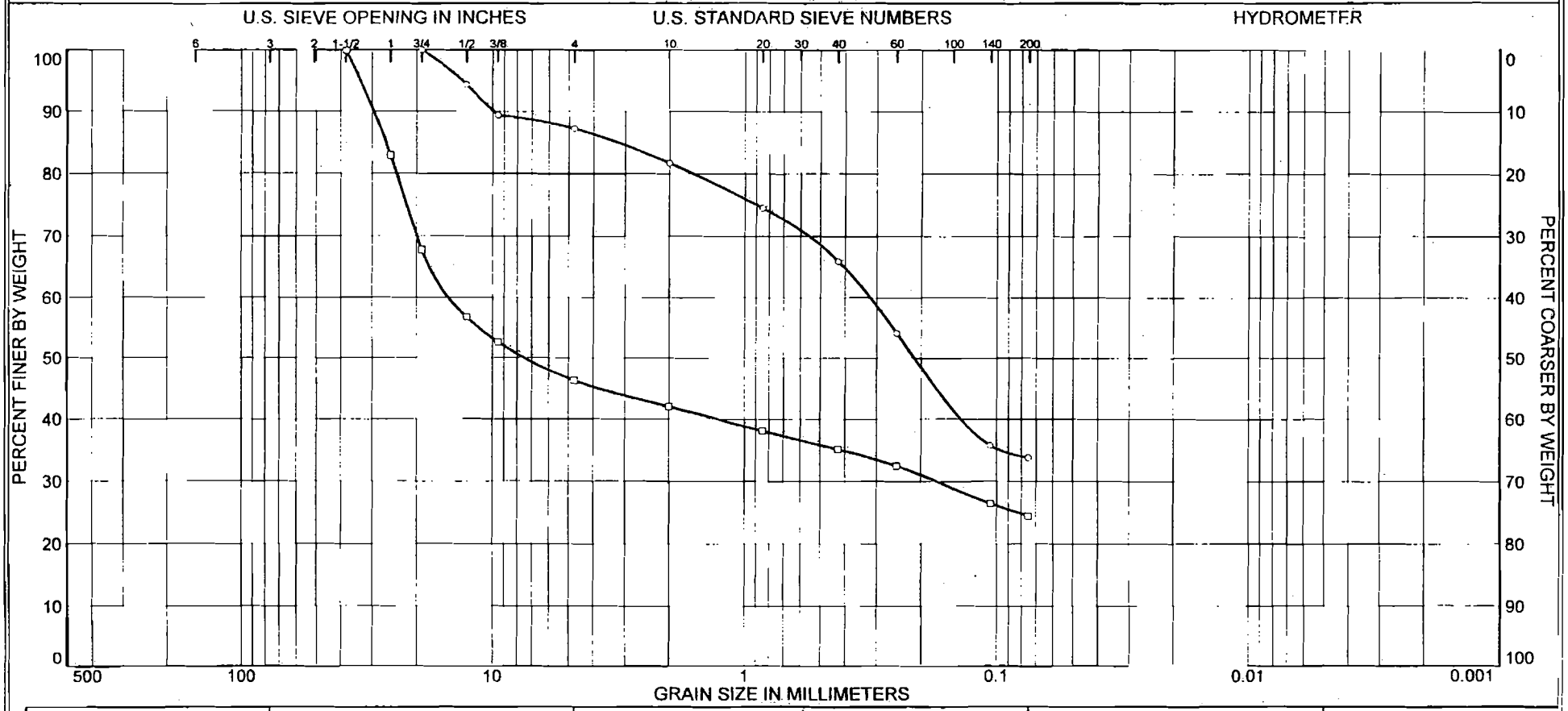
Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	12.8	53.4	33.8	
□	0.0	53.7	21.8	24.5	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1002	UD-3	113.5'/		SC	Clayey Sand	25.5	29	19
			108.48'						
□	B-1002	UD-4	123.5'/98.48'		GC-GM	Clayey/Silty Gravel with Sand	13.5	22	17

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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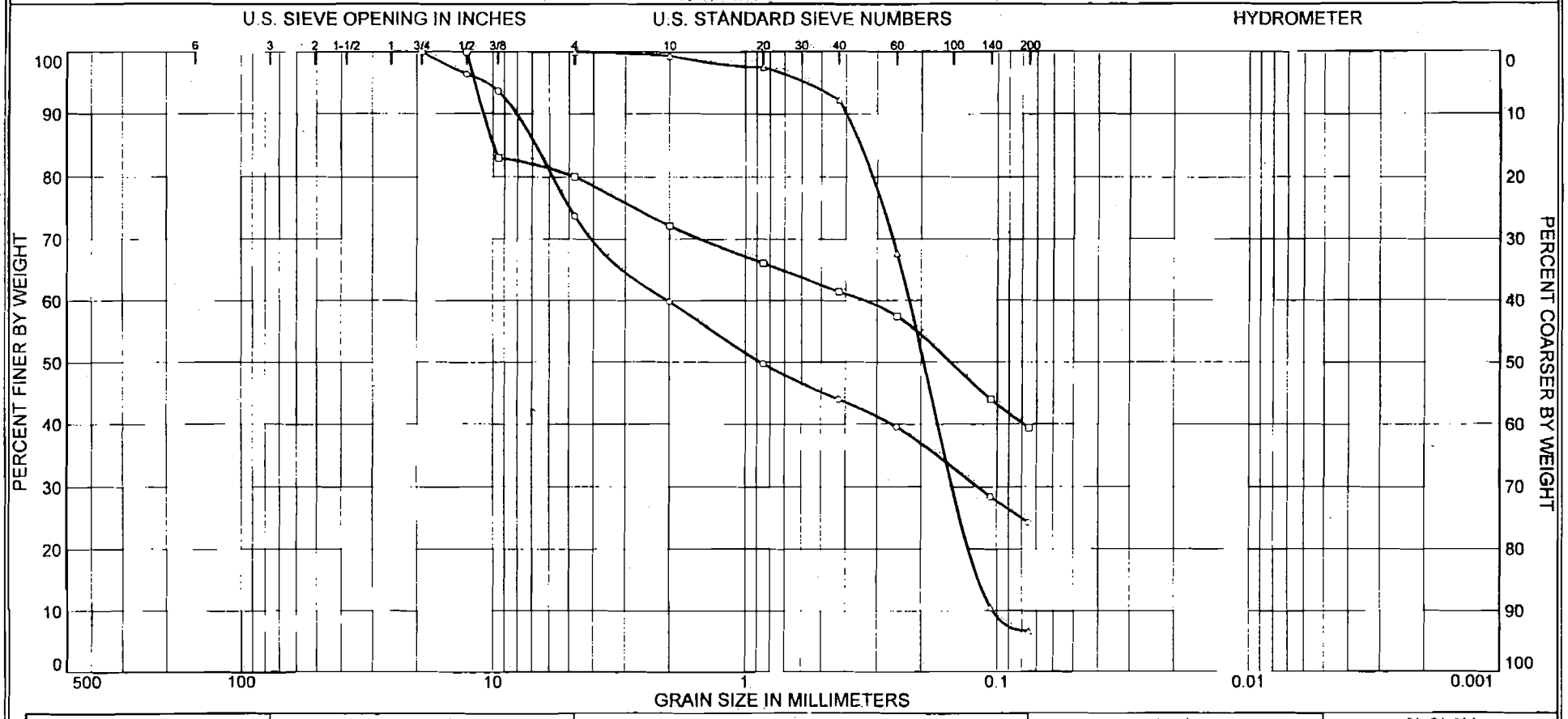
Reviewed by: SP

□ Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	26.3	49.4	24.3	
□	0.0	20.0	40.6	39.4	
△	0.0	0.0	93.4	6.6	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1002	UD-5	133.5'/88.48'		SM	Silty Sand with Gravel	28.6	32	25
□	B-1002	33	153.5'/68.48'		SC	Clayey sand with gravel	23.3	34	21
△	B-1002	38	188.5'/33.48'		SP-SM	Poorly graded sand with silt	40.7		NP

Client Southern Nuclear Co.

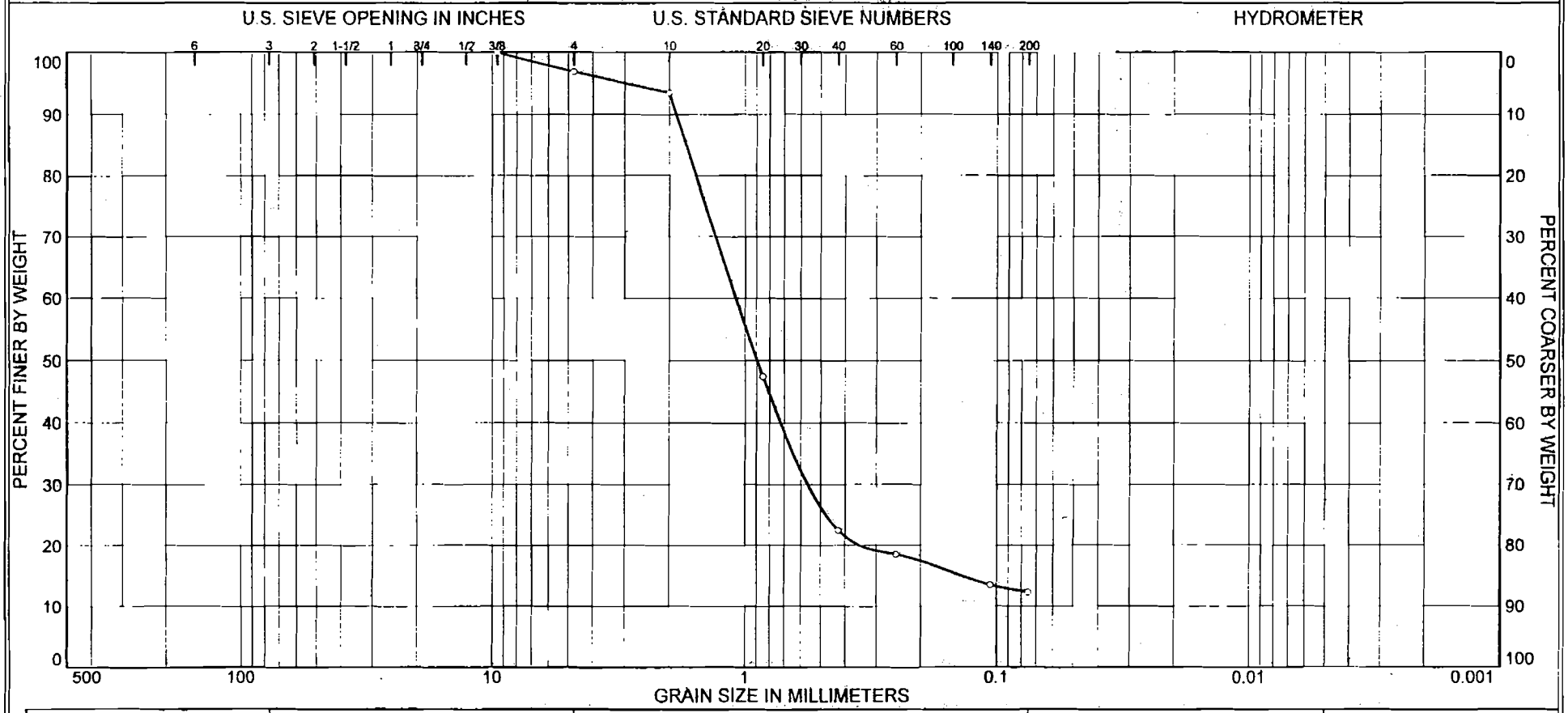
Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: JM
Reviewed by: SP
□ Tested by: BM
Reviewed by: JM
△ Tested by: BM
Reviewed by: JM

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	3.1	84.6	12.3	

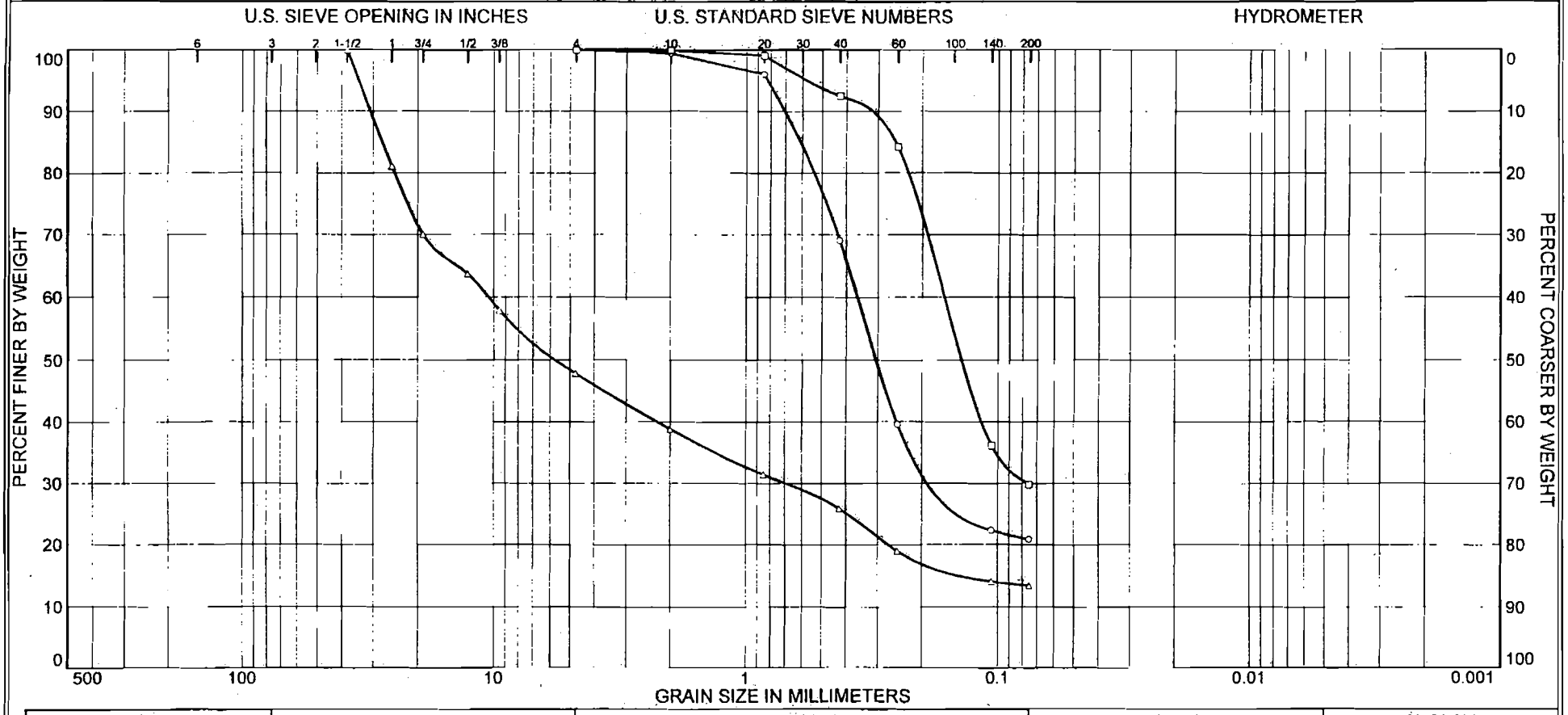
SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1002	43	238.5'/-16.52'		SM	Silty sand	18.5		

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

Tested by: BM
Reviewed by: JM

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	79.1	20.9	
□	0.0	0.0	70.2	29.8	
△	0.0	52.2	34.4	13.4	

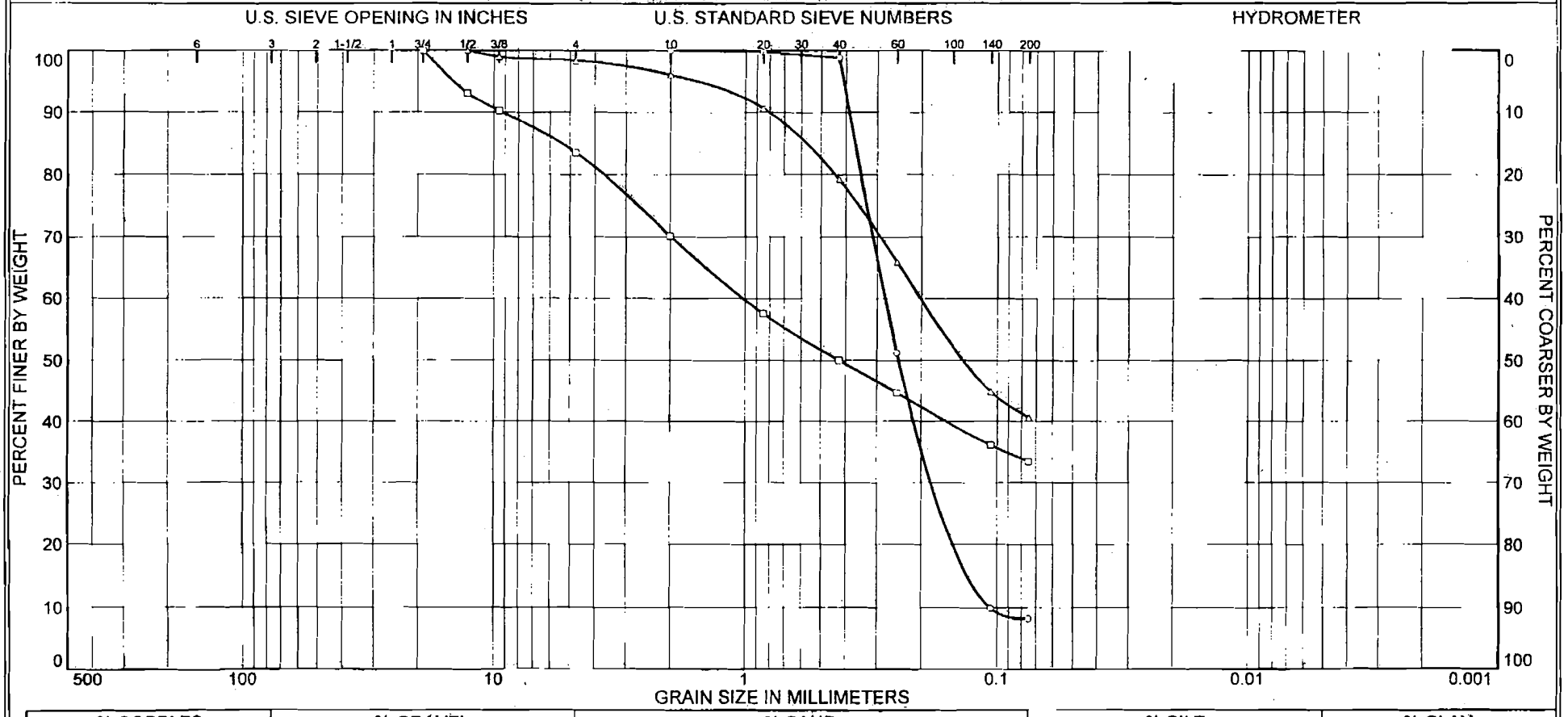
	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1003	3	15.0'/208.21'			Silty Sand	13.4		
□	B-1003	7	35.0'/185.21'			Silty Sand	42.1		
△	B-1003	11	55.0'/168.21'			Shell Hash with Silt and Sand	17.5		

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: RM
Reviewed by: SP
□ Tested by: JM
Reviewed by: SP
△ Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	91.8	8.2	
□	0.0	16.5	50.1	33.4	
△	0.0	1.6	57.8	40.6	

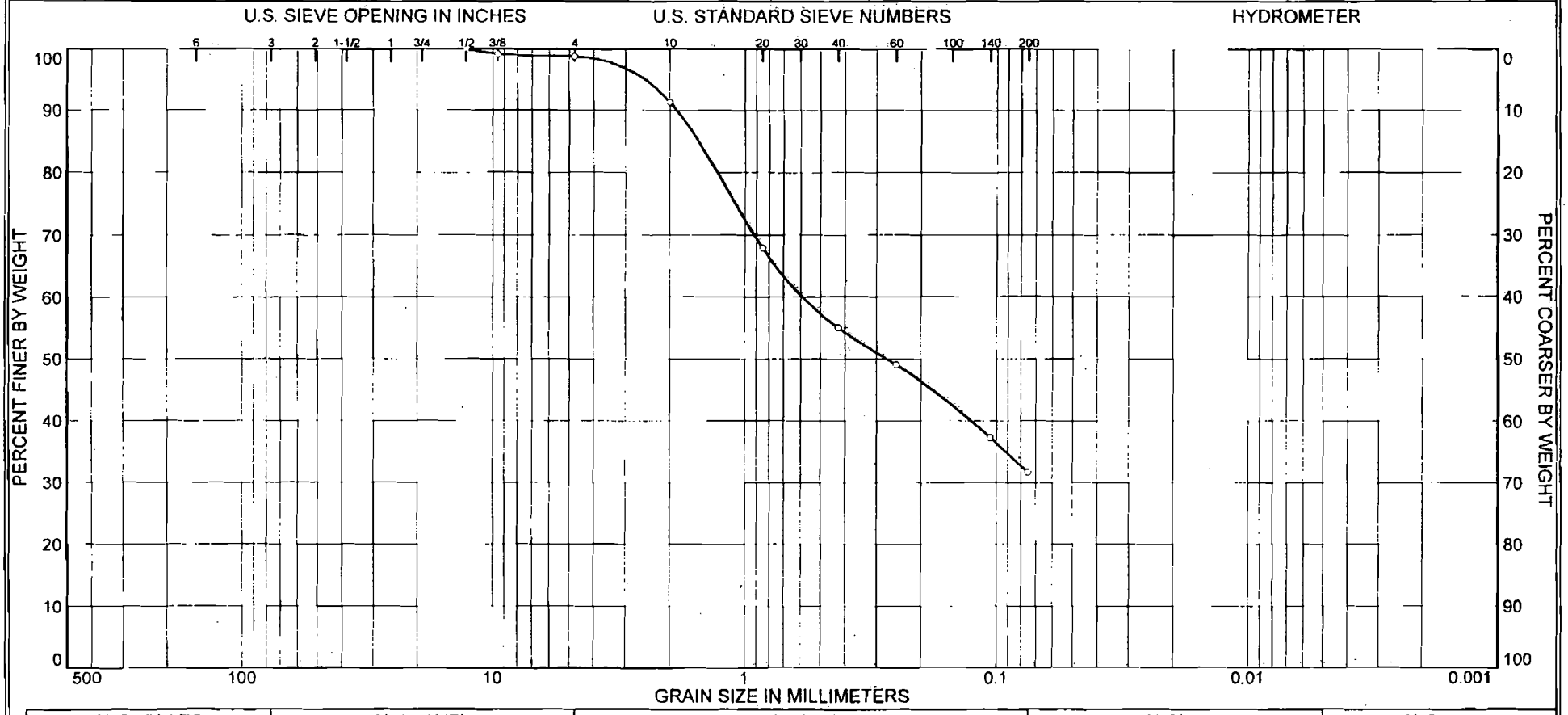
	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1003	14	75.0'/148.21'			Micaceous, Sand with Silt	32.3		
□	B-1003	17	88.0'/135.21'		SM	Silty Sand with Gravel	67.4	93	42
△	B-1003	UD-1	93.0'/130.21'		SM	Silty Sand	30.6	54	32

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: JM
Reviewed by: SP
□ Tested by: JM
Reviewed by: SP
△ Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	1.2	67.1	31.7	

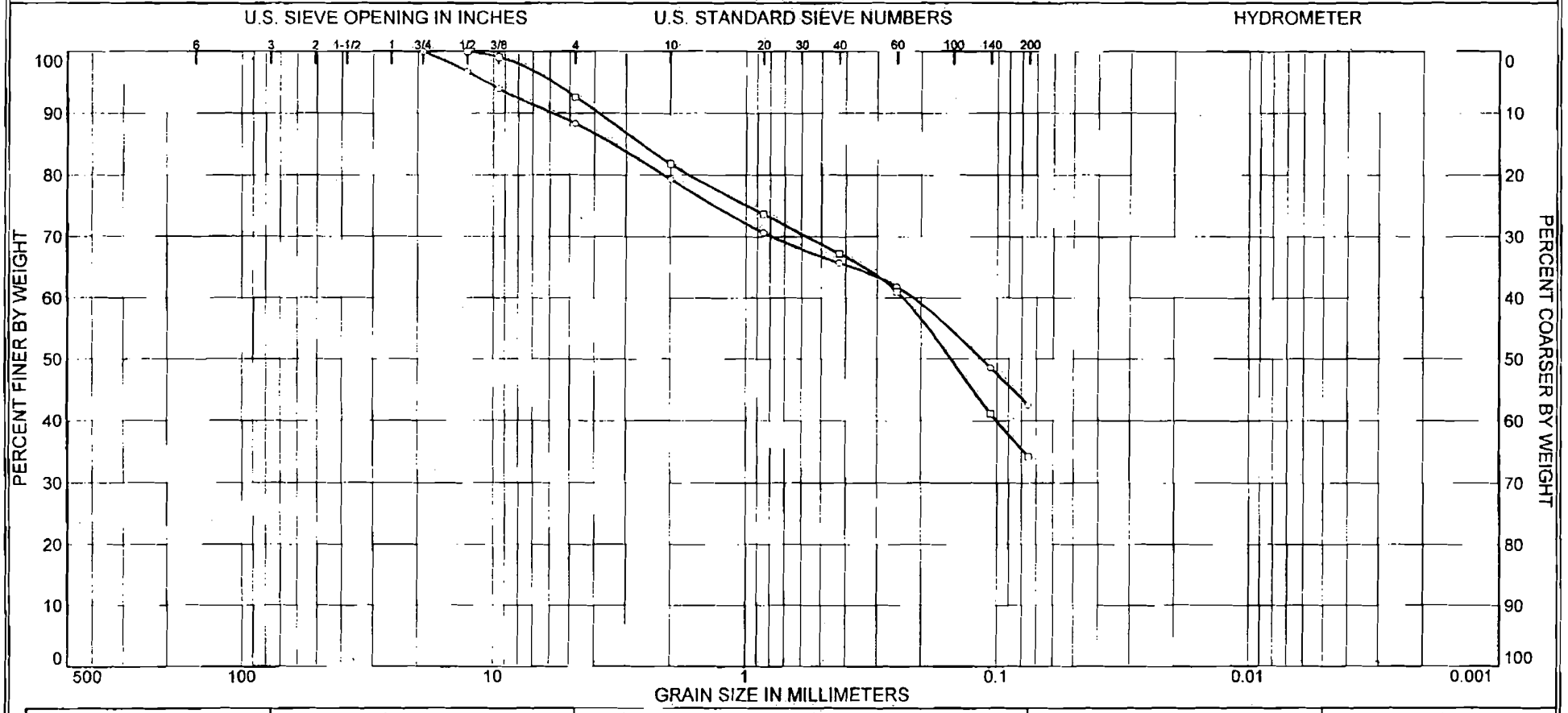
SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1003	22	104.7'/ 118.51'		SM	Silty Sand with Shells	40.6	83	51

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	11.7	45.8	42.5	
□	0.0	7.3	58.5	34.2	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1003	27	121.7'/ 101.51'		SM	Silty Sand	28.0		NP
□	B-1003	31	141.7'/81.51'		SM	Silty sand with Shells	25.9	41	28

Client Southern Nuclear Co.

Project ALWR ESP

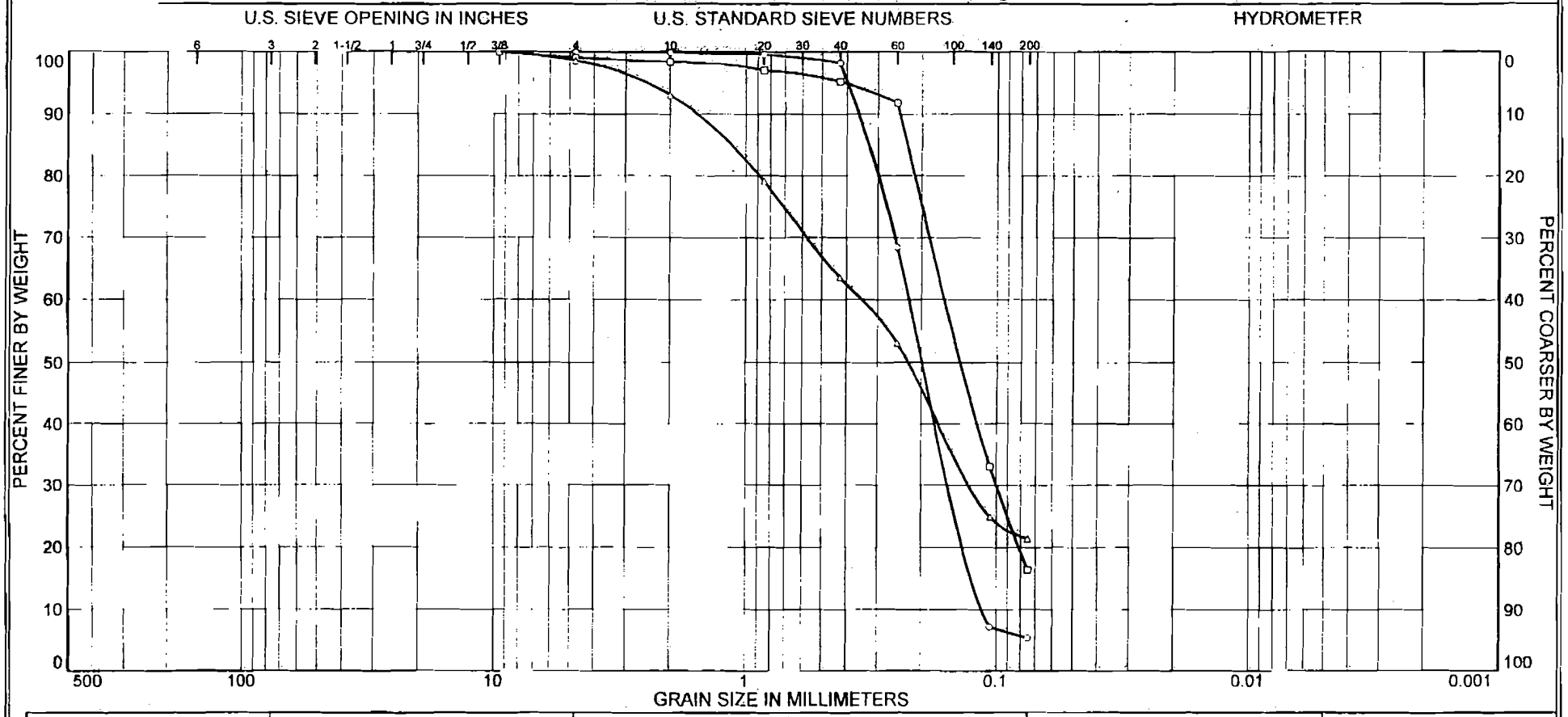
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: JM
Reviewed by: SP

□ Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	94.6	5.4	
□	0.0	0.9	82.7	16.4	
△	0.0	1.4	77.2	21.4	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1003	36	165.7'/57.51'		SP-SM	Sand with Silt	23.6		NP
□	B-1003	40	185.7'/37.51'			Silty Sand	32.3		
△	B-1003	44	205.7'/17.51'			Silty Sand	39.3		

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

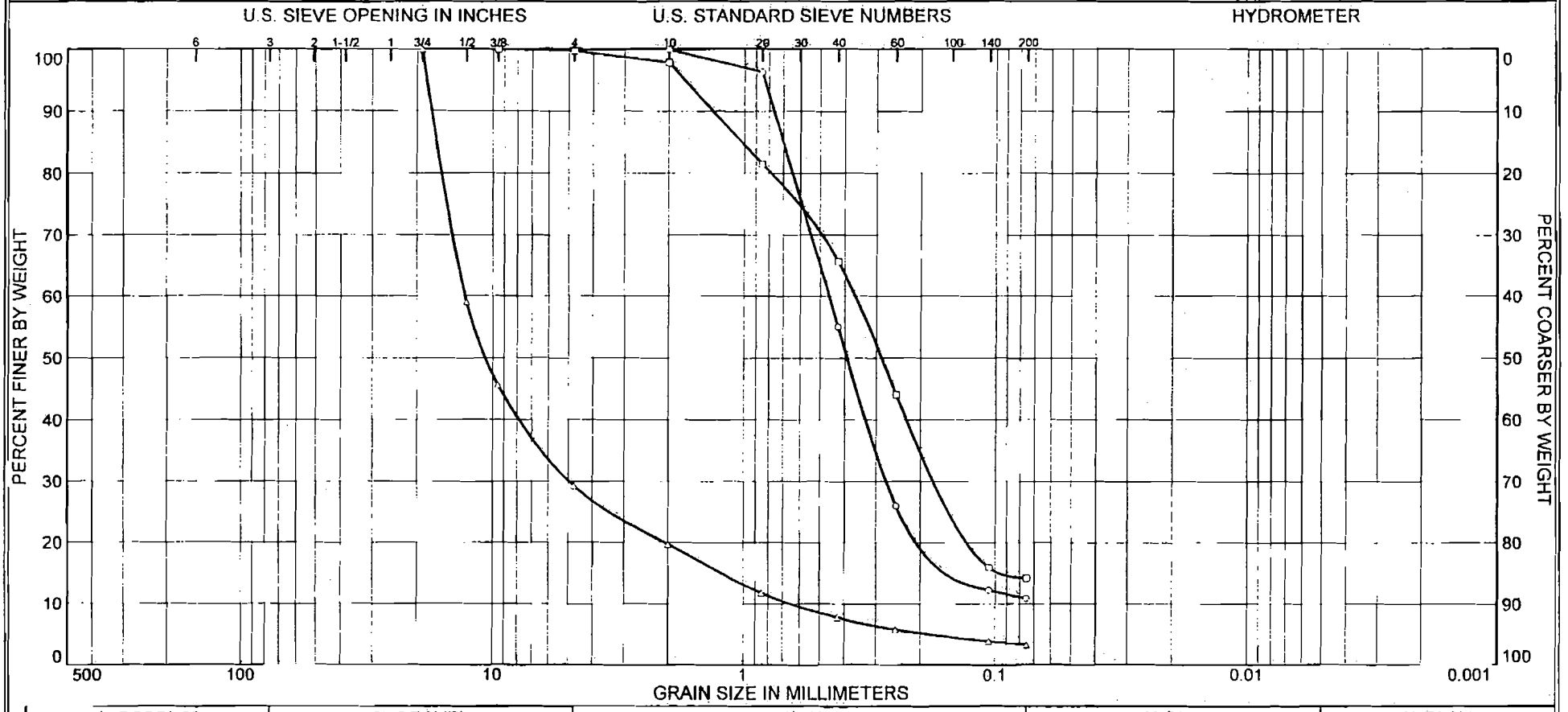
MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: JM
Reviewed by: SP

□ Tested by: JM
Reviewed by: SP

△ Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	89.1	10.9	
□	0.0	0.3	85.5	14.2	
△	0.0	70.7	26.0	3.3	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1003	51	240.7'/-17.49'			Sand with Silt	23.2		
□	B-1003	59	280.7'/-57.49'			Micaceous, Silty Sand	23.2		
△	B-1003	66	315.7'/-92.49'		GW	Gravel with Sand	32.7	53	38

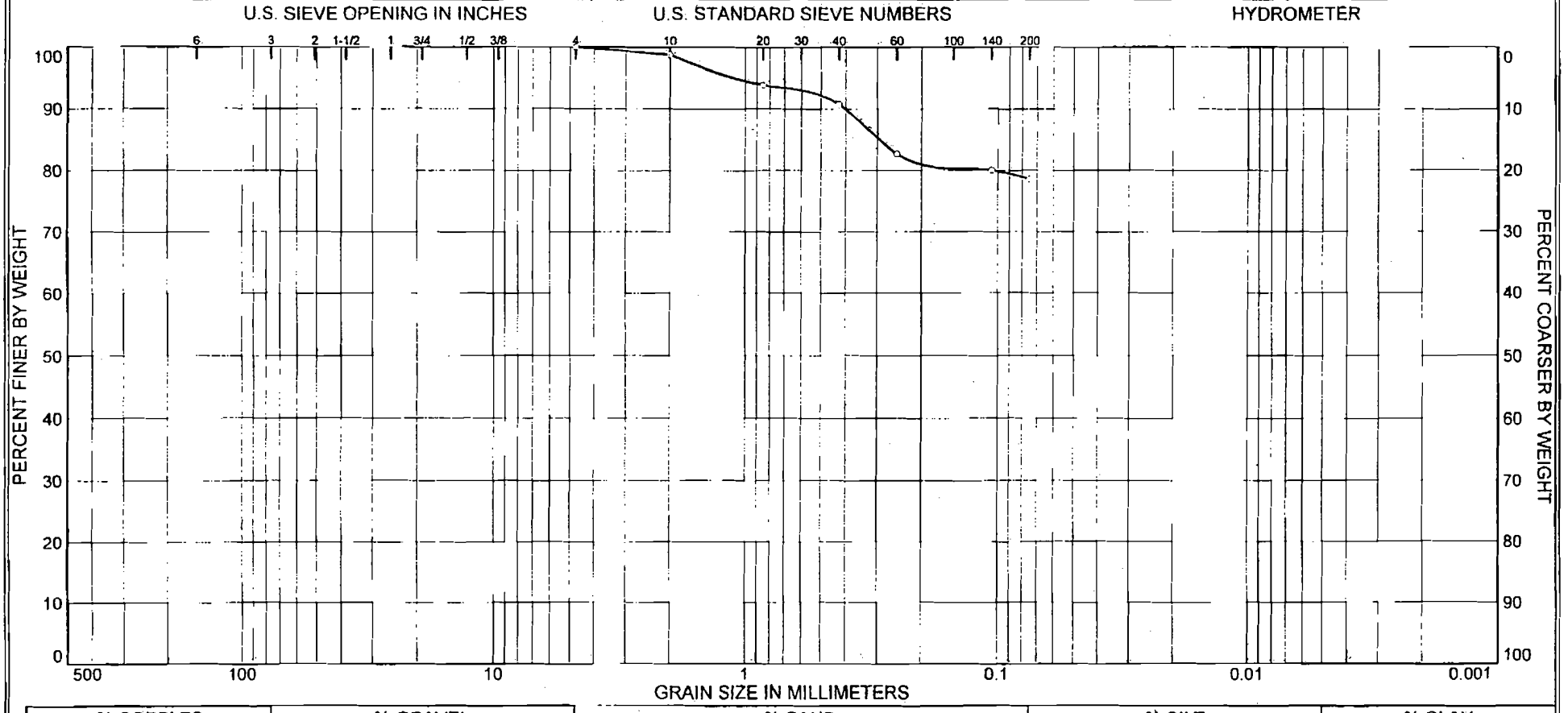
Client Southern Nuclear Co.
Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: JM
Reviewed by: SP
□ Tested by: JM
Reviewed: SP
△ Tested by: RM
Reviewed by: SP

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	21.5	78.5	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1003	73	350.7'/- 127.49'		CL	Sandy Clay	21.3	41	22

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

Tested by: JM
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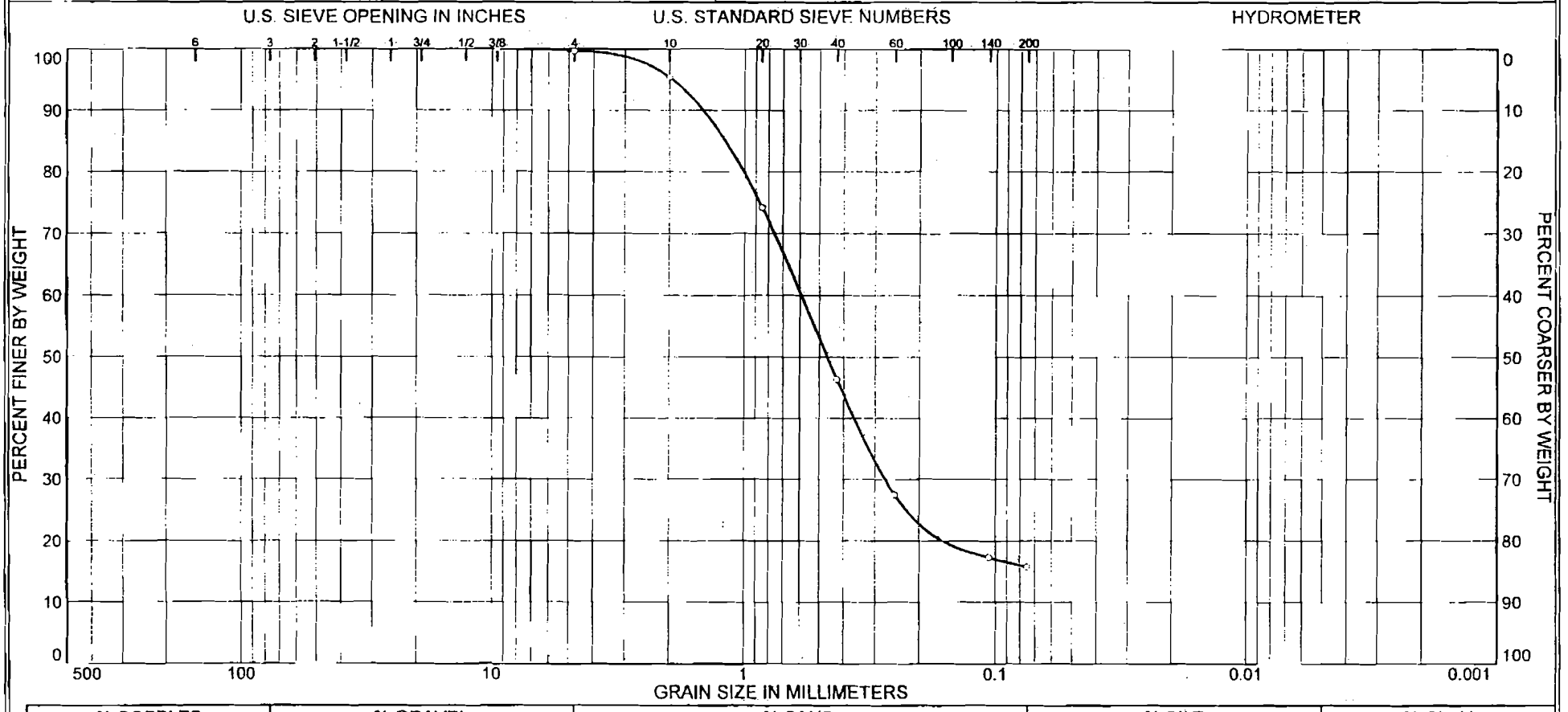
Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.3	83.9	15.8	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1003	83	400.7'/- 177.49'			Micaceous, Silty Sand	18.9		

Client Southern Nuclear Co.

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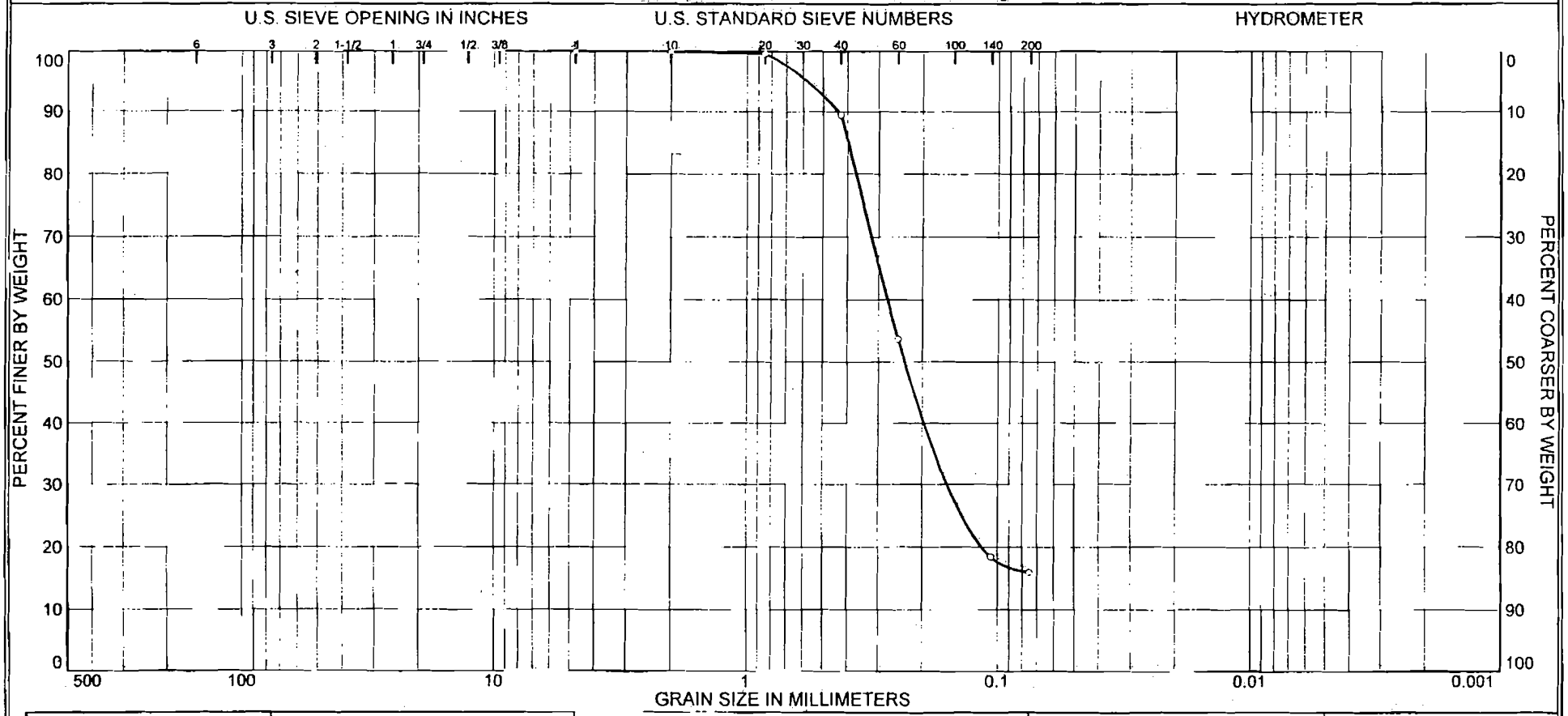
Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	84.1	15.9	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1003	93	450.7'/-227.49'			Micaceous, Silty Sand	28.6		

Client Southern Nuclear Co.

Project ALWR ESP

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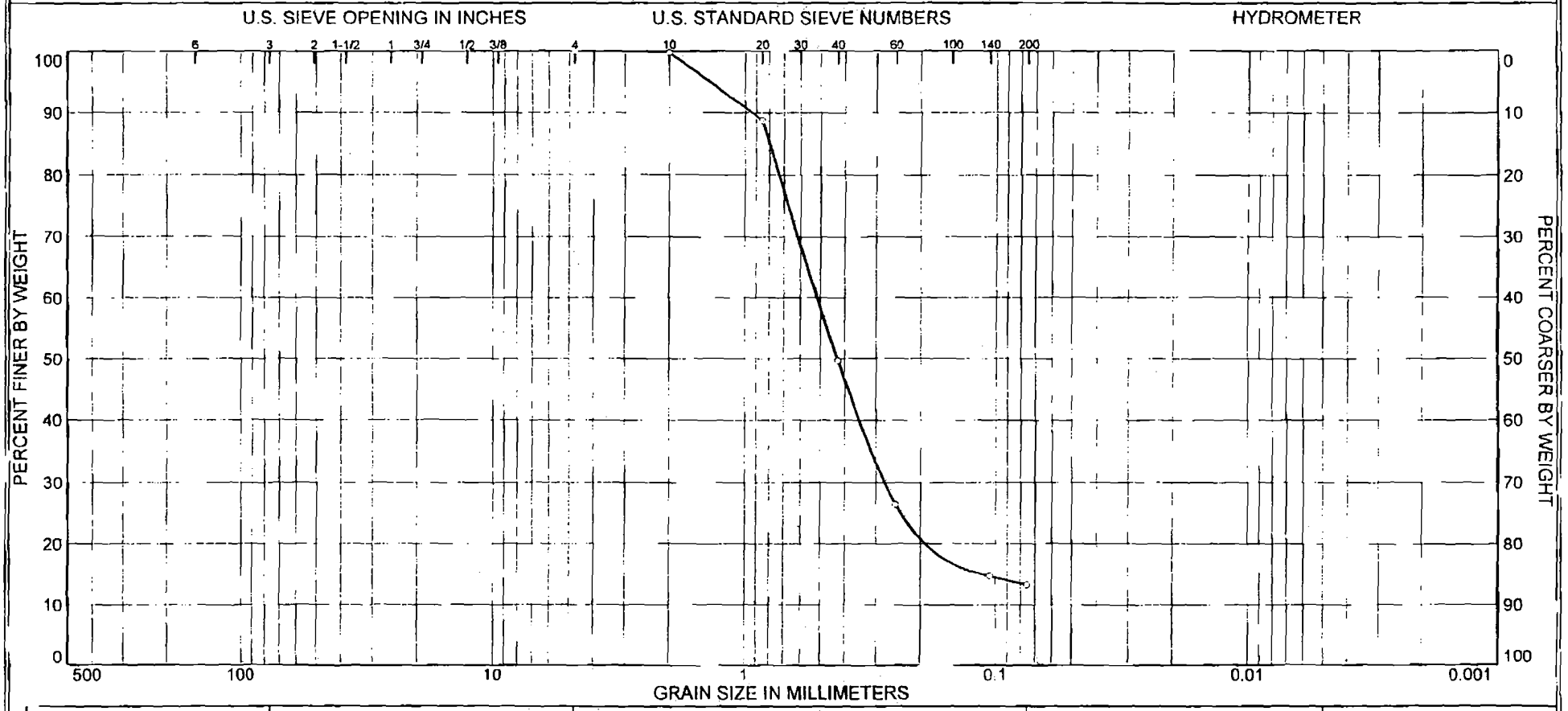
Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	86.8	13.2	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1003	103	496.7'/- 273.49'			Micaceous, Silty Sand	26.4		

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

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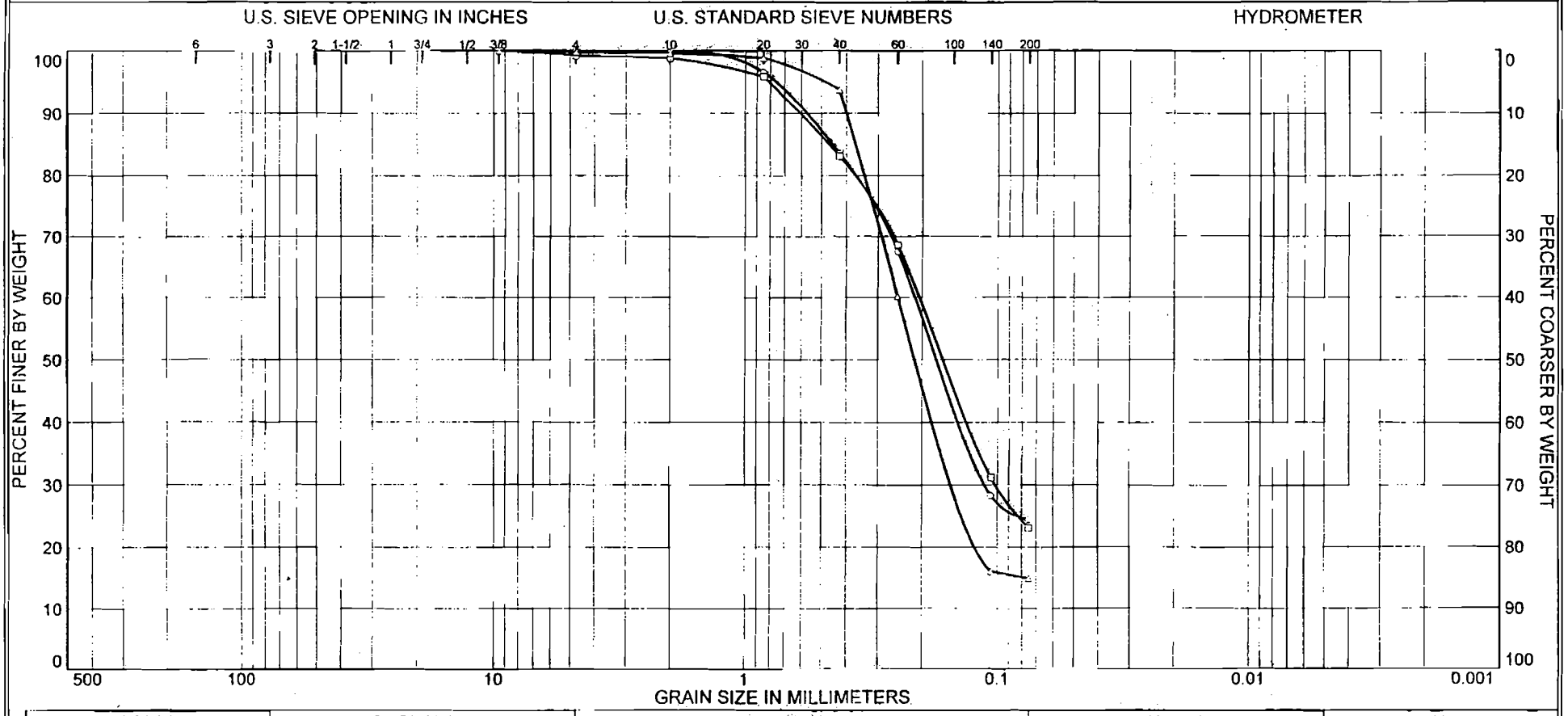
Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	75.6	24.4	
□	0.0	0.7	76.2	23.1	
△	0.0	0.2	84.9	14.9	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1004	7	9.0'/240.78'		SM	Silty sand	13.8		
□	B-1004	9	12.0'/237.78'		SM	Silty sand	14.5		
△	B-1004	12	23.5'/226.28'		SM	Silty sand	18.5		

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: BM
Reviewed by: JM
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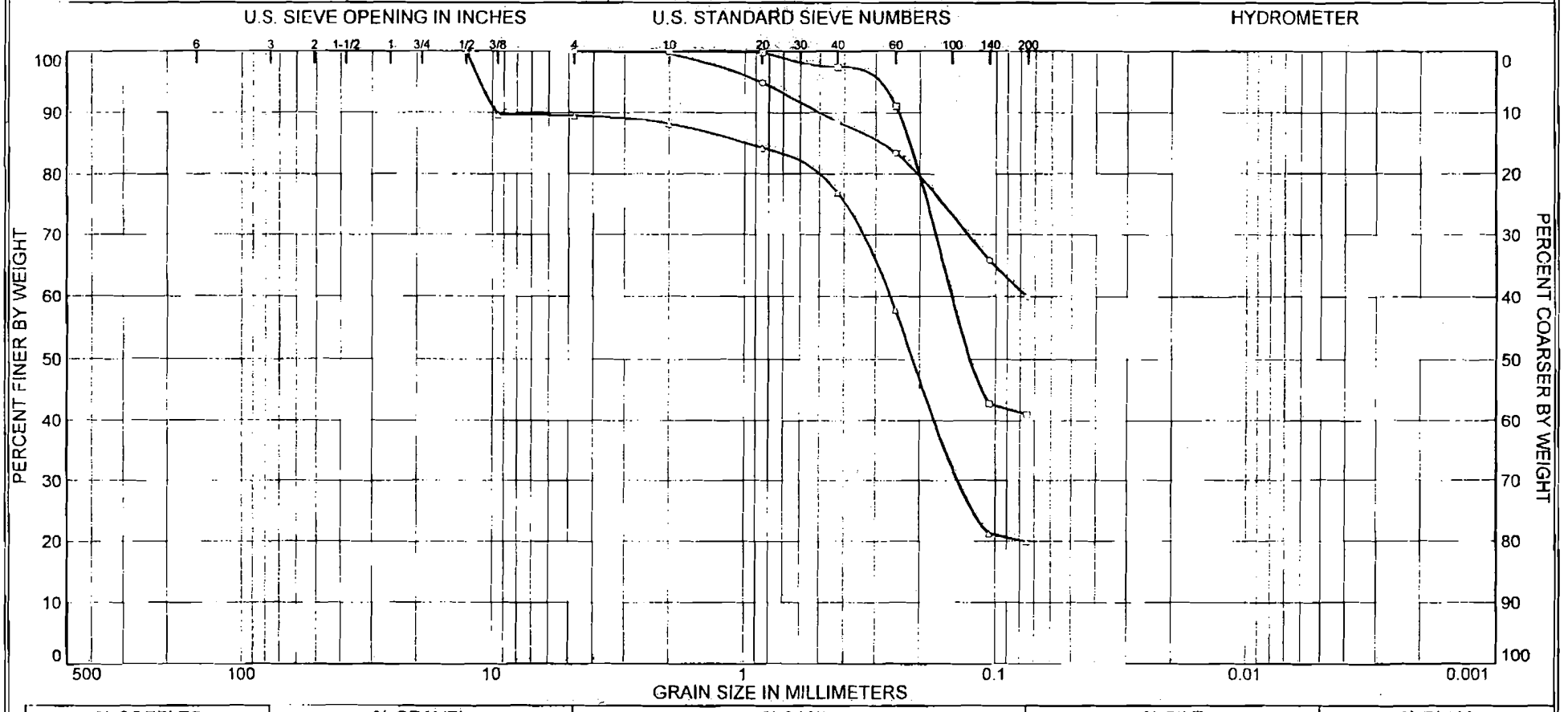
Reviewed by: JM
△ Tested by: BM
Reviewed by: JM

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	40.0	60.0	
□	0.0	0.0	59.0	41.0	
△	0.0	10.5	69.6	19.9	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1004	16	43.5'/206.28'		CH	Sandy fat clay	46.2	58	24
□	B-1004	18	53.5'/196.28'		SM	Silty sand	62.9		
△	B-1004	21	68.5'/181.28'		SM	Silty sand	24.1		

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

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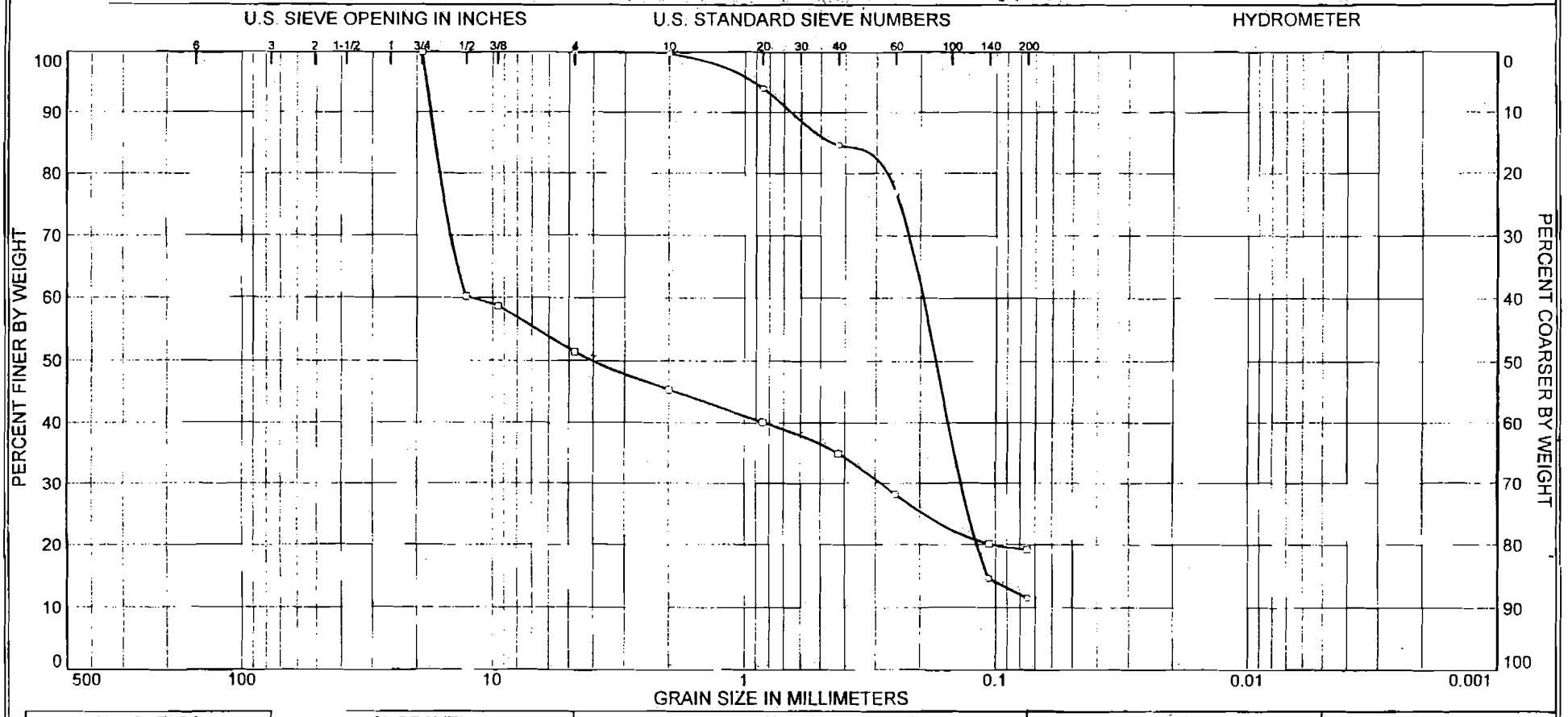
Reviewed by: JM
□ Tested by: BM
Reviewed by: JM
△ Tested by: BM
Reviewed by: JM

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	88.5	11.5	
□	0.0	48.6	32.2	19.2	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1004	24	83.5'/166.28'		SP-SM	Poorly graded sand with silt	28.8		
□	B-1004	32	123.5'/ 126.28'		GC	Clayey gravel with sand	19.7	43	19

Client Southern Nuclear Co.
Project ALWR ESP
Project No. 6141-05-0227.16

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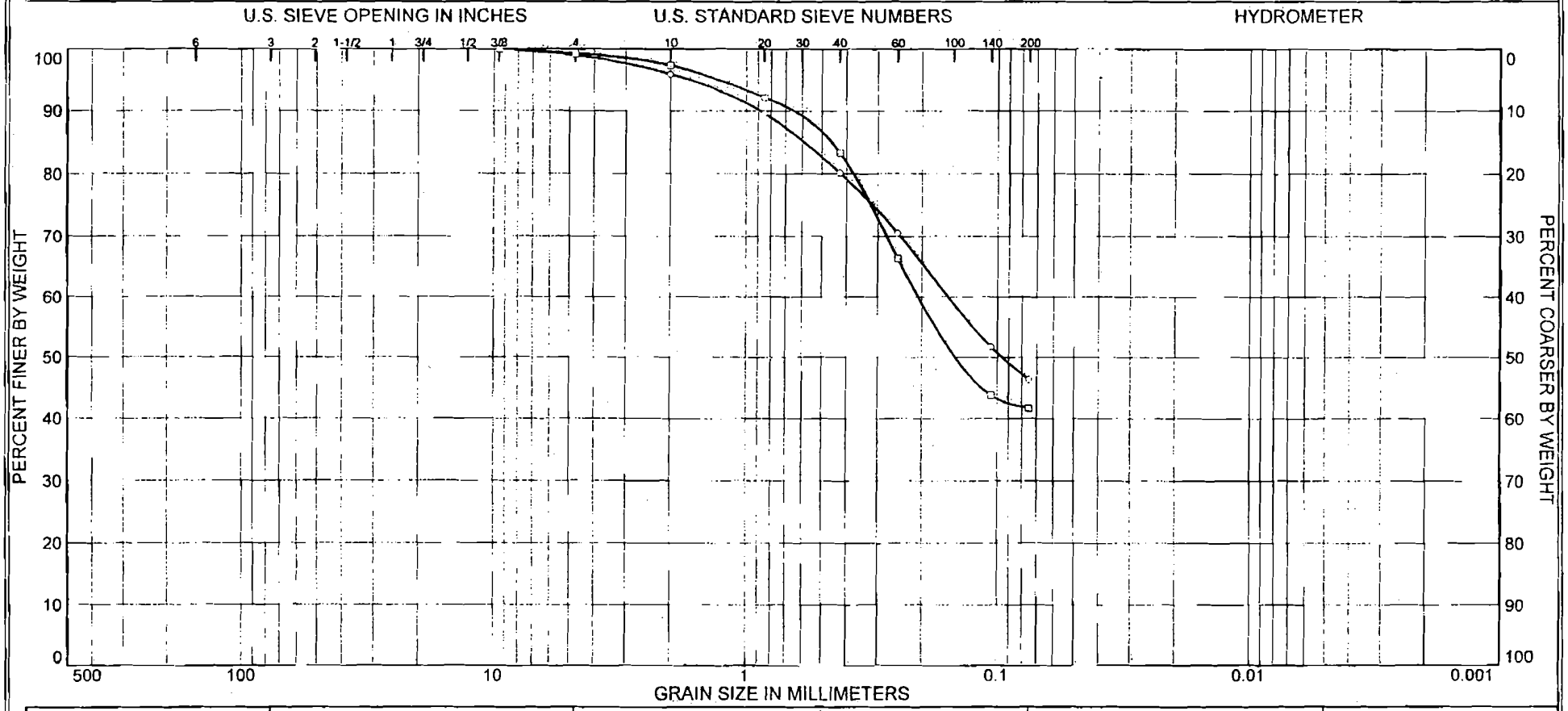
Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	1.0	52.7	46.3	
□	0.0	0.7	57.6	41.7	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1004	UD-1 Upper	144.0'/ 105.78'		SM	Silty Sand	44.6	59	38
□	B-1004	UD-2	153.5'/96.28'		SM	Silty Sand	30.1	43	27

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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Reviewed by: SP

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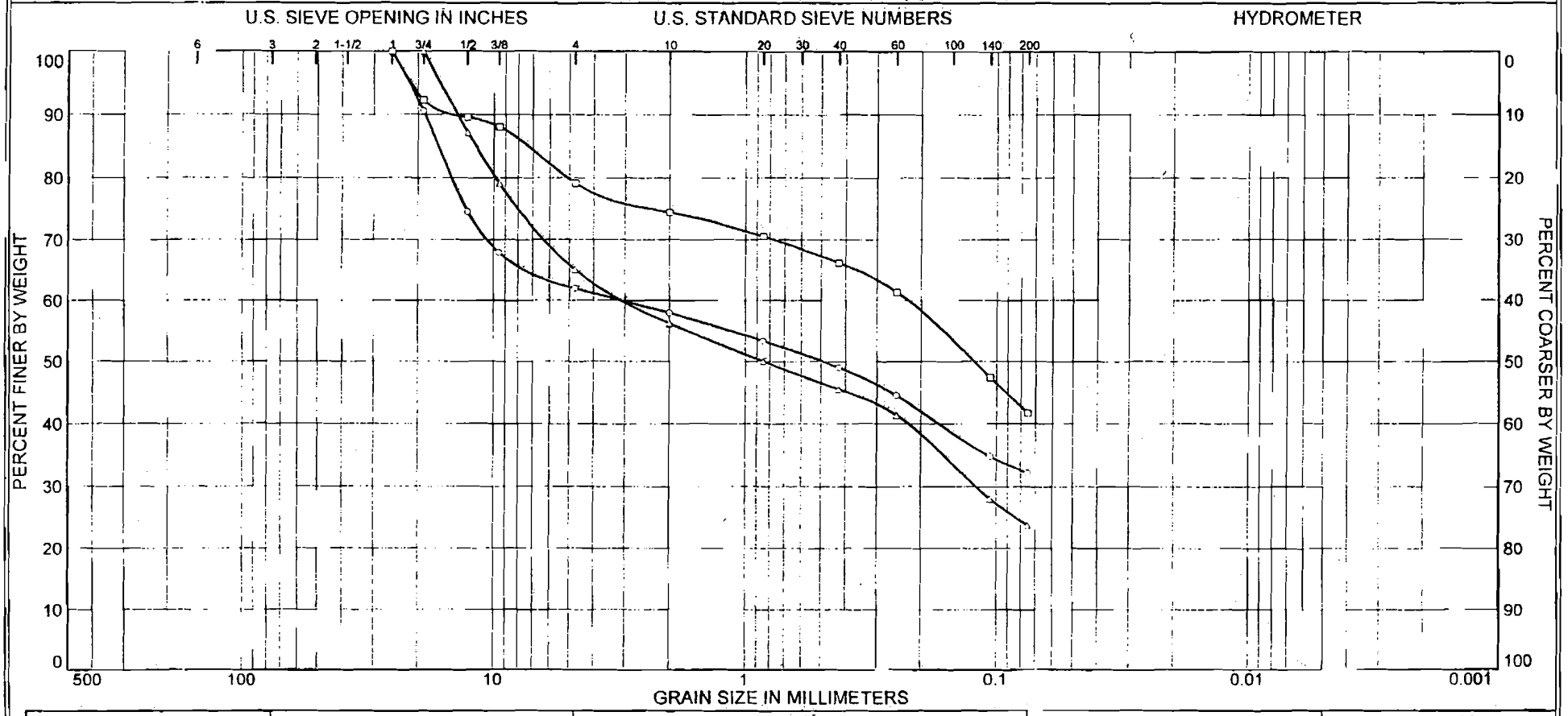
Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	38.0	29.8	32.2	
□	0.0	20.9	37.4	41.7	
△	0.0	34.9	41.3	23.8	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1004	UD-3 Upper	163.5'/86.28'		GC	Clayey Gravel with Sand	25.1	31	22
□	B-1004	UD-4 Upper	177.0'/72.78'		SM	Silty Sand with Gravel	20.8	31	22
△	B-1004	UD-5	188.5'/61.28'		SM	Silty Sand with Gravel	29.0	34	27

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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Reviewed by: SP

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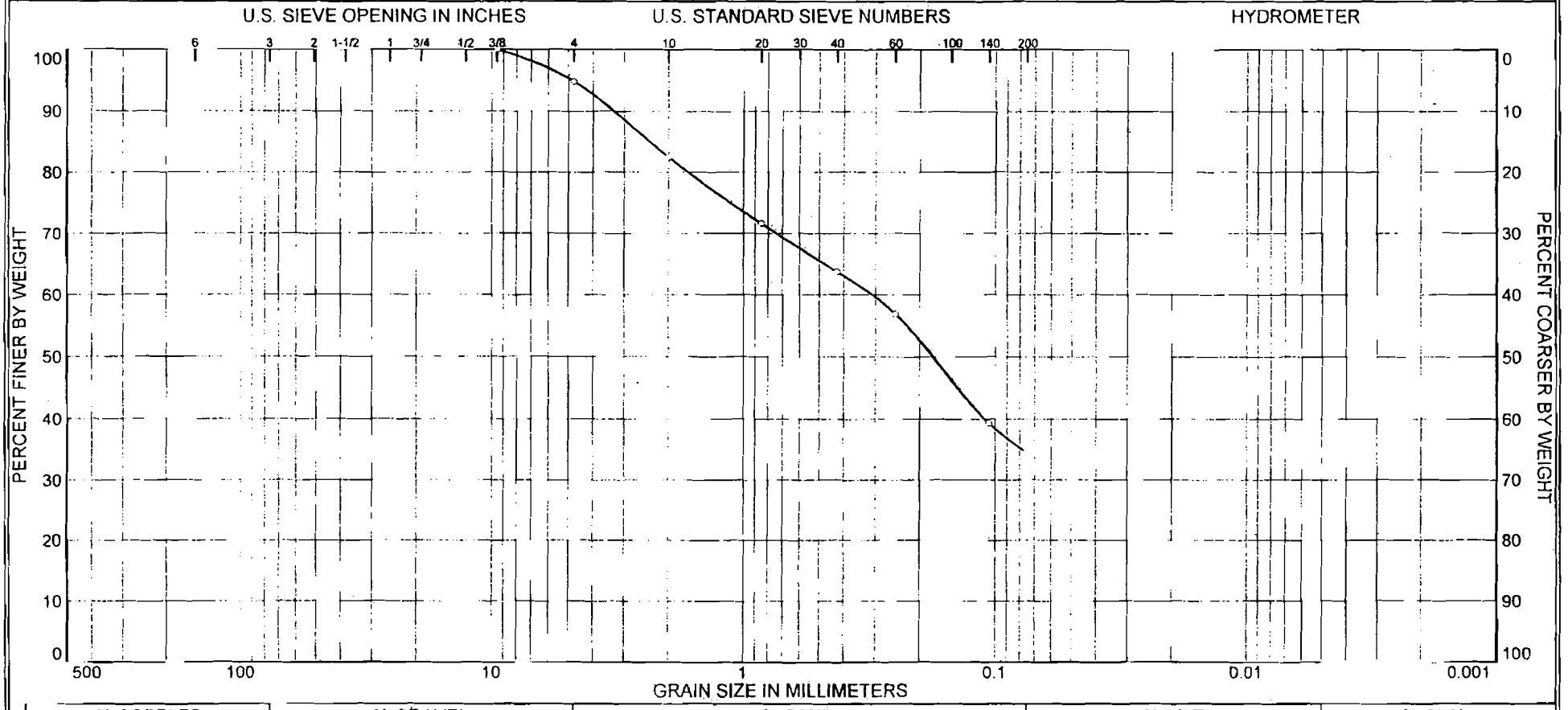
Reviewed by: SP

△ Tested by: JM
Reviewed by: SP

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	5.2	60.3	34.5	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1004	UD-6	198.5'/51.28'		SC	Clayey Sand	26.2	31	21

Client Southern Nuclear Co.

Project ALWR ESP

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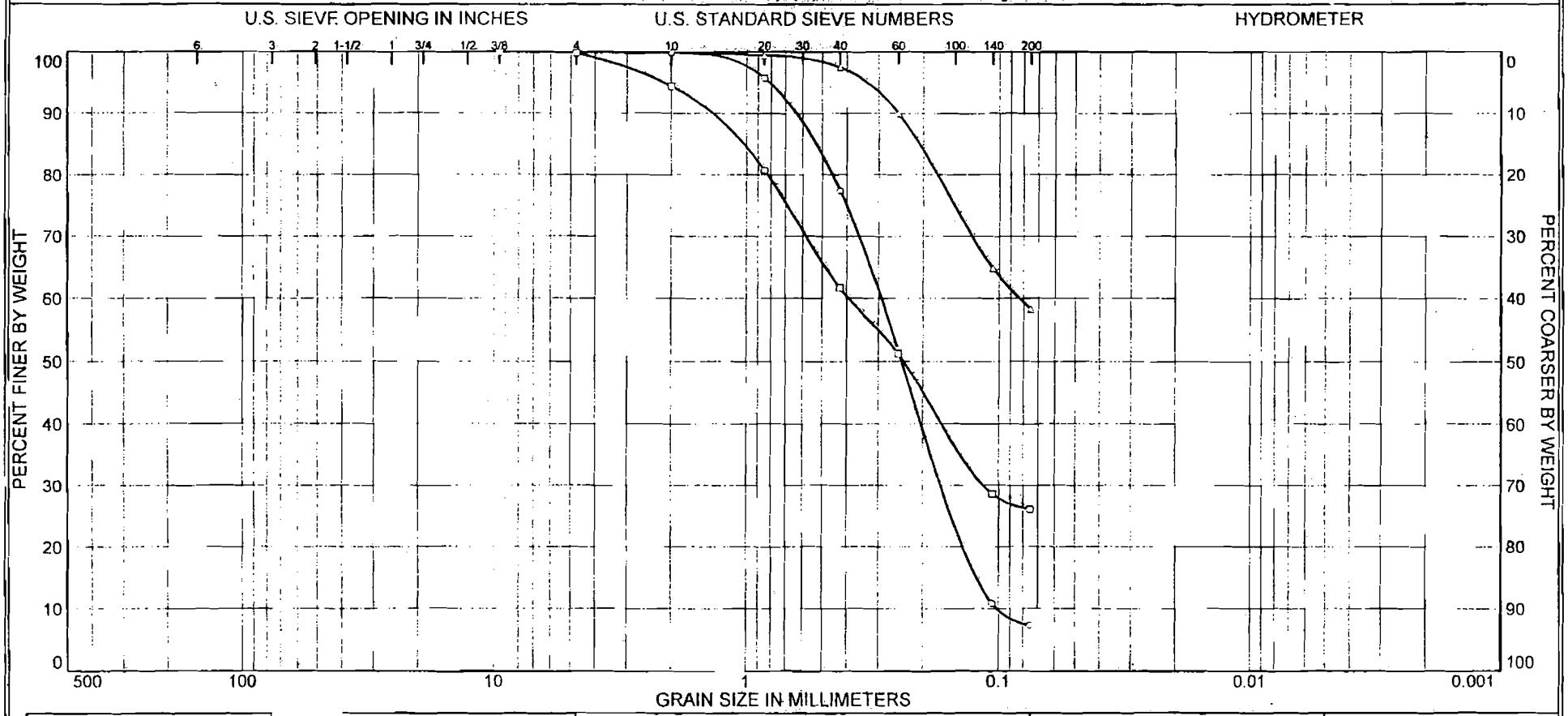
Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	92.7	7.3	
□	0.0	0.1	73.8	26.1	
△	0.0	0.0	41.7	58.3	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1006	6	7.5'/248.45'		SP-SM	Poorly graded sand with silt	3.8		
□	B-1006	14	33.5'/222.45'		SM	Silty sand	19.7		
△	B-1006	19	58.5'/197.45'		CH	Sandy fat clay	92.8	97	30

Client Southern Nuclear Co.

Project ALWR ESP

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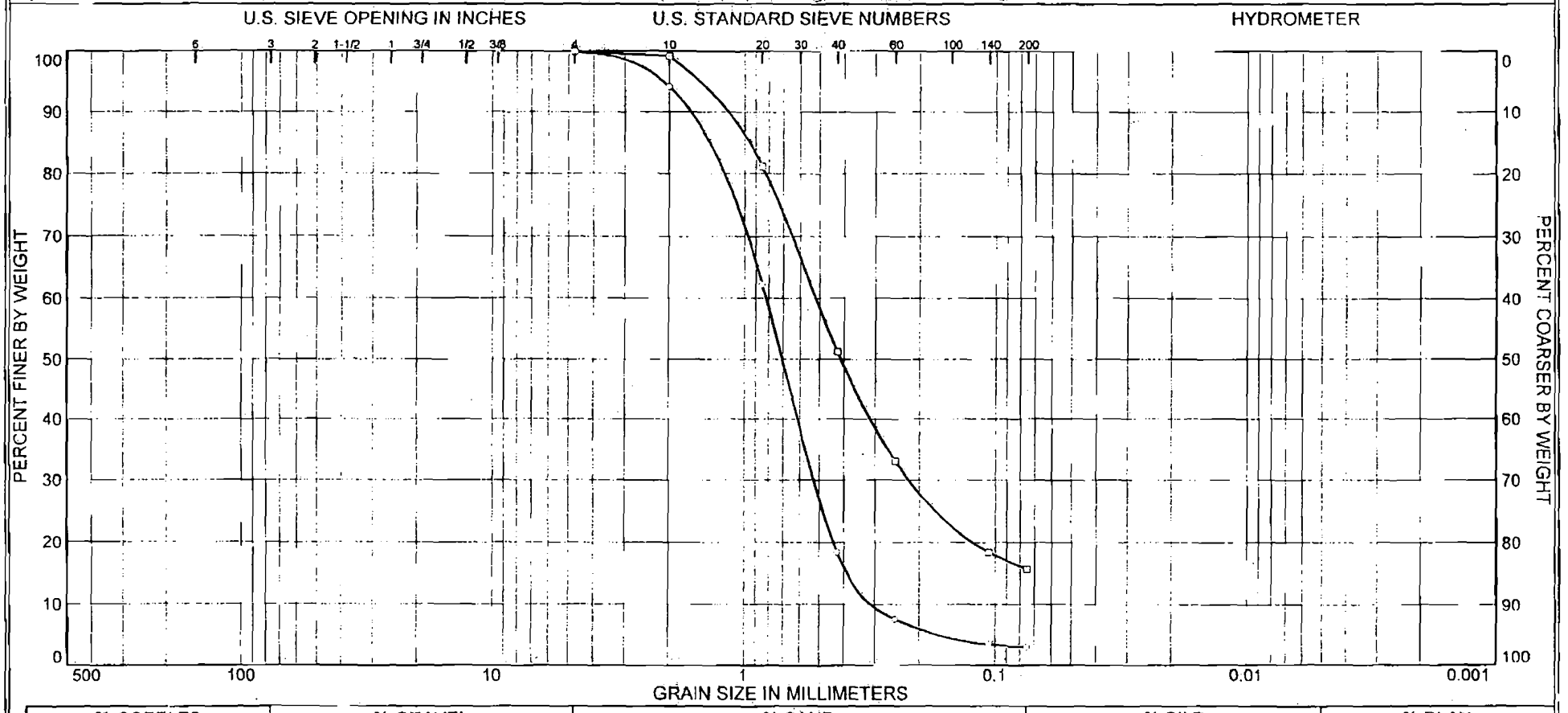
Reviewed by: JM

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.1	96.8	3.1	
□	0.0	0.0	84.3	15.7	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1006	21	68.5'/187.45'		SP	Poorly graded sand	25.4		
□	B-1006	25	88.5'/167.45'		SM	Silty sand	51.9		

Client Southern Nuclear Co.
Project ALWR ESP
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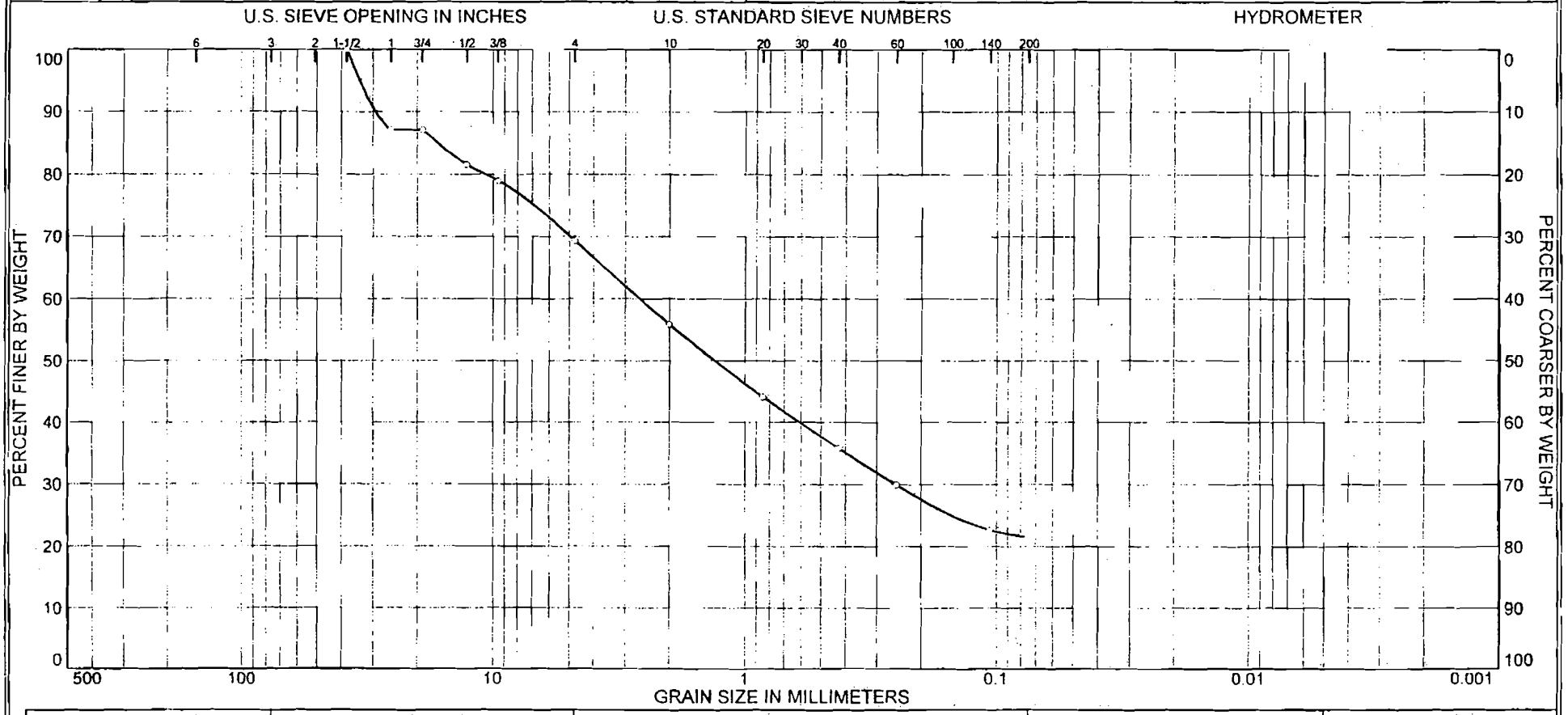
Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	30.7	47.8	21.5	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1006	29	108.5'/ 147.45'		SM	Silty sand with gravel	22.0		

Client Southern Nuclear Co.

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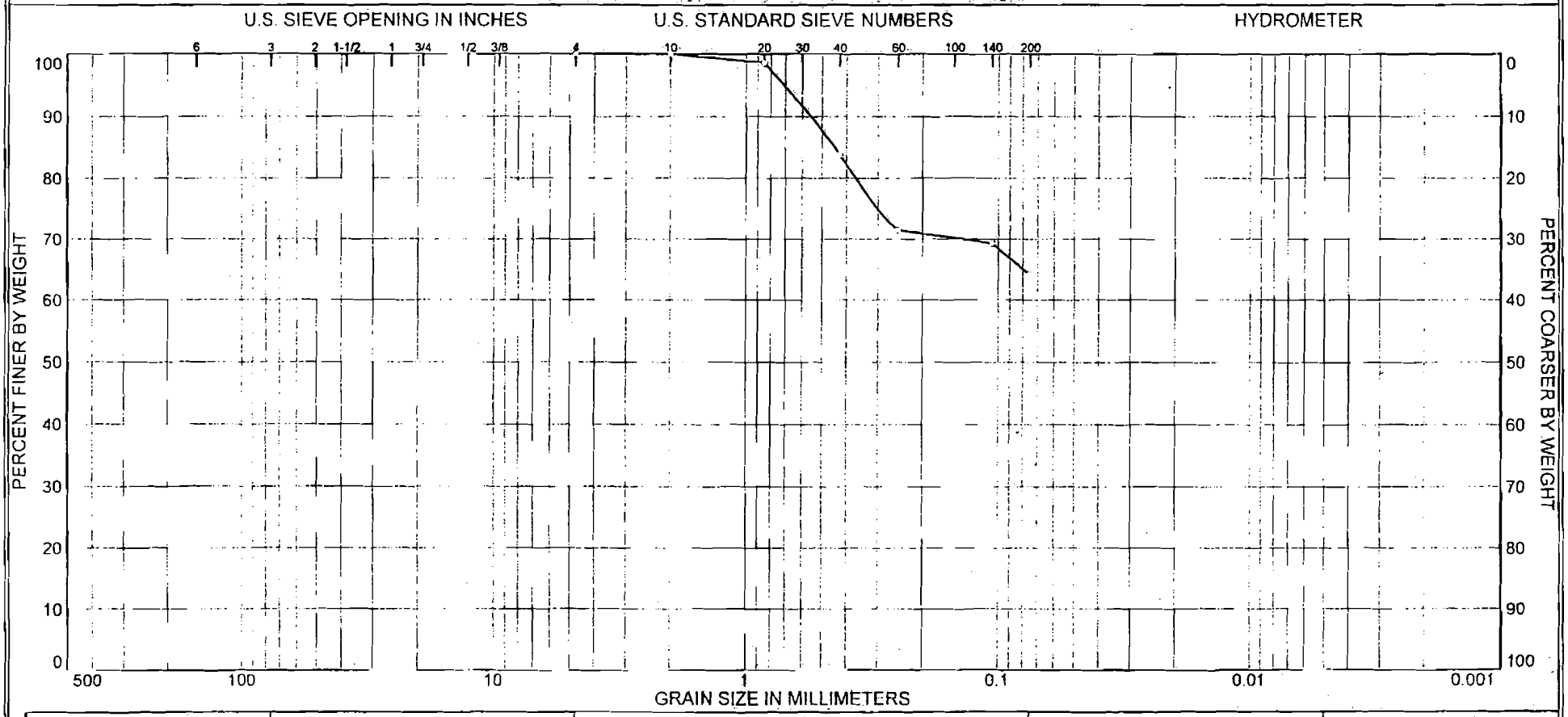
Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	35.9	64.1	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-1006	32	123.5'/ 132.45'		MH	Sandy elastic silt	53.7	99	43

Client Southern Nuclear Co.

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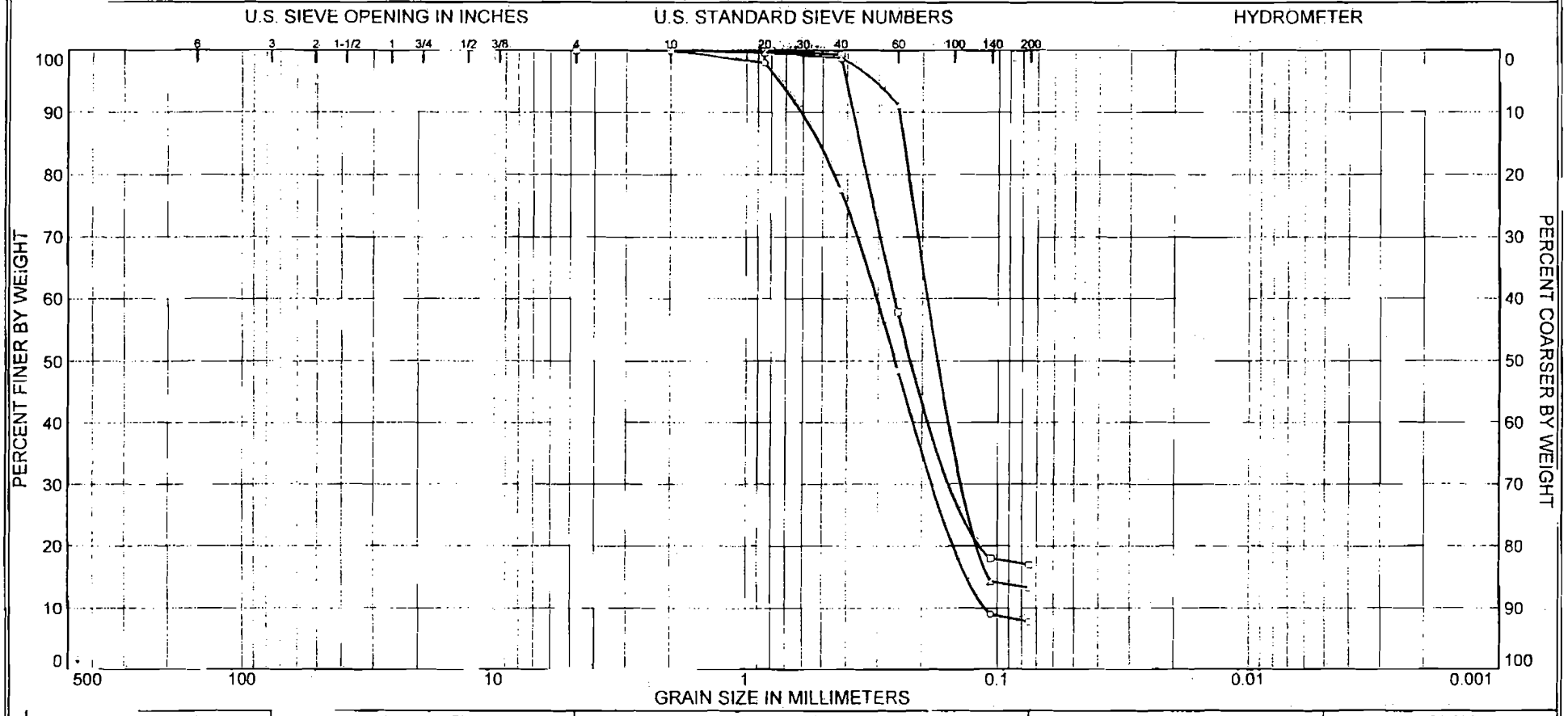

	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	92.2	7.8	
□	0.0	0.0	83.0	17.0	
△	0.0	0.0	86.7	13.3	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1010	6	7.5'/211.1'		SP-SM	Poorly graded sand with silt	5.7		
□	B-1010	14	33.5'/185.1'		SM	Silty sand	18.9		
△	B-1010	19	58.5'/160.1'		SM	Silty sand	27.3		

Client Southern Nuclear Co.

Project ALWR ESP

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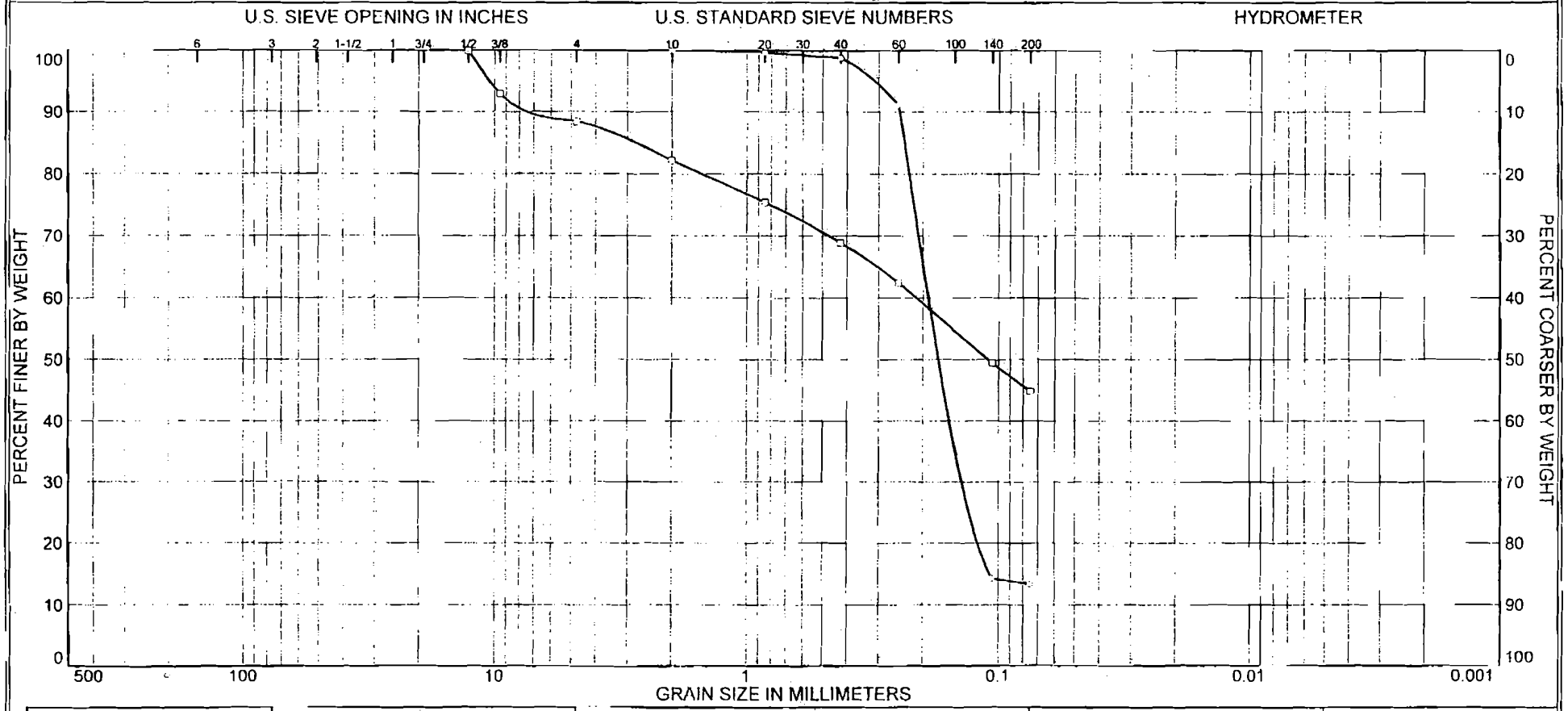
Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	86.7	13.3	
□	0.0	11.6	43.5	44.9	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-1010	19	58.5'/160.1'		SM	Silty sand	27.3		
□	B-1010	27	98.5'/120.1'		SC	Clayey sand	49.9	94	36

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: BM
Reviewed by: JM

□ Tested by: BM
Reviewed by: JM

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 6
Elev. or Depth: 7.5'/214.28' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 6.2
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	233.73	0.00
Tare =	142.92	0.00
Dry sample weight =	90.81	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.50 inch	0.00	100.0
.375 inch	1.22	98.7
# 4	5.97	93.4
# 10	10.41	88.5
# 20	16.35	82.0
# 40	29.84	67.1
# 60	48.59	46.5
# 140	79.24	12.7
# 200	82.25	9.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 6.6 **% SAND =** 84.0
% FINES = 9.4

D_{85}= 1.12 D_{60}= 0.35 D_{50}= 0.27
D_{30}= 0.18 D_{15}= 0.12 D_{10}= 0.08
C_c= 1.0567 C_u= 4.1209

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 11
Elev. or Depth: 18.5'/203.48' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 24.4
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	265.76	0.00
Tare =	143.64	0.00
Dry sample weight =	122.12	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
4	0.00	100.0
# 10	0.85	99.3
# 20	12.34	89.9
# 40	41.27	66.2
# 60	65.66	46.2
# 140	75.34	38.3
# 200	76.80	37.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 62.9
% FINES = 37.1

D_{85}= 0.71 D_{60}= 0.37 D_{50}= 0.28

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 13
Elev. or Depth: 28.5'/193.48' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 31.8
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	276.48	0.00
Tare =	143.33	0.00
Dry sample weight =	133.15	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.08	99.9
# 20	2.78	97.9
# 40	10.31	92.3
# 60	22.51	83.1
# 140	81.43	38.8
# 200	100.05	24.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 75.1
% FINES = 24.9

D_{85}= 0.27 D_{60}= 0.16 D_{50}= 0.13
D_{30}= 0.09

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 14
Elev. or Depth: 33.5'/188.48' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 58.8
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	209.85	0.00
Tare =	144.92	0.00
Dry sample weight =	64.93	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
10	0.00	100.0
# 20	0.16	99.8
# 40	1.87	97.1
# 60	6.17	90.5
# 140	37.57	42.1
# 200	44.43	31.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 68.4
% FINES = 31.6

D_{85}= 0.22 D_{60}= 0.15 D_{50}= 0.12

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 18
Elev. or Depth: 53.5'/168.48' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 42.9
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	216.71	0.00
Tare =	144.22	0.00
Dry sample weight =	72.49	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.02	100.0
# 20	1.09	98.5
# 40	5.45	92.5
# 60	12.50	82.8
# 140	61.66	14.9
# 200	64.91	10.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 89.5
% FINES = 10.5

D_{85}= 0.26 D_{60}= 0.19 D_{50}= 0.17
D_{30}= 0.13 D_{15}= 0.11

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 20
Elev. or Depth: 63.5'/158.48' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 29.3
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	172.83	0.00
Tare =	89.13	0.00
Dry sample weight =	83.70	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
4	0.00	100.0
# 10	0.09	99.9
# 20	2.21	97.4
# 40	10.37	87.6
# 60	30.52	63.5
# 140	75.88	9.3
# 200	77.68	7.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 92.8
% FINES = 7.2

D_{85}= 0.39 D_{60}= 0.24 D_{50}= 0.21
D_{30}= 0.16 D_{15}= 0.12 D_{10}= 0.11
C_c= 0.9655 C_u= 2.1823

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 22
Elev. or Depth: 73.5'/148.48' **Sample Length (in./cm.):**
Location:
Description: Well-graded sand with silt
Date: **Natural Moisture:** 24.5
Liquid Limit: **Plastic Limit:** **USCS Class.:** SW-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	181.87	0.00
Tare =	97.08	0.00
Dry sample weight =	84.79	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.36	99.6
# 10	6.67	92.1
# 20	24.60	71.0
# 40	38.89	54.1
# 60	54.07	36.2
# 140	74.82	11.8
# 200	76.29	10.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 0.4 **% SAND =** 89.6
% FINES = 10.0

D_{85}= 1.45 D_{60}= 0.53 D_{50}= 0.37
D_{30}= 0.21 D_{15}= 0.13 D_{10}= 0.08
C_c= 1.1122 C_u= 7.09

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 24
Elev. or Depth: 83.5'/138.48' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 27.6
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	247.88	0.00
Tare =	141.54	0.00
Dry sample weight =	106.34	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.13	99.9
# 20	0.76	99.3
# 40	3.28	96.9
# 60	54.66	48.6
# 140	98.80	7.1
# 200	99.84	6.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 93.9
% FINES = 6.1

D_{85}= 0.38 D_{60}= 0.29 D_{50}= 0.25
D_{30}= 0.19 D_{15}= 0.14 D_{10}= 0.12
C_c= 1.0529 C_u= 2.3336

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-1 Upper
Elev. or Depth: 92.0'/129.98' **Sample Length (in./cm.):**
Location:
Description: Silty Gravel with Sand
Date: **Natural Moisture:** 52.1
Liquid Limit: 72 **Plastic Limit:** 37 **USCS Class.:** GM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	141.75
Tare =	0.00
Dry sample weight =	141.75

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
3 inch	0.00	100.0
2 inch	65.48	53.8
1.5 inch	65.48	53.8
1.0 inch	65.48	53.8
.75 inch	65.48	53.8
.50 inch	66.15	53.3
.375 inch	67.21	52.6
# 4	70.00	50.6
# 10	72.42	48.9
# 20	77.78	45.1
# 40	85.04	40.0
# 60	91.42	35.5
# 140	99.02	30.1
# 200	100.77	28.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = 0.0 **% GRAVEL** = 49.4 **% SAND** = 21.7
% FINES = 28.9

D_{85}= 68.79 D_{60}= 55.78 D_{50}= 3.49
D_{30}= 0.10

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-2
Elev. or Depth: 103.5'/118.48' **Sample Length (in./cm.):**
Location:
Description: Clayey sand with gravel
Date: **Natural Moisture:** 56.5
Liquid Limit: 34 **Plastic Limit:** 22 **USCS Class.:** SC
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	161.51	0.00
Tare =	113.02	0.00
Dry sample weight =	48.49	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.75 inch	0.00	100.0
.50 inch	7.90	83.7
.375 inch	7.90	83.7
# 4	11.11	77.1
# 10	12.60	74.0
# 20	14.93	69.2
# 40	18.07	62.7
# 60	24.78	48.9
# 140	29.63	38.9
# 200	31.09	35.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 22.9 **% SAND =** 41.2
% FINES = 35.9

D_{85}= 13.53 D_{60}= 0.38 D_{50}= 0.26

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-3
Elev. or Depth: 113.5'/108.48' **Sample Length (in./cm.):**
Location:
Description: Clayey Sand
Date: **Natural Moisture:** 25.5
Liquid Limit: 29 **Plastic Limit:** 19 **USCS Class.:** SC
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	94.17
Tare =	0.00
Dry sample weight =	94.17

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.75 inch	0.00	100.0
.50 inch	5.38	94.3
.375 inch	9.95	89.4
# 4	12.05	87.2
# 10	17.20	81.7
# 20	24.05	74.5
# 40	32.03	66.0
# 60	43.20	54.1
# 140	60.42	35.8
# 200	62.35	33.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 12.8 **% SAND =** 53.4
% FINES = 33.8

D_{85}= 3.12 D_{60}= 0.32 D_{50}= 0.21

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-4
Elev. or Depth: 123.5'/98.48' **Sample Length (in./cm.):**
Location:
Description: Clayey/Silty Gravel with Sand
Date: **Natural Moisture:** 13.5
Liquid Limit: 22 **Plastic Limit:** 17 **USCS Class.:** GC-GM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	283.95
Tare =	0.00
Dry sample weight =	283.95

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
50 inch	0.00	100.0
1.000 inch	48.52	82.9
0.750 inch	91.53	67.8
0.500 inch	123.06	56.7
0.375 inch	134.60	52.6
# 4	152.54	46.3
# 10	164.74	42.0
# 20	175.84	38.1
# 40	184.29	35.1
# 60	191.66	32.5
# 140	208.83	26.5
# 200	214.35	24.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 53.7 **% SAND =** 21.8
% FINES = 24.5

D_{85}= 26.49 D_{60}= 15.03 D_{50}= 7.52
D_{30}= 0.17

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-5
Elev. or Depth: 133.5'/88.48' **Sample Length (in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 28.6
Liquid Limit: 32 **Plastic Limit:** 25 **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	78.41
Tare =	0.00
Dry sample weight =	78.41

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
0.750 inch	0.00	100.0
0.500 inch	2.84	96.4
0.375 inch	4.96	93.7
# 4	20.65	73.7
# 10	31.53	59.8
# 20	39.41	49.7
# 40	44.02	43.9
# 60	47.46	39.5
# 140	56.15	28.4
# 200	59.36	24.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 26.3 **% SAND =** 49.4
% FINES = 24.3

D_{85}= 6.79 D_{60}= 2.04 D_{50}= 0.87
D_{30}= 0.12

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 33
Elev. or Depth: 153.5'/68.48' **Sample Length (in./cm.):**
Location:
Description: Clayey sand with gravel
Date: **Natural Moisture:** 23.3
Liquid Limit: 34 **Plastic Limit:** 21 **USCS Class.:** SC
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	219.60	0.00
Tare =	142.71	0.00
Dry sample weight =	76.89	0.00
Minus #200 from wash=	100.0 %	

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.50 inch	0.00	100.0
.375 inch	13.15	82.9
# 4	15.38	80.0
# 10	21.49	72.1
# 20	26.03	66.1
# 40	29.61	61.5
# 60	32.78	57.4
# 140	43.10	43.9
# 200	46.58	39.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 20.0 **% SAND =** 40.6
% FINES = 39.4

D_{85}= 9.98 D_{60}= 0.34 D_{50}= 0.15

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 38
Elev. or Depth: 188.5'/33.48' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 40.7
Liquid Limit: **Plastic Limit:** NP **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	155.18	0.00
Tare =	88.30	0.00
Dry sample weight =	66.88	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.42	99.4
# 20	1.70	97.5
# 40	5.14	92.3
# 60	21.57	67.7
# 140	59.84	10.5
# 200	62.48	6.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 93.4
% FINES = 6.6

D_{85}= 0.35 D_{60}= 0.22 D_{50}= 0.20
D_{30}= 0.15 D_{15}= 0.12 D_{10}= 0.10
C_c= 0.9794 C_u= 2.1439

GRAIN SIZE DISTRIBUTION TEST DATA

C nt: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 43
Elev. or Depth: 238.5'/-16.52' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 18.5
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	293.39	0.00
Tare =	144.73	0.00
Dry sample weight =	148.66	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	4.58	96.9
# 10	9.69	93.5
# 20	78.16	47.4
# 40	115.20	22.5
# 60	121.09	18.5
# 140	128.60	13.5
# 200	130.31	12.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 3.1 **% SAND =** 84.6
% FINES = 12.3

D_{85}= 1.72 D_{60}= 1.09 D_{50}= 0.90
D_{30}= 0.56 D_{15}= 0.14

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 3
Elev. or Depth: 15.0'/208.21' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 13.4
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: RM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	110.55
Tare =	0.00
Dry sample weight =	110.55

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.52	99.5
# 20	4.39	96.0
# 40	34.14	69.1
# 60	66.89	39.5
# 140	85.88	22.3
# 200	87.40	20.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 79.1
% FINES = 20.9

D_{85}= 0.61 D_{60}= 0.36 D_{50}= 0.31
D_{30}= 0.19

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-C227.16

Sample Data

Source: B-1003
Sample No.: 7
Elev. or Depth: 35.0'/185.21' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 42.1
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	116.72
Tare =	0.00
Dry sample weight =	116.72

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
10	0.05	100.0
# 20	1.10	99.1
# 40	8.71	92.5
# 60	18.40	84.2
# 140	74.56	36.1
# 200	81.91	29.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 70.2
% FINES = 29.8

D_{85}= 0.26 D_{60}= 0.16 D_{50}= 0.14
D_{30}= 0.08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 11
Elev. or Depth: 55.0'/168.21' **Sample Length (in./cm.):**
Location:
Description: Shell Hash with Silt and Sand
Date: **Natural Moisture:** 17.5
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	249.19
Tare =	0.00
Dry sample weight =	249.19

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
1.5 inch	0.00	100.0
1.0 inch	47.14	81.1
.75 inch	74.74	70.0
.50 inch	90.53	63.7
.375 inch	104.81	57.9
# 4	130.18	47.8
# 10	152.58	38.8
# 20	171.05	31.4
# 40	184.56	25.9
# 60	201.78	19.0
# 140	214.11	14.1
# 200	215.70	13.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 52.2 **% SAND =** 34.4
% FINES = 13.4

D_{85}= 27.68 D_{60}= 10.97 D_{50}= 5.58
D_{30}= 0.69 D_{15}= 0.14

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 14
Elev. or Depth: 75.0'/148.21' **Sample Length (in./cm.):**
Location:
Description: Micaceous, Sand with Silt
Date: **Natural Moisture:** 32.3
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	183.30
Tare =	0.00
Dry sample weight =	183.30

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
20	0.30	99.8
40	2.28	98.8
# 60	89.49	51.2
# 140	165.12	9.9
# 200	168.27	8.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 91.8
% FINES = 8.2

D_{85}= 0.37 D_{60}= 0.28 D_{50}= 0.25
D_{30}= 0.18 D_{15}= 0.13 D_{10}= 0.11
C_c= 1.1295 C_u= 2.6094

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 17
Elev. or Depth: 88.0'/135.21' **Sample Length (in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 67.4
Liquid Limit: 93 **Plastic Limit:** 42 **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	131.94
Tare =	0.00
Dry sample weight =	131.94

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.75 inch	0.00	100.0
.50 inch	9.16	93.1
.375 inch	12.93	90.2
# 4	21.80	83.5
# 10	39.45	70.1
# 20	55.95	57.6
# 40	66.02	50.0
# 60	72.98	44.7
# 140	84.28	36.1
# 200	87.91	33.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 16.5 **% SAND =** 50.1
% FINES = 33.4

D_{85}= 5.41 D_{60}= 1.02 D_{50}= 0.43

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B1003
Sample No.: UD-1
Elev. or Depth: 93.0' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 30.6
Liquid Limit: 54 **Plastic Limit:** 32 **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	88.21
Tare =	0.00
Dry sample weight =	88.21

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
0.500 inch	0.00	100.0
375 inch	0.86	99.0
4	1.43	98.4
# 10	3.48	96.1
# 20	8.26	90.6
# 40	18.39	79.2
# 60	30.10	65.9
# 140	48.64	44.9
# 200	52.43	40.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 1.6 **% SAND =** 57.8
% FINES = 40.6

D_{85}= 0.57 D_{60}= 0.20 D_{50}= 0.14

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 22
Elev. or Depth: 104.7'/118.51' **Sample Length (in./cm.):**
Location:
Description: Silty Sand with Shells
Date: **Natural Moisture:** 40.6
Liquid Limit: 83 **Plastic Limit:** 51 **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	72.96
Tare =	0.00
Dry sample weight =	72.96

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.50 inch	0.00	100.0
.375 inch	0.56	99.2
# 4	0.86	98.8
# 10	6.34	91.3
# 20	23.43	67.9
# 40	32.83	55.0
# 60	37.24	49.0
# 140	45.78	37.3
# 200	49.85	31.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 1.2 **% SAND =** 67.1
% FINES = 31.7

D_{85}= 1.54 D_{60}= 0.59 D_{50}= 0.27

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 27
Elev. or Depth: 121.7'/101.51' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 28.0
Liquid Limit: **Plastic Limit:** NP **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	75.87
Tare =	0.00
Dry sample weight =	75.87

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
0.75 inch	0.00	100.0
.50 inch	2.41	96.8
.375 inch	4.54	94.0
# 4	8.88	88.3
# 10	15.73	79.3
# 20	22.29	70.6
# 40	26.06	65.7
# 60	28.96	61.8
# 140	39.07	48.5
# 200	43.62	42.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 11.7 **% SAND =** 45.8
% FINES = 42.5

D_{85}= 3.37 D_{60}= 0.21 D_{50}= 0.12

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 31
Elev. or Depth: 141.7'/81.51' **Sample Length (in./cm.):**
Location:
Description: Silty Sand with Shells
Date: **Natural Moisture:** 25.9
Liquid Limit: 46 **Plastic Limit:** 28 **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	108.96
Tare =	0.00
Dry sample weight =	108.96

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.50 inch	0.00	100.0
.375 inch	1.02	99.1
# 4	7.92	92.7
# 10	19.78	81.8
# 20	28.78	73.6
# 40	35.73	67.2
# 60	42.47	61.0
# 140	64.19	41.1
# 200	71.74	34.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 7.3 **% SAND** = 58.5
% FINES = 34.2

D_{85}= 2.61 D_{60}= 0.24 D_{50}= 0.15

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 36
Elev. or Depth: 165.7'/57.51' **Sample Length (in./cm.):**
Location:
Description: Sand with Silt
Date: **Natural Moisture:** 23.6
Liquid Limit: **Plastic Limit:** NP **USCS Class.:** SP-SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	151.76
Tare =	0.00
Dry sample weight =	151.76

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
10	0.08	99.9
20	0.67	99.6
# 40	2.70	98.2
# 60	48.02	68.4
# 140	140.80	7.2
# 200	143.59	5.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 94.6
% FINES = 5.4

D_{85}= 0.33 D_{60}= 0.22 D_{50}= 0.20
D_{30}= 0.16 D_{15}= 0.13 D_{10}= 0.11
C_c= 0.9567 C_u= 1.9552

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 40
Elev. or Depth: 185.7'/37.51' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 32.3
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	180.17
Tare =	0.00
Dry sample weight =	180.17

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	1.67	99.1
# 10	2.91	98.4
# 20	5.38	97.0
# 40	8.59	95.2
# 60	14.78	91.8
# 140	120.68	33.0
# 200	150.58	16.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 0.9 **% SAND** = 82.7
% FINES = 16.4

D_{85}= 0.23 D_{60}= 0.16 D_{50}= 0.14
D_{30}= 0.10

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 44
Elev. or Depth: 205.7'/17.51' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 39.3
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	146.22
Tare =	0.00
Dry sample weight =	146.22

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
4	1.99	98.6
# 10	10.07	93.1
# 20	30.53	79.1
# 40	53.16	63.6
# 60	68.60	53.1
# 140	109.82	24.9
# 200	114.96	21.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 1.4 **% SAND =** 77.2
% FINES = 21.4

D_{85}= 1.14 D_{60}= 0.35 D_{50}= 0.23
D_{30}= 0.13

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 51
Elev. or Depth: 240.7'/-17.49' **Sample Length (in./cm.):**
Location:
Description: Sand with Silt
Date: **Natural Moisture:** 23.2
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by:JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	176.58
Tare =	0.00
Dry sample weight =	176.58

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.09	99.9
# 20	6.52	96.3
# 40	79.47	55.0
# 60	130.71	26.0
# 140	155.07	12.2
# 200	157.34	10.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 89.1
% FINES = 10.9

D_{85}= 0.70 D_{60}= 0.46 D_{50}= 0.39
D_{30}= 0.27 D_{15}= 0.16

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 59
Elev. or Depth: 280.7'/-57.49' **Sample Length (in./cm.):**
Location:
Description: Micaceous, Silty Sand
Date: **Natural Moisture:** 23.2
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	164.98
Tare =	0.00
Dry sample weight =	164.98

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
4	0.45	99.7
10	3.69	97.8
# 20	30.45	81.5
# 40	56.80	65.6
# 60	92.15	44.1
# 140	138.82	15.9
# 200	141.48	14.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 0.3 **% SAND =** 85.5
% FINES = 14.2

D_{85}= 0.99 D_{60}= 0.36 D_{50}= 0.29
D_{30}= 0.18 D_{15}= 0.10

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 66
Elev. or Depth: 315.7'/-92.49' **Sample Length (in./cm.):**
Location:
Description: Gravel with Sand
Date: **Natural Moisture:** 32.7
Liquid Limit: 53 **Plastic Limit:** 38 **USCS Class.:** GW
Testing Remarks: Tested by: RM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	149.15
Tare =	0.00
Dry sample weight =	149.15

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
0.750 inch	0.00	100.0
0.500 inch	61.09	59.0
0.375 inch	80.93	45.7
# 4	105.51	29.3
# 10	119.82	19.7
# 20	131.51	11.8
# 40	137.57	7.8
# 60	140.45	5.8
# 140	143.32	3.9
# 200	144.28	3.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 70.7 **% SAND =** 26.0
% FINES = 3.3

D_{85}= 16.72 D_{60}= 12.88 D_{50}= 10.74
D_{30}= 4.96 D_{15}= 1.23 D_{10}= 0.65
C_c= 2.924 C_u= 19.7331

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 73
Elev. or Depth: 350.7'/-127.49' **Sample Length (in./cm.):**
Location:
Description: Sandy Clay
Date: **Natural Moisture:** 21.3
Liquid Limit: 41 **Plastic Limit:** 22 **USCS Class.:** CL
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	152.78
Tare =	0.00
Dry sample weight =	152.78

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
10	1.87	98.8
20	9.27	93.9
# 40	14.18	90.7
# 60	26.41	82.7
# 140	30.52	80.0
# 200	32.91	78.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 21.5
% FINES = 78.5

D_{85}= 0.30

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 83
Elev. or Depth: 400.7'/-177.49' **Sample Length (in./cm.):**
Location:
Description: Micaceous, Silty Sand
Date: **Natural Moisture:** 18.9
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	195.22
Tare =	0.00
Dry sample weight =	195.22

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.49	99.7
# 10	9.06	95.4
# 20	50.34	74.2
# 40	104.88	46.3
# 60	141.49	27.5
# 140	161.53	17.3
# 200	164.30	15.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 0.3 **% SAND** = 83.9
% FINES = 15.8

D_{85}= 1.20 D_{60}= 0.59 D_{50}= 0.46
D_{30}= 0.27

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 93
Elev. or Depth: 450.7'/-227.49' **Sample Length (in./cm.):**
Location:
Description: Micaceous, Silty Sand
Date: **Natural Moisture:** 28.6
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	232.97
Tare =	0.00
Dry sample weight =	232.97

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
10	0.01	100.0
20	0.94	99.6
# 40	24.57	89.5
# 60	108.04	53.6
# 140	190.21	18.4
# 200	196.02	15.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 84.1
% FINES = 15.9

D_{85}= 0.40 D_{60}= 0.28 D_{50}= 0.24
D_{30}= 0.16

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 103
Elev. or Depth: 496.7'/-273.49' **Sample Length (in./cm.):**
Location:
Description: Micaceous, Silty Sand
Date: **Natural Moisture:** 26.4
Liquid Limit: **Plastic Limit:** **USCS Class.:**
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	206.56
Tare =	0.00
Dry sample weight =	206.56

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.43	99.8
# 20	23.32	88.7
# 40	104.02	49.6
# 60	151.97	26.4
# 140	176.28	14.7
# 200	179.33	13.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 86.8
% FINES = 13.2

D_{85}= 0.78 D_{60}= 0.51 D_{50}= 0.43
D_{30}= 0.28 D_{15}= 0.11

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 7
Elev. or Depth: 9.0'/240.78' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 13.8
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	205.88	0.00
Tare =	90.41	0.00
Dry sample weight =	115.47	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.16	99.9
# 20	3.98	96.6
# 40	18.97	83.6
# 60	37.54	67.5
# 140	82.80	28.3
# 200	87.28	24.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 75.6
% FINES = 24.4

D_{85}= 0.45 D_{60}= 0.21 D_{50}= 0.18
D_{30}= 0.11

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 9
Elev. or Depth: 12.0'/237.78' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 14.5
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	217.73	0.00
Tare =	97.16	0.00
Dry sample weight =	120.57	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.84	99.3
# 10	1.27	98.9
# 20	4.95	95.9
# 40	20.32	83.1
# 60	37.96	68.5
# 140	83.10	31.1
# 200	92.75	23.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 0.7 **% SAND =** 76.2
% FINES = 23.1

D_{85}= 0.47 D_{60}= 0.20 D_{50}= 0.17
D_{30}= 0.10

GRAIN SIZE DISTRIBUTION TEST DATA

C nt: Southern Nuclear Co.
P ject: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 12
Elev. or Depth: 23.5'/226.28' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 18.5
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	272.80	0.00
Tare =	144.56	0.00
Dry sample weight =	128.24	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.27	99.8
# 10	0.33	99.7
# 20	1.46	98.9
# 40	7.97	93.8
# 60	51.01	60.2
# 140	107.77	16.0
# 200	109.15	14.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 0.2 **% SAND** = 84.9
% FINES = 14.9

D_{85}= 0.37 D_{60}= 0.25 D_{50}= 0.21
D_{30}= 0.15 D_{15}= 0.08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 16
Elev. or Depth: 43.5'/206.28' **Sample Length (in./cm.):**
Location:
Description: Sandy fat clay
Date: **Natural Moisture:** 46.2
Liquid Limit: 58 **Plastic Limit:** 24 **USCS Class.:** CH
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	169.60	0.00
Tare =	99.48	0.00
Dry sample weight =	70.12	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.30	99.6
# 20	3.61	94.9
# 40	8.05	88.5
# 60	11.62	83.4
# 140	23.96	65.8
# 200	28.08	60.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 40.0
% FINES = 60.0

D_{85}= 0.28 D_{60}= 0.08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 18
Elev. or Depth: 53.5'/196.28' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 62.9
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	166.16	0.00
Tare =	96.46	0.00
Dry sample weight =	69.70	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
10	0.00	100.0
# 20	0.14	99.8
# 40	1.79	97.4
# 60	6.19	91.1
# 140	39.86	42.8
# 200	41.14	41.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 59.0
% FINES = 41.0

D_{85}= 0.22 D_{60}= 0.15 D_{50}= 0.13

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 21
Elev. or Depth: 68.5'/181.28' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 24.1
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	194.43	0.00
Tare =	94.54	0.00
Dry sample weight =	99.89	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.50 inch	0.00	100.0
.375 inch	10.27	89.7
# 4	10.49	89.5
# 10	11.82	88.2
# 20	15.66	84.3
# 40	23.12	76.9
# 60	42.02	57.9
# 140	78.66	21.3
# 200	80.06	19.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 10.5 **% SAND =** 69.6
% FINES = 19.9

D_{85}= 0.98 D_{60}= 0.26 D_{50}= 0.21
D_{30}= 0.14

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 24
Elev. or Depth: 83.5'/166.28' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 28.8
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	210.13	0.00
Tare =	143.22	0.00
Dry sample weight =	66.91	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
4	0.00	100.0
# 10	0.14	99.8
# 20	4.03	94.0
# 40	10.30	84.6
# 60	15.53	76.8
# 140	57.17	14.6
# 200	59.19	11.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 88.5
% FINES = 11.5

D_{85}= 0.45 D_{60}= 0.19 D_{50}= 0.17
D_{30}= 0.14 D_{15}= 0.11

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 32
Elev. or Depth: 123.5'/126.28' **Sample Length (in./cm.):**
Location:
Description: Clayey gravel with sand
Date: **Natural Moisture:** 19.7
Liquid Limit: 43 **Plastic Limit:** 19 **USCS Class.:** GC
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	221.21	0.00
Tare =	144.71	0.00
Dry sample weight =	76.50	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.75 inch	0.00	100.0
.50 inch	30.43	60.2
.375 inch	31.67	58.6
# 4	37.18	51.4
# 10	41.80	45.4
# 20	45.85	40.1
# 40	49.83	34.9
# 60	54.96	28.2
# 140	61.11	20.1
# 200	61.84	19.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 48.6 **% SAND =** 32.2
% FINES = 19.2

D_{85}= 16.88 D_{60}= 12.13 D_{50}= 4.04
D_{30}= 0.29

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-1 Upper
Elev. or Depth: 144.0'/105.78' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 44.6
Liquid Limit: 59 **Plastic Limit:** 38 **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	48.99
Tare =	0.00
Dry sample weight =	48.99

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
375 inch	0.00	100.0
4	0.49	99.0
# 10	1.94	96.0
# 20	5.09	89.6
# 40	9.73	80.1
# 60	14.46	70.5
# 140	23.67	51.7
# 200	26.30	46.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 1.0 **% SAND** = 52.7
% FINES = 46.3

D_{85}= 0.59 D_{60}= 0.16 D_{50}= 0.10

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-2
Elev. or Depth: 153.5'/96.28' **Sample Length (in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 30.1
Liquid Limit: 43 **Plastic Limit:** 27 **USCS Class.:** SM
Testing Remarks: Tested by; JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	102.36
Tare =	0.00
Dry sample weight =	102.36

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.67	99.3
# 10	2.66	97.4
# 20	8.00	92.2
# 40	17.06	83.3
# 60	34.36	66.4
# 140	57.50	43.8
# 200	59.69	41.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 0.7 **% SAND =** 57.6
% FINES = 41.7

D_{85}= 0.46 D_{60}= 0.21 D_{50}= 0.15

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-3 Upper
Elev. or Depth: 163.5'/86.28' **Sample Length (in./cm.):**
Location:
Description: Clayey Gravel with Sand
Date: **Natural Moisture:** 25.1
Liquid Limit: 31 **Plastic Limit:** 22 **USCS Class.:** GC
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	119.78
Tare =	0.00
Dry sample weight =	119.78

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
0 inch	0.00	100.0
.75 inch	11.20	90.6
.50 inch	30.56	74.5
.375 inch	38.45	67.9
# 4	45.52	62.0
# 10	50.45	57.9
# 20	55.98	53.3
# 40	61.04	49.0
# 60	66.44	44.5
# 140	78.07	34.8
# 200	81.18	32.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 38.0 **% SAND =** 29.8
% FINES = 32.2

D_{85}= 16.59 D_{60}= 3.09 D_{50}= 0.49

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-4 Upper
Elev. or Depth: 177.0'/72.78' **Sample Length (in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 20.8
Liquid Limit: 31 **Plastic Limit:** 22 **USCS Class.:** SM
Testing Remarks: Tested by; JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	87.60
Tare =	0.00
Dry sample weight =	87.60

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
1.0 inch	0.00	100.0
0.75 inch	6.68	92.4
0.50 inch	9.09	89.6
.375 inch	10.41	88.1
# 4	18.34	79.1
# 10	22.46	74.4
# 20	25.81	70.5
# 40	29.59	66.2
# 60	33.80	61.4
# 140	46.04	47.4
# 200	51.09	41.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 20.9 **% SAND** = 37.4
% FINES = 41.7

D_{85}= 10.11 D_{60}= 0.22 D_{50}= 0.12

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-5
Elev. or Depth: 188.5'/61.28' **Sample Length (in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 29.0
Liquid Limit: 34 **Plastic Limit:** 27 **USCS Class.:** SM
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	89.59
Tare =	0.00
Dry sample weight =	89.59

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
75 inch	0.00	100.0
.50 inch	11.51	87.2
.375 inch	18.74	79.1
# 4	31.26	65.1
# 10	39.28	56.2
# 20	44.79	50.0
# 40	48.81	45.5
# 60	52.48	41.4
# 140	64.46	28.1
# 200	68.29	23.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 34.9 **% SAND =** 41.3
% FINES = 23.8

D_{85}= 11.79 D_{60}= 3.11 D_{50}= 0.85
D_{30}= 0.12

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-6
Elev. or Depth: 198.5'/51.28' **Sample Length (in./cm.):**
Location:
Description: Clayey Sand
Date: **Natural Moisture:** 26.2
Liquid Limit: 31 **Plastic Limit:** 21 **USCS Class.:** SC
Testing Remarks: Tested by: JM
Reviewed by: SP

Mechanical Analysis Data

	Initial
Dry sample and tare=	83.56
Tare =	0.00
Dry sample weight =	83.56

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	4.32	94.8
# 10	14.66	82.5
# 20	23.71	71.6
# 40	30.30	63.7
# 60	36.02	56.9
# 140	50.76	39.3
# 200	54.73	34.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 5.2 **% SAND** = 60.3
% FINES = 34.5

D_{85}= 2.36 D_{60}= 0.31 D_{50}= 0.18

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 6
Elev. or Depth: 7.5'/248.45' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 3.8
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	240.27	0.00
Tare =	97.30	0.00
Dry sample weight =	142.97	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
4	0.00	100.0
10	0.08	99.9
# 20	6.00	95.8
# 40	32.39	77.3
# 60	68.94	51.8
# 140	127.54	10.8
# 200	132.60	7.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 92.7
% FINES = 7.3

D_{85}= 0.53 D_{60}= 0.29 D_{50}= 0.24
D_{30}= 0.17 D_{15}= 0.12 D_{10}= 0.10
C_c= 0.9747 C_u= 2.8602

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 14
Elev. or Depth: 33.5'/222.45' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 19.7
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	248.46	0.00
Tare =	92.64	0.00
Dry sample weight =	155.82	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.23	99.9
# 10	8.64	94.5
# 20	30.03	80.7
# 40	59.63	61.7
# 60	75.97	51.2
# 140	111.28	28.6
# 200	115.18	26.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 0.1 **% SAND =** 73.8
% FINES = 26.1

D_{85}= 1.03 D_{60}= 0.39 D_{50}= 0.24
D_{30}= 0.12

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 19
Elev. or Depth: 58.5'/197.45' **Sample Length (in./cm.):**
Location:
Description: Sandy fat clay
Date: **Natural Moisture:** 92.8
Liquid Limit: 97 **Plastic Limit:** 30 **USCS Class.:** CH
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	148.95	0.00
Tare =	100.16	0.00
Dry sample weight =	48.79	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
10	0.00	100.0
# 20	0.26	99.5
# 40	1.24	97.5
# 60	4.86	90.0
# 140	17.19	64.8
# 200	20.33	58.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND** = 41.7
% FINES = 58.3

D_{85}= 0.21 D_{60}= 0.08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 21
Elev. or Depth: 68.5'/187.45' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand
Date: **Natural Moisture:** 25.4
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	333.64	0.00
Tare =	143.63	0.00
Dry sample weight =	190.01	0.00
Minus #200 from wash=	100.0 %	

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.19	99.9
# 10	11.11	94.2
# 20	71.67	62.3
# 40	155.13	18.4
# 60	175.50	7.6
# 140	183.43	3.5
# 200	184.07	3.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 0.1 **% SAND =** 96.8
% FINES = 3.1

D_{85}= 1.38 D_{60}= 0.82 D_{50}= 0.71
D_{30}= 0.53 D_{15}= 0.39 D_{10}= 0.31
C_c= 1.0845 C_u= 2.622

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 25
Elev. or Depth: 88.5'/167.45' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 51.9
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	193.58	0.00
Tare =	89.16	0.00
Dry sample weight =	104.42	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
4	0.00	100.0
# 10	0.81	99.2
# 20	19.71	81.1
# 40	50.99	51.2
# 60	69.90	33.1
# 140	85.20	18.4
# 200	87.99	15.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 84.3
% FINES = 15.7

D_{85}= 0.96 D_{60}= 0.52 D_{50}= 0.41
D_{30}= 0.22

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 29
Elev. or Depth: 108.5'/147.45' **Sample Length (in./cm.):**
Location:
Description: Silty sand with gravel
Date: **Natural Moisture:** 22.0
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	224.55	0.00
Tare =	88.62	0.00
Dry sample weight =	135.93	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
1.5 inch	0.00	100.0
1.0 inch	17.52	87.1
.750 inch	17.52	87.1
.50 inch	25.21	81.5
.375 inch	28.71	78.9
# 4	41.77	69.3
# 10	59.98	55.9
# 20	75.97	44.1
# 40	87.22	35.8
# 60	95.22	29.9
# 140	105.08	22.7
# 200	106.71	21.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 30.7 **% SAND =** 47.8
% FINES = 21.5

D_{85}= 16.60 D_{60}= 2.62 D_{50}= 1.33
D_{30}= 0.25

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 32
Elev. or Depth: 123.5'/132.45' **Sample Length (in./cm.):**
Location:
Description: Sandy elastic silt
Date: **Natural Moisture:** 53.7
Liquid Limit: 99 **Plastic Limit:** 43 **USCS Class.:** MH
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	153.29	0.00
Tare =	88.97	0.00
Dry sample weight =	64.32	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
4	0.00	100.0
# 10	0.02	100.0
# 20	0.90	98.6
# 40	10.43	83.8
# 60	18.35	71.5
# 140	19.75	69.3
# 200	23.09	64.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 35.9
% FINES = 64.1

D_{85}= 0.45

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1010
Sample No.: 6
Elev. or Depth: 7.5'/211.1' **Sample Length (in./cm.):**
Location:
Description: Poorly graded sand with silt
Date: **Natural Moisture:** 5.7
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	205.69	0.00
Tare =	94.14	0.00
Dry sample weight =	111.55	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	2.20	98.0
# 40	25.05	77.5
# 60	57.58	48.4
# 140	101.48	9.0
# 200	102.87	7.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
COBBLES = % GRAVEL = % SAND = 92.2
FINES = 7.8

D_{85}= 0.52 D_{60}= 0.30 D_{50}= 0.26
D_{30}= 0.18 D_{15}= 0.13 D_{10}= 0.11
C_c= 0.9846 C_u= 2.7138

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1010
Sample No.: 14
Elev. or Depth: 33.5'/185.1' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 18.9
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	185.06	0.00
Tare =	92.60	0.00
Dry sample weight =	92.46	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.02	100.0
# 20	0.11	99.9
# 40	0.65	99.3
# 60	39.02	57.8
# 140	75.86	18.0
# 200	76.74	17.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND** = 83.0
% FINES = 17.0

D_{85}= 0.36 D_{60}= 0.26 D_{50}= 0.22
D_{30}= 0.16

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1010
Sample No.: 19
Elev. or Depth: 58.5'/160.1' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 27.3
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	259.67	0.00
Tare =	87.64	0.00
Dry sample weight =	172.03	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.44	99.7
# 40	2.14	98.8
# 60	15.38	91.1
# 140	147.36	14.3
# 200	149.09	13.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 86.7
% FINES = 13.3

D_{85}= 0.24 D_{60}= 0.19 D_{50}= 0.17
D_{30}= 0.14 D_{15}= 0.11

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1010
Sample No.: 22
Elev. or Depth: 73.5'/145.1' **Sample Length (in./cm.):**
Location:
Description: Silty sand
Date: **Natural Moisture:** 30.8
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	229.26	0.00
Tare =	89.53	0.00
Dry sample weight =	139.73	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.76	99.5
# 20	14.27	89.8
# 40	43.76	68.7
# 60	71.62	48.7
# 140	104.30	25.4
# 200	106.38	23.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** **% SAND =** 76.1
% FINES = 23.9

D_{85}= 0.70 D_{60}= 0.34 D_{50}= 0.26
D_{30}= 0.14

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1010
Sample No.: 27
Elev. or Depth: 98.5'/120.1' **Sample Length (in./cm.):**
Location:
Description: Clayey sand
Date: **Natural Moisture:** 49.9
Liquid Limit: 94 **Plastic Limit:** 36 **USCS Class.:** SC
Testing Remarks: Tested by: BM
Reviewed by: JM

Mechanical Analysis Data

	Initial	After wash
Dry sample and tare=	144.84	0.00
Tare =	89.02	0.00
Dry sample weight =	55.82	0.00

Minus #200 from wash= 100.0 %
Tare for cumulative weight retained= .00

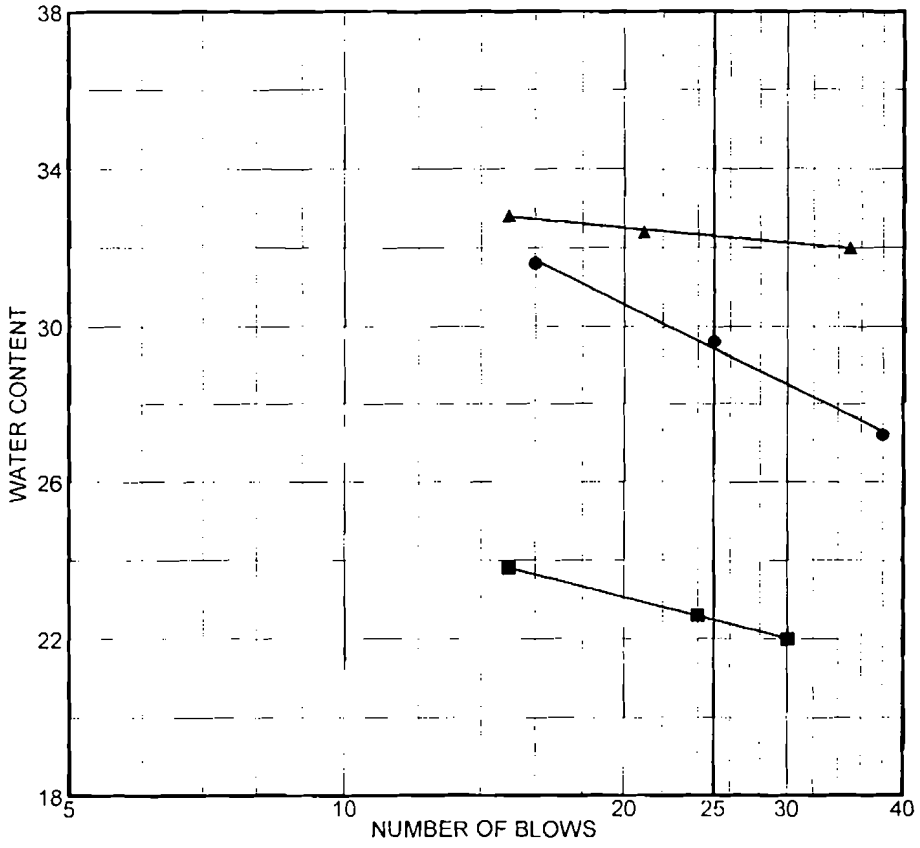
Sieve	Cumul. Wt. retained	Percent finer
.50 inch	0.00	100.0
.375 inch	3.93	93.0
# 4	6.46	88.4
# 10	9.96	82.2
# 20	13.71	75.4
# 40	17.35	68.9
# 60	20.97	62.4
# 140	28.25	49.4
# 200	30.78	44.9

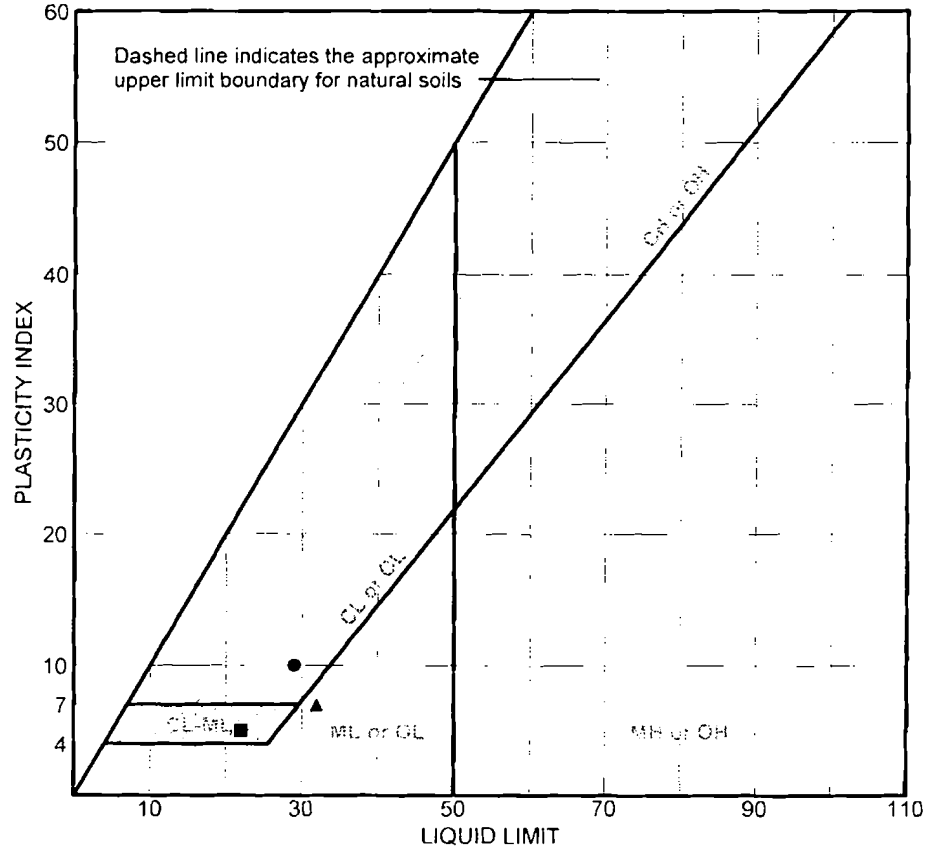
Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 11.6 **% SAND =** 43.5
% FINES = 44.9

D_{85}= 2.77 D_{60}= 0.21 D_{50}= 0.11

LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1002	UD-3	113.5'/ 108.48'		SC	Clayey Sand	25.5	29	10
■	B-1002	UD-4	123.5'/98.48'		GC-GM	Clayey/Silty Gravel with Sand	13.5	22	5
▲	B-1002	UD-5	133.5'/88.48'		SM	Silty Sand with Gravel	28.6	32	7

Client Southern Nuclear Co.

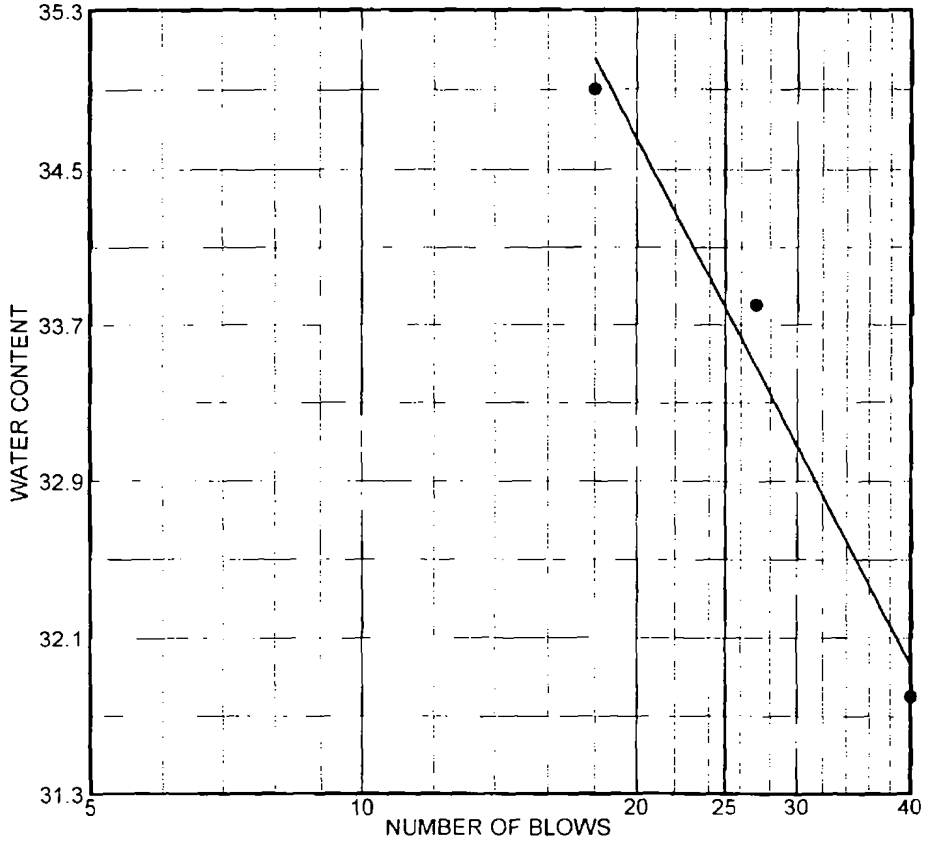
Project ALWR ESP

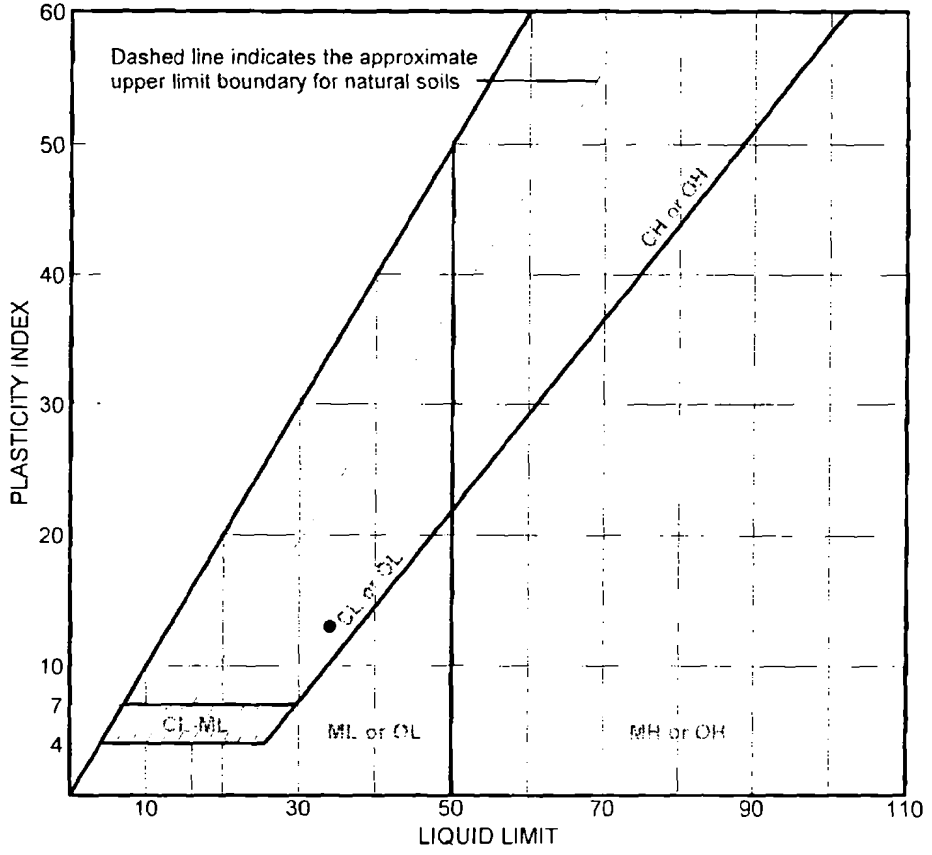
Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: JM
Reviewed by: JL
■ Tested by; JM
Reviewed by: SP
▲ Tested by: JM
Reviewed by: SP

LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1002	33	153.5'/68.48'		CL	Sandy Clay with Gravel	23.3	34	13
■	B-1002	38	188.5'/33.48'		SM	Silty Sand	40.7		NP

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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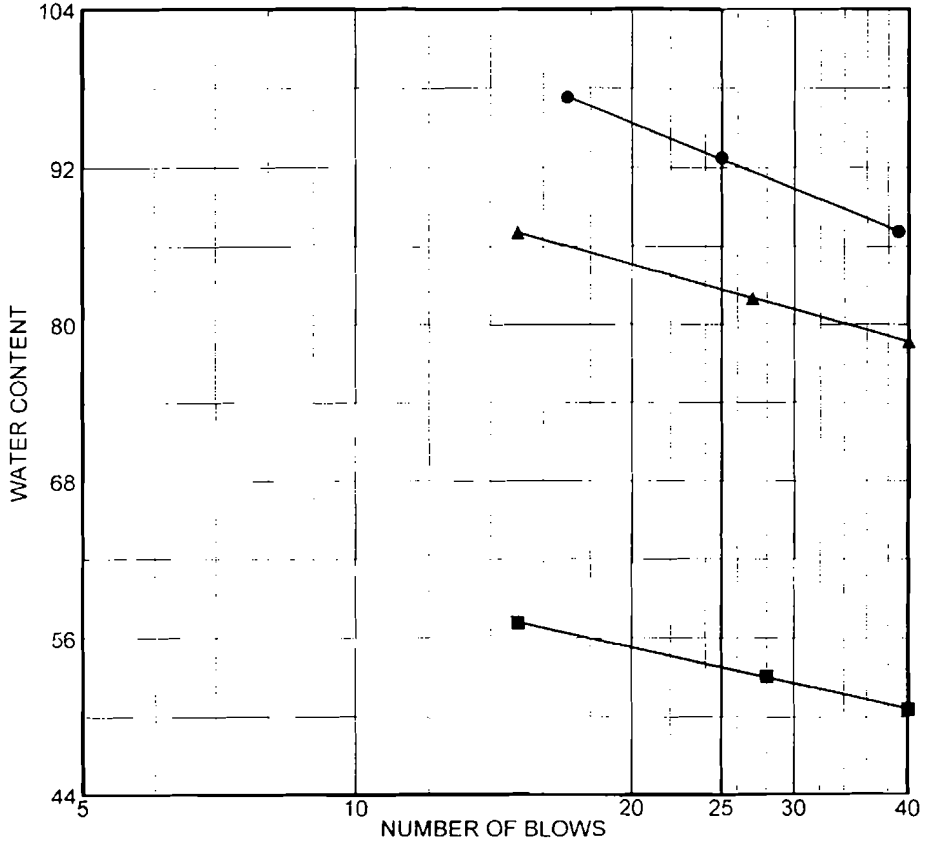
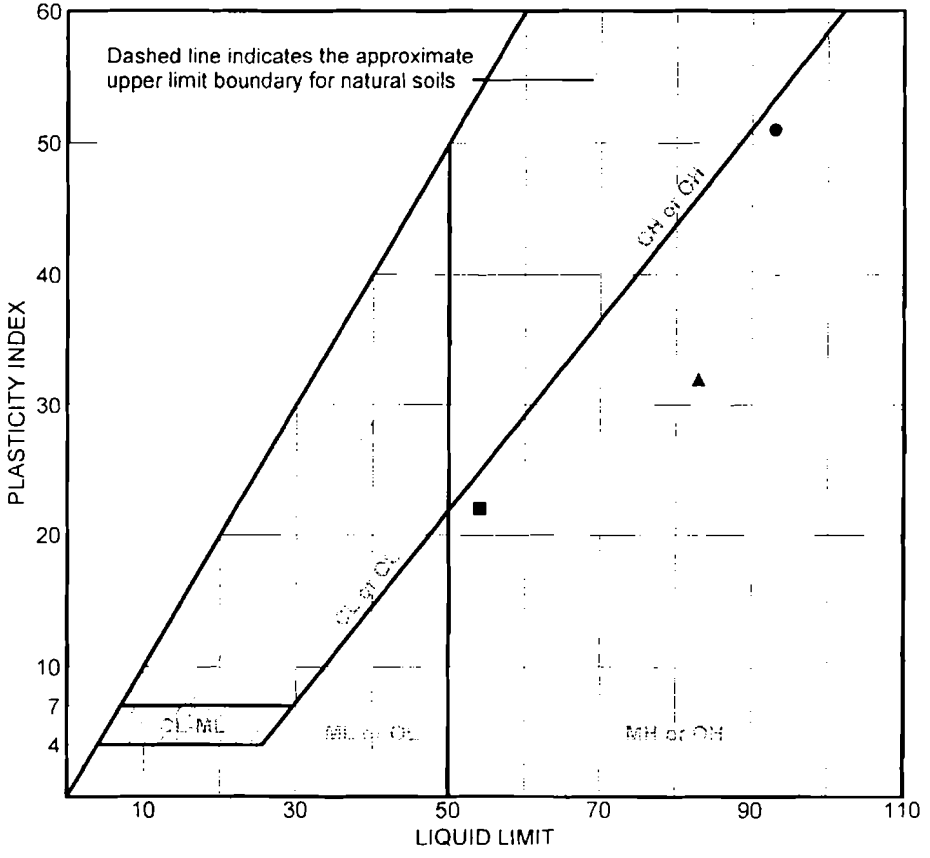
LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1003	17	88.0'/135.21'		SM	Silty Sand with Gravel	67.4	93	51
■	B-1003	UD-1	93.0'/130.21'		SM	Silty Sand	30.6	54	22
▲	B-1003	22	104.7'/ 118.51'		SM	Silty Sand with Shells	40.6	83	32

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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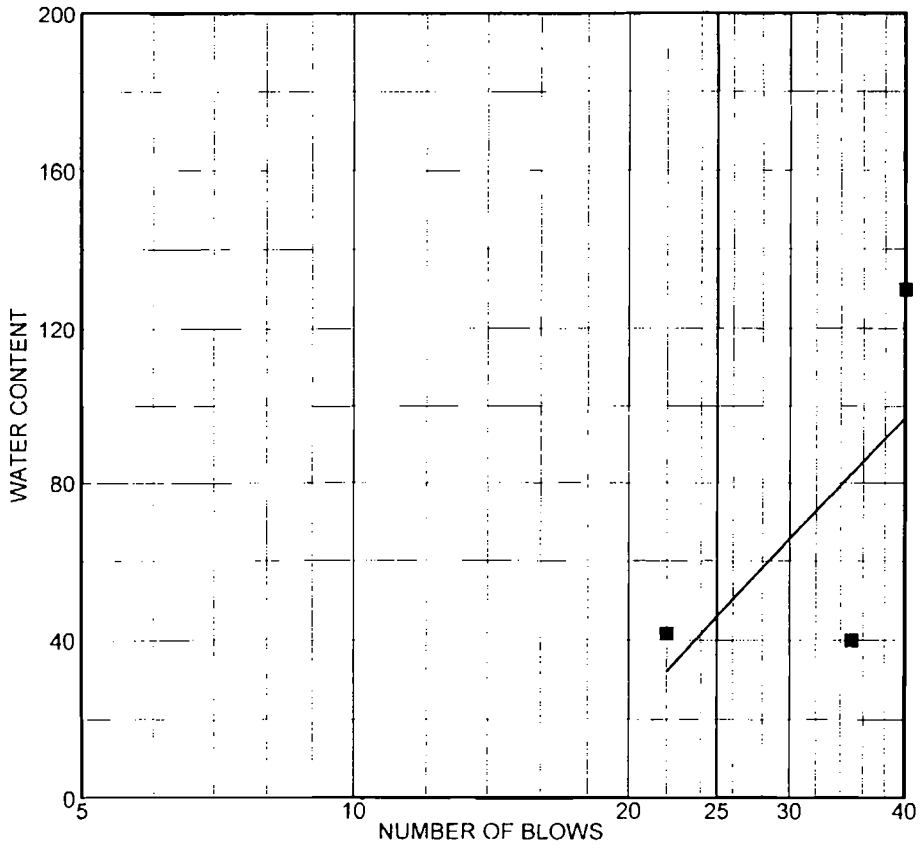
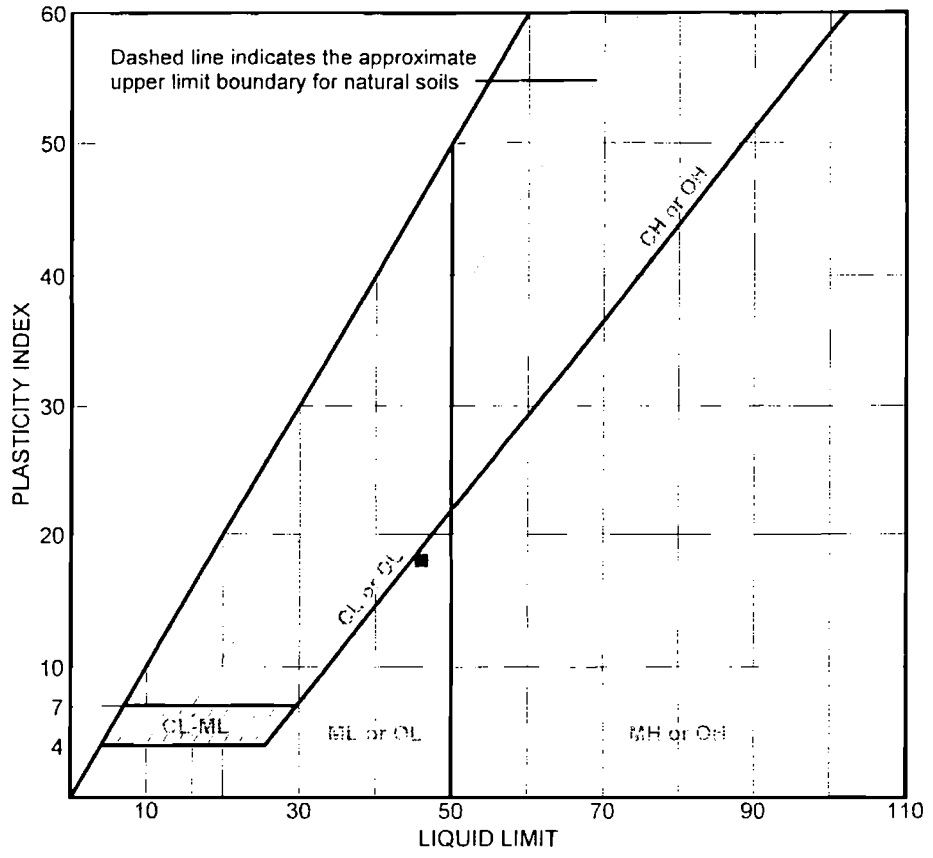
Reviewed by: SP

■ Tested by: JM
Reviewed by:

▲ Tested by: JM
Reviewed by:

LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1003	27	121.7'/ 101.51'		SM	Silty Sand	28.0		NP
■	B-1003	31	141.7'/81.51'		SM	Silty Sand with Shells	25.9	46	18
▲	B-1003	36	165.7'/57.51'		SP-SM	Sand with Silt	23.6		NP

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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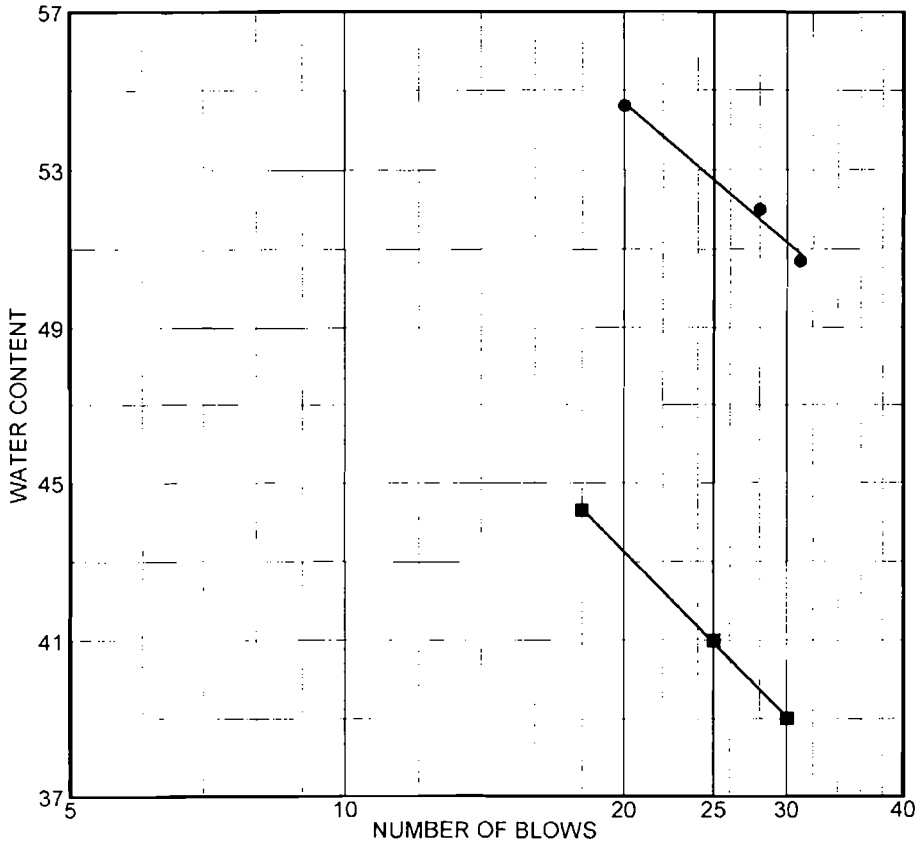
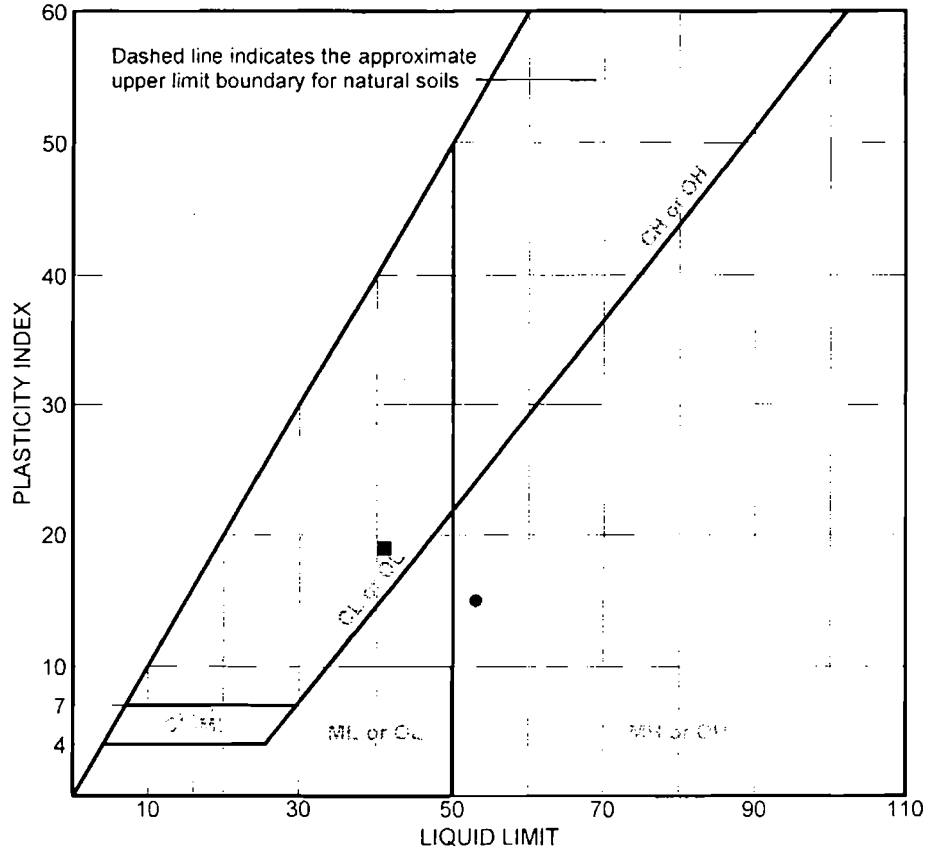
● Tested by: JM
Reviewed by: JL

■ Tested by:JM
Reviewed by: PDP

▲ Tested by: JM
Reviewed by: SP

LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1003	66	315.7'/-92.49'		GW	Gravel with Sand	32.7	53	15
■	B-1003	73	350.7'/-127.49'		CL	Sandy Clay	21.3	41	19

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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Reviewed by: SP

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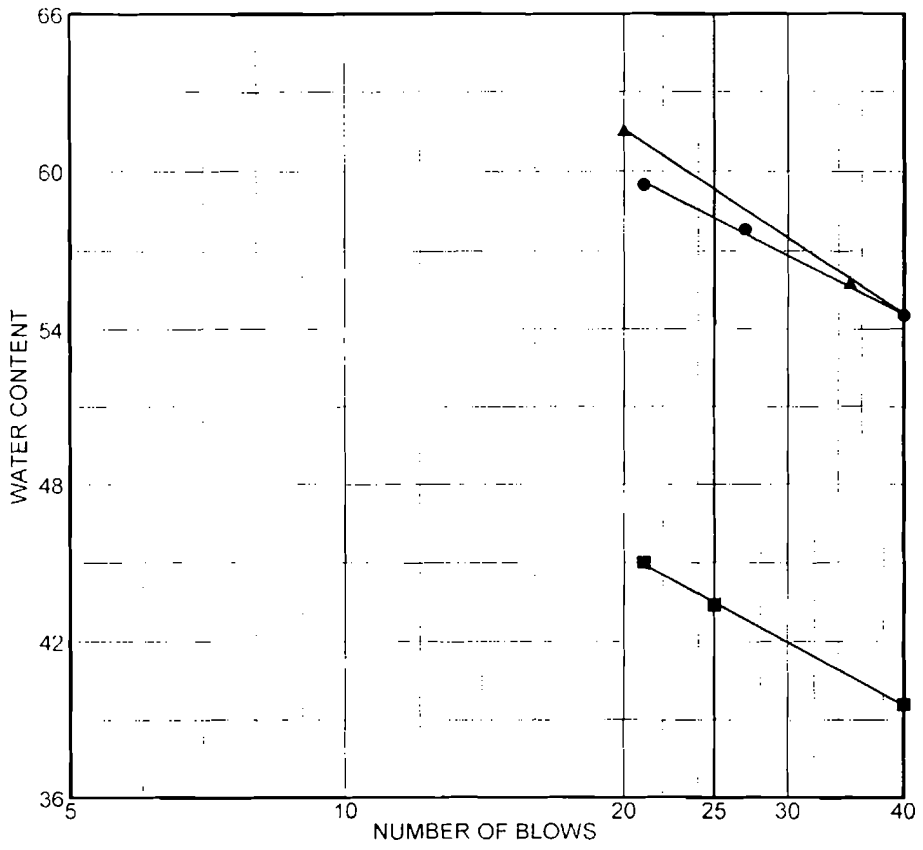
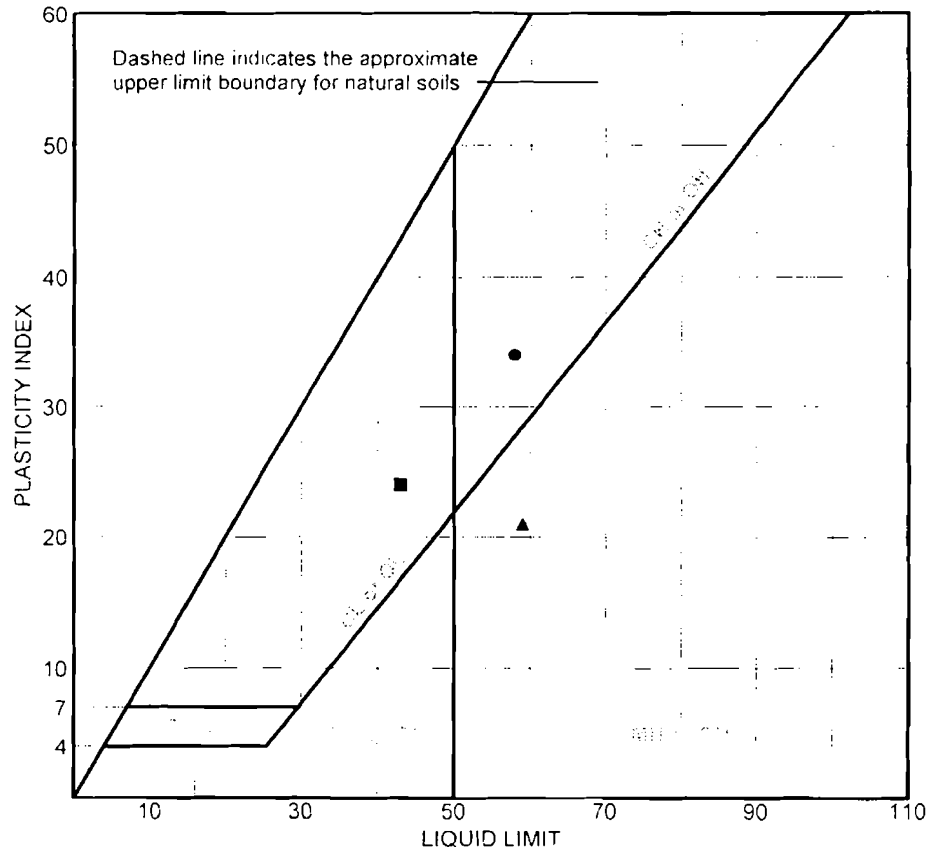
Reviewed by: PDP

LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1004	16	43.5'/206.28'		CH	Sandy Clay	46.2	58	34
■	B-1004	32	123.5'/ 126.28'		GC	Clayey Gravel with Sand	19.7	43	24
▲	B-1004	UD-1 Upper	144.0'/ 105.78'		SM	Silty Sand	44.6	59	21

Client Southern Nuclear Co.
Project ALWR ESP

Project No. 6141-05-0227.16

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Reviewed by: JL
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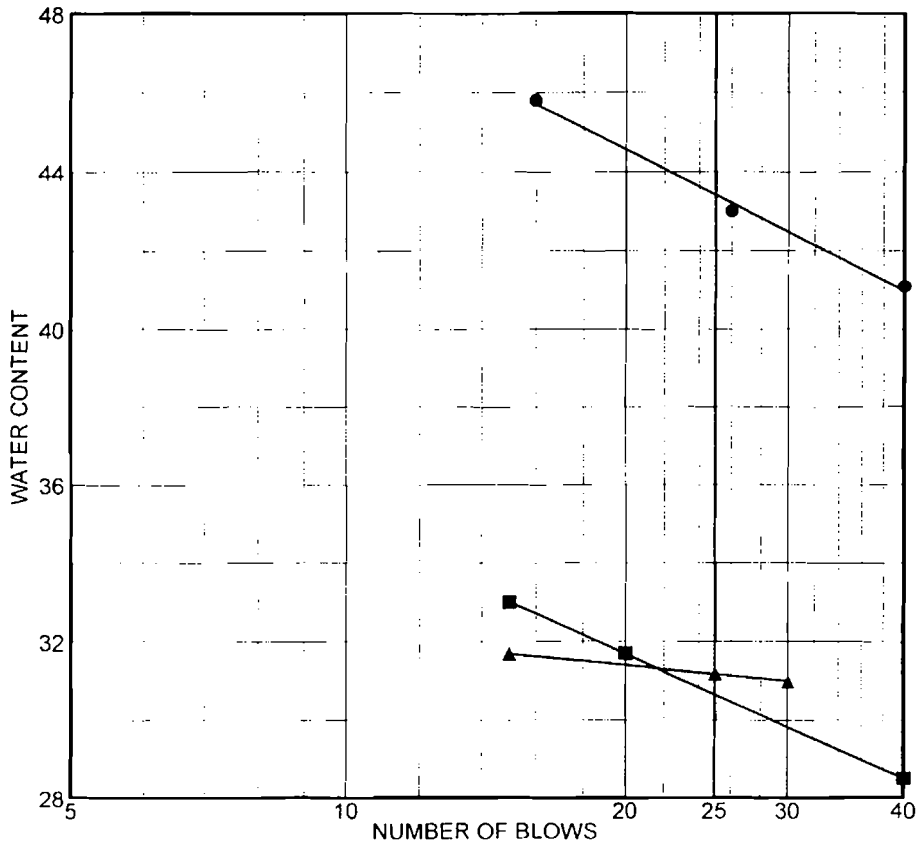
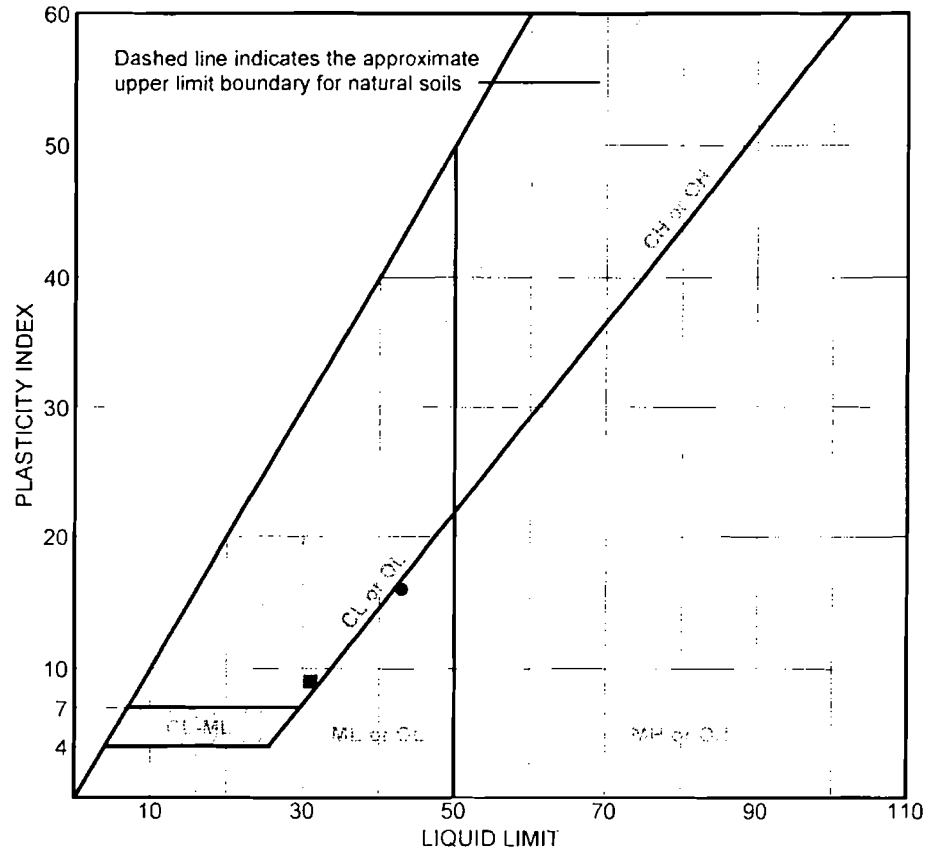
Reviewed by: JL
▲ Tested by: JM
Reviewed by:

LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1004	UD-2	153.5'/96.28'		SM	Silty Sand	30.1	43	16
■	B-1004	UD-3 Upper	163.5'/86.28'		GC	Clayey Gravel with Sand	25.1	31	9
▲	B-1004	UD-4 Upper	177.0'/72.78'		SM	Silty Sand with Gravel	20.8	31	9

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

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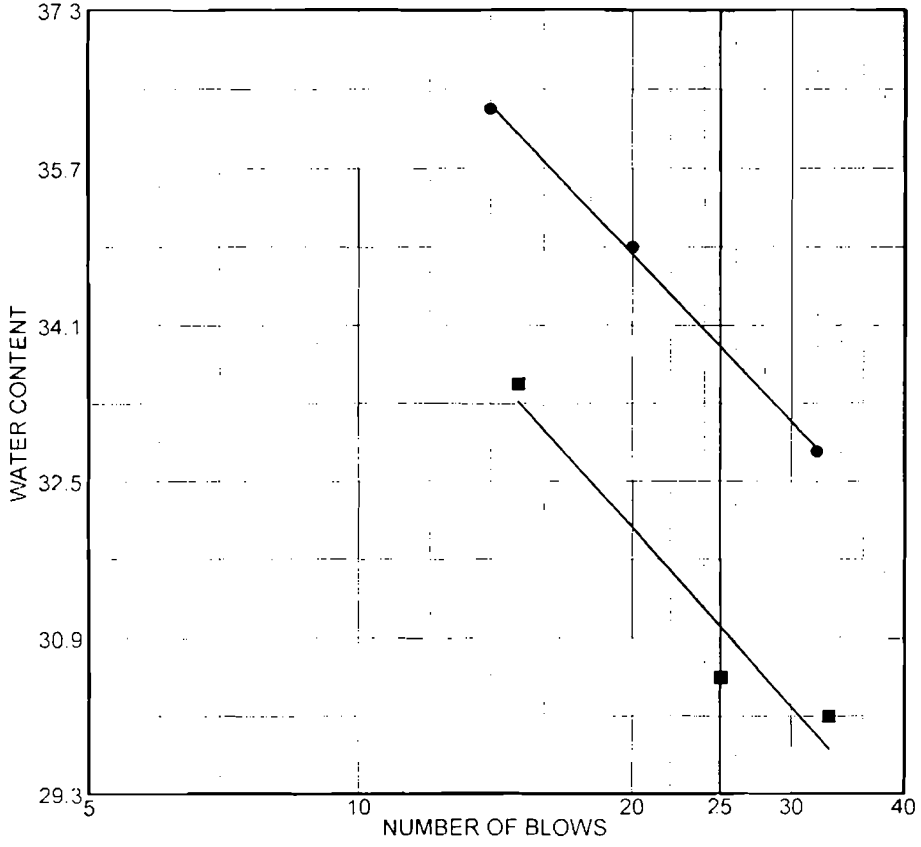
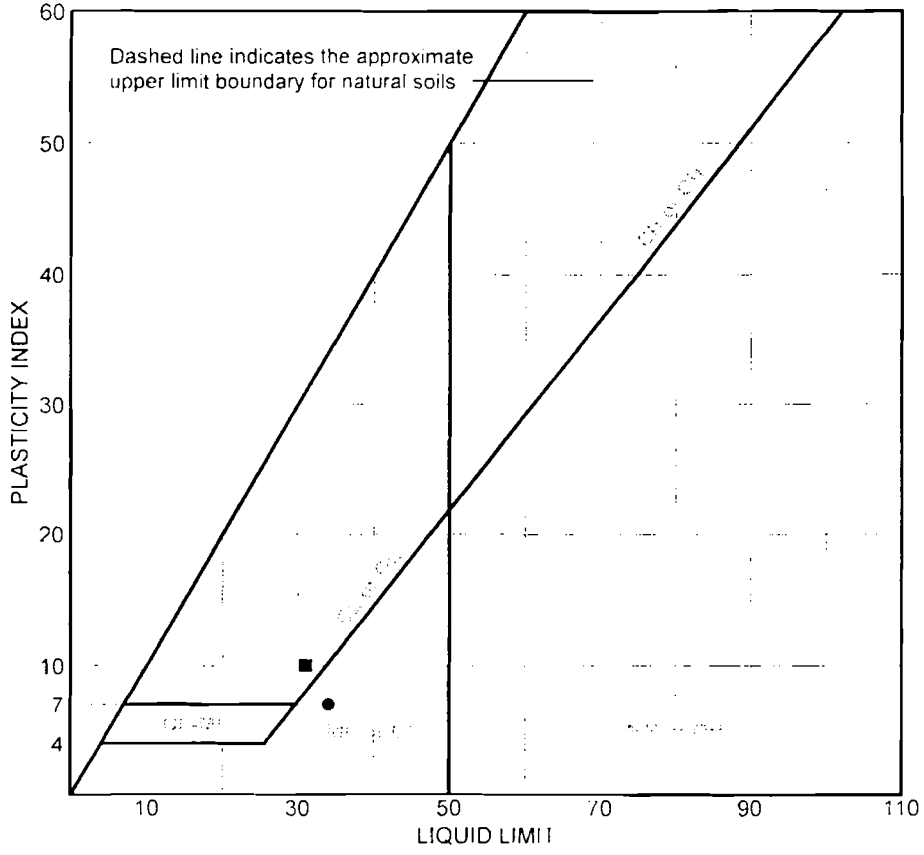
● Tested by: JM
Reviewed by:

■ Tested by: JM
Reviewed by: PDP

▲ Tested by: JM
Reviewed by: PDP

LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1004	UD-5	188.5'/61.28'		SM	Silty Sand with Gravel	29.0	34	7
■	B-1004	UD-6	198.5'/51.28'		SC	Clayey Sand	26.2	31	10

Client Southern Nuclear Co.
Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

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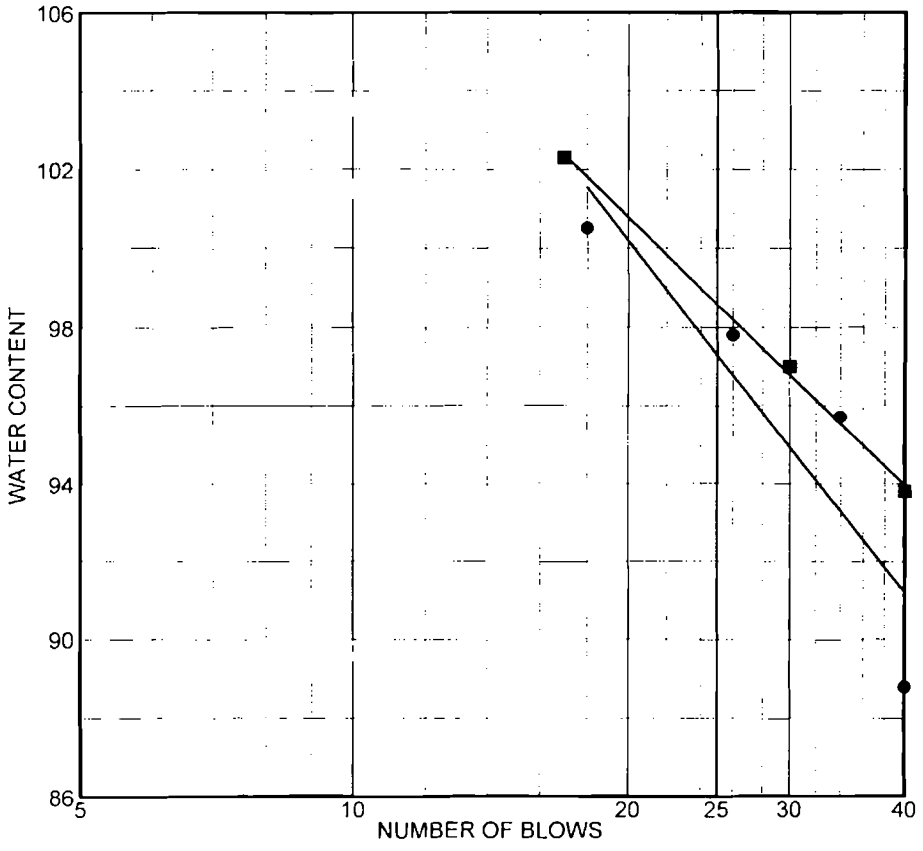
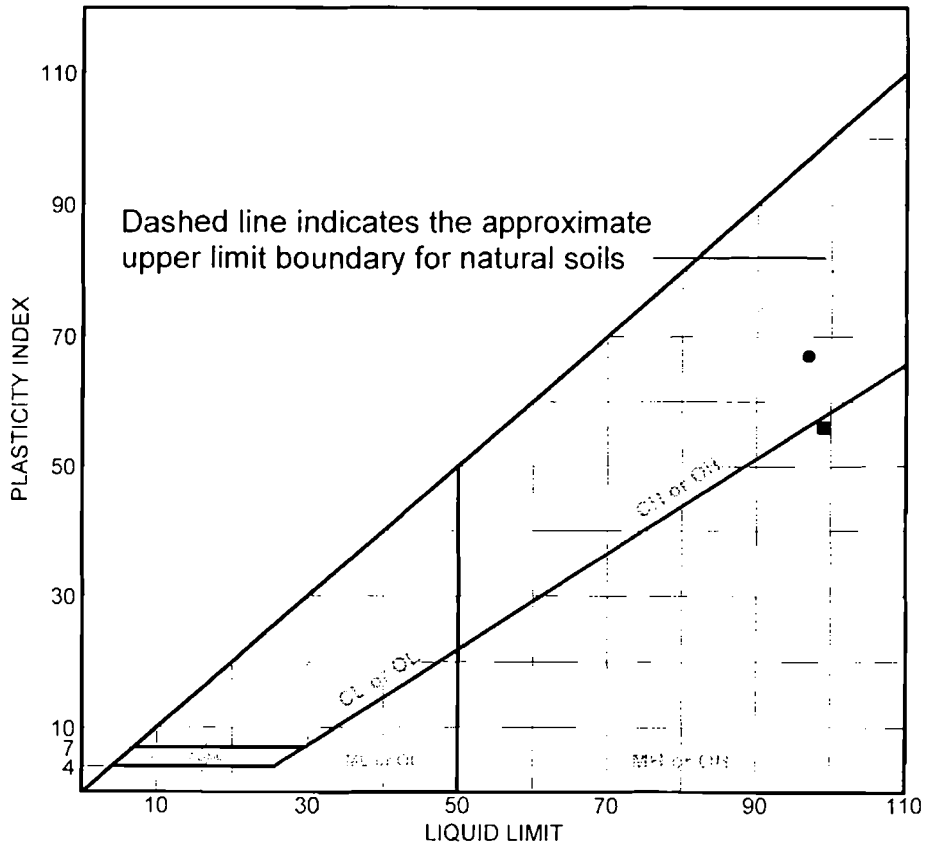
LIQUID AND PLASTIC LIMITS TEST REPORT





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1006	19	58.5'/197.45'		CH	Sandy Silty Clay	92.8	97	67
■	B-1006	32	123.5'/ 132.45'		MH	Silt with Sand	53.7	99	56

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: JM
Reviewed by: PDP

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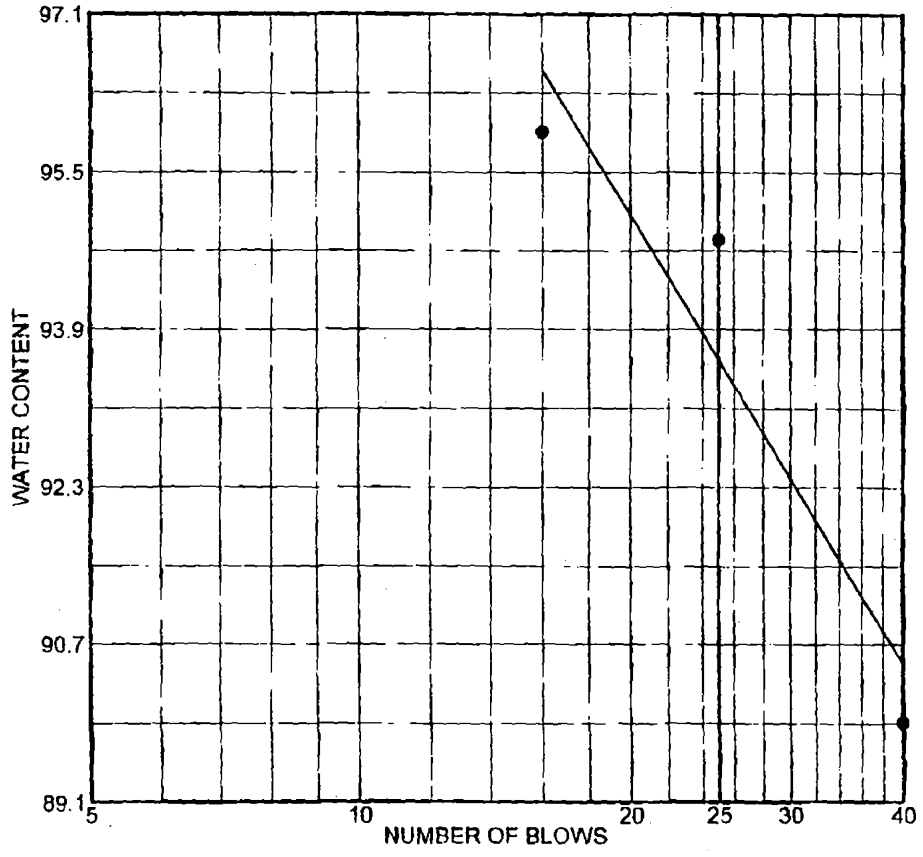
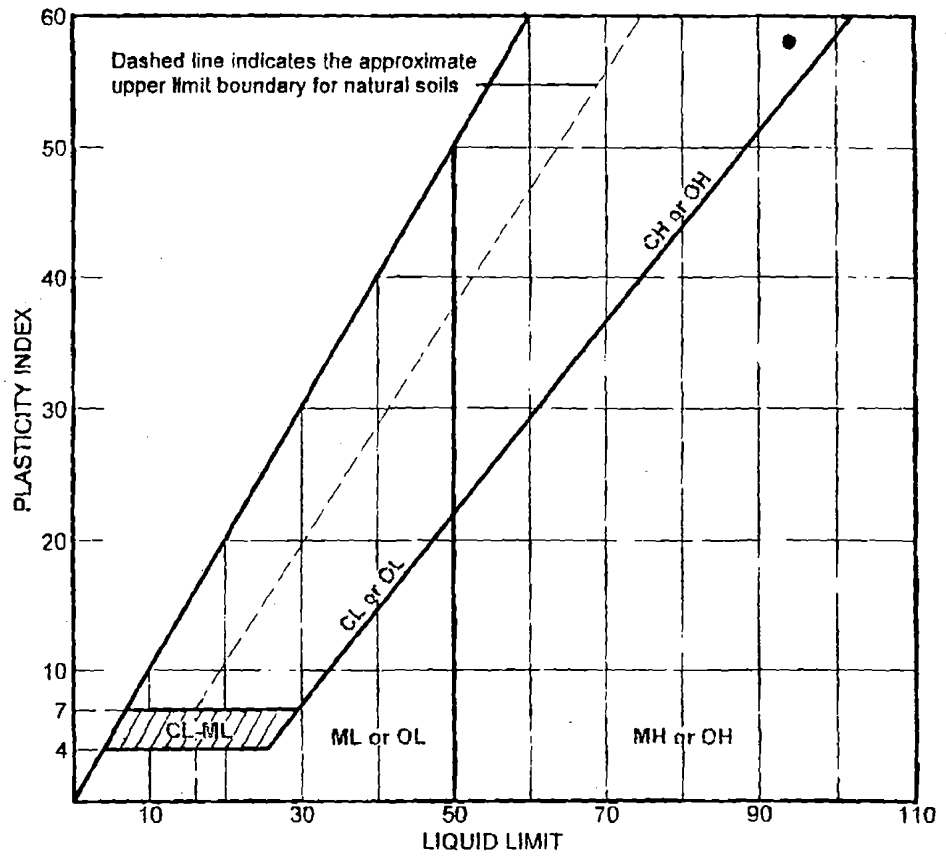
Reviewed by: PDP

LIQUID AND PLASTIC LIMITS ASTM D4318





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-1010	27	98.5'/120.1'		SC	Clayey sand	49.9	94	58

Client Southern Nuclear Co.

Project ALWR ESP

Project No. 6141-05-0227.16

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: JM
Reviewed by: PDP

LIQUID AND PLASTIC LIMIT TEST DATA

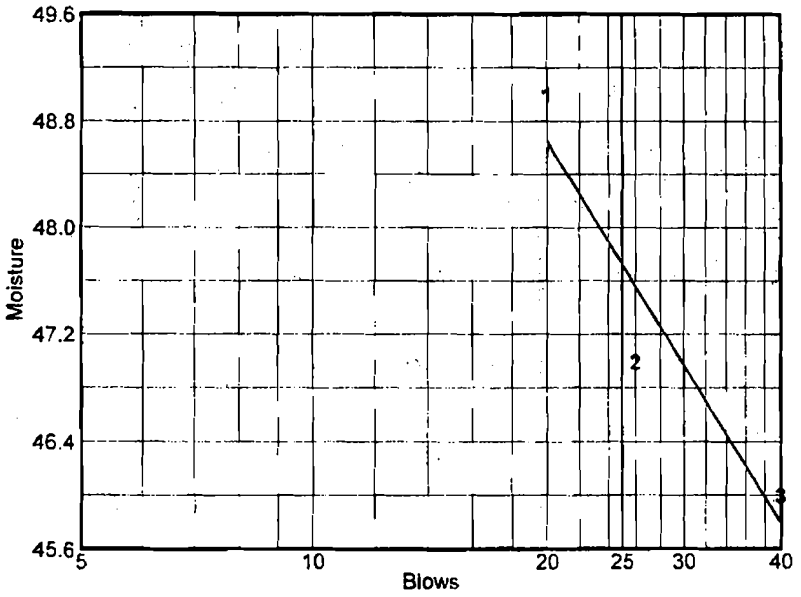
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 15
Elev. or Depth: 38.5'/183.48' **Sample Length(in./cm.):**
Location:
Description: Silty Clay
Date: **Natural Moisture:** 92.8
USCS Class.: **AASHTO Class.:**
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	37.16	31.21	33.82			
Dry+Tare	31.94	27.81	29.51			
Tare	21.28	20.58	20.14			
# Blows	20	26	40			
Moisture	49.0	47.0	46.0			



Liquid Limit= 48
Plastic Limit= 27
Plasticity Index= 21

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	27.00	26.96		
Dry+Tare	25.84	25.48		
Tare	21.49	20.13		
Moisture	26.7	27.7		

LIQUID AND PLASTIC LIMIT TEST DATA

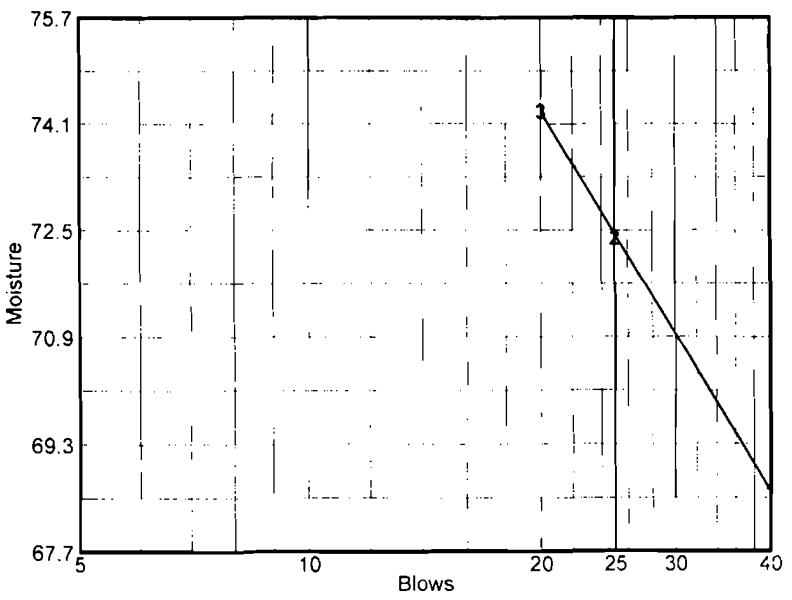
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-1 Upper
Elev. or Depth: 92.0'/129.98' **Sample Length(in./cm.):**
Location:
Description: Silty Gravel with Sand
Date: **Natural Moisture:** 52.1
USCS Class.: GM **AASHTO Class.:** A-2-7(4)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.50	25.74	27.96			
Dry+Tare	24.97	23.35	24.78			
Tare	21.28	20.05	20.50			
# Blows	40	25	20			
Moisture	68.6	72.4	74.3			



Liquid Limit= 72
Plastic Limit= 37
Plasticity Index= 35

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.75	25.42		
Dry+Tare	24.36	23.99		
Tare	20.66	20.12		
Moisture	37.6	37.0		

LIQUID AND PLASTIC LIMIT TEST DATA

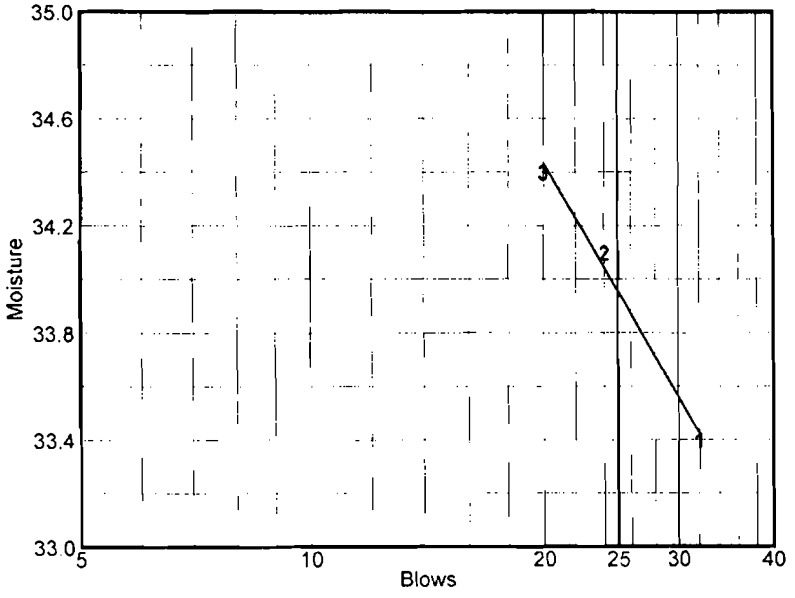
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-2
Elev. or Depth: 103.5'/118.48' **Sample Length(in./cm.):**
Location:
Description: Sandy Silty Clay
Date: **Natural Moisture:** 56.5
USCS Class.: CL **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.64	34.96	34.41			
Dry+Tare	31.03	31.48	30.80			
Tare	20.21	21.28	20.31			
# Blows	32	24	20			
Moisture	33.4	34.1	34.4			



Liquid Limit= 34
Plastic Limit= 22
Plasticity Index= 12

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.74	25.71		
Dry+Tare	24.74	24.75		
Tare	20.11	20.31		
Moisture	21.6	21.6		

LIQUID AND PLASTIC LIMIT TEST DATA

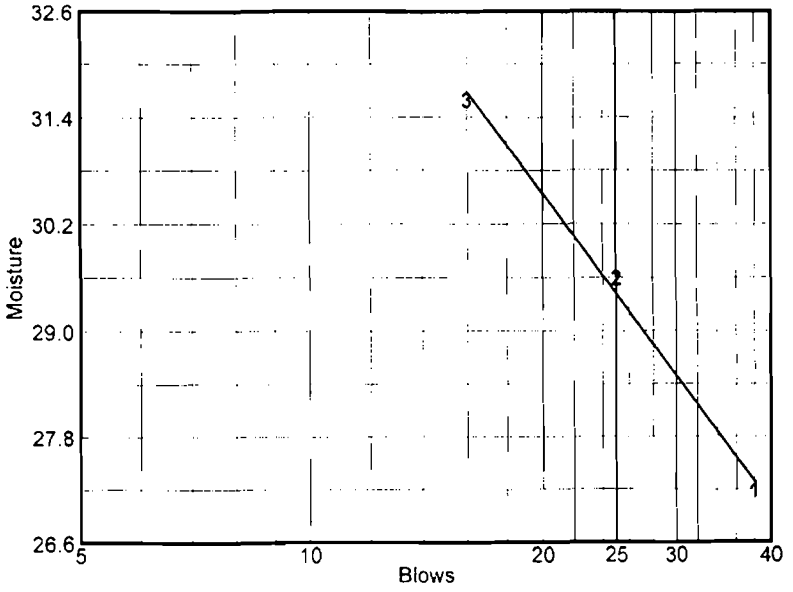
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-3
Elev. or Depth: 113.5'/108.48' **Sample Length(in./cm.):**
Location:
Description: Clayey Sand
Date: **Natural Moisture:** 25.5
USCS Class.: SC **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.24	35.58	32.87			
Dry+Tare	30.44	32.20	29.98			
Tare	20.13	20.77	20.83			
# Blows	38	25	16			
Moisture	27.2	29.6	31.6			



Liquid Limit= 29
Plastic Limit= 19
Plasticity Index= 10

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	26.25	26.27		
Dry+Tare	25.39	25.44		
Tare	20.88	20.98		
Moisture	19.1	18.6		

LIQUID AND PLASTIC LIMIT TEST DATA

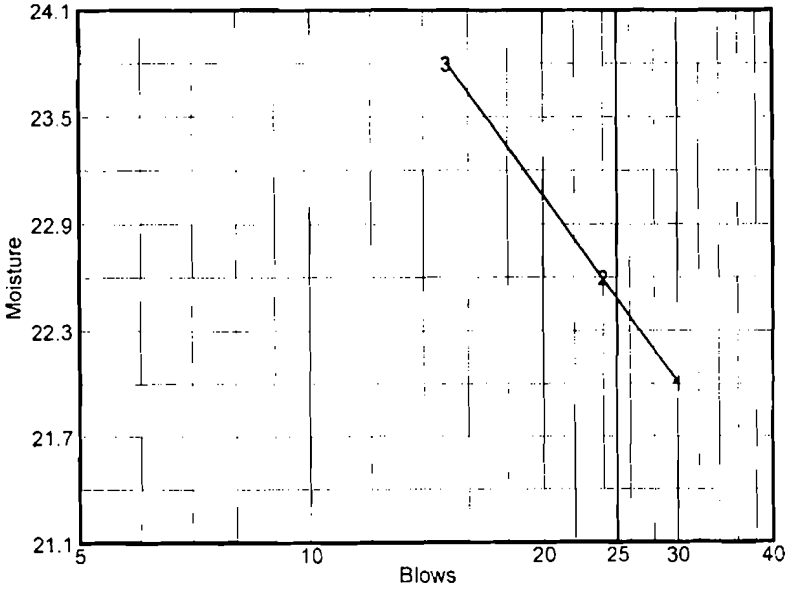
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-4
Elev. or Depth: 123.5'/98.48' **Sample Length(in./cm.):**
Location:
Description: Clayey/Silty Gravel with Sand
Date: **Natural Moisture:** 13.5
USCS Class.: GC-GM **AASHTO Class.:** A-1-b
Testing Remarks: Tested by; JM
Reviewed by: SP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.69	33.95	32.78			
Dry+Tare	29.67	31.39	30.39			
Tare	20.48	20.07	20.34			
# Blows	30	24	15			
Moisture	22.0	22.6	23.8			



Liquid Limit= 22
Plastic Limit= 17
Plasticity Index= 5

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	27.06	26.78		
Dry+Tare	26.2	25.84		
Tare	21.16	20.31		
Moisture	17.1	17.0		

LIQUID AND PLASTIC LIMIT TEST DATA

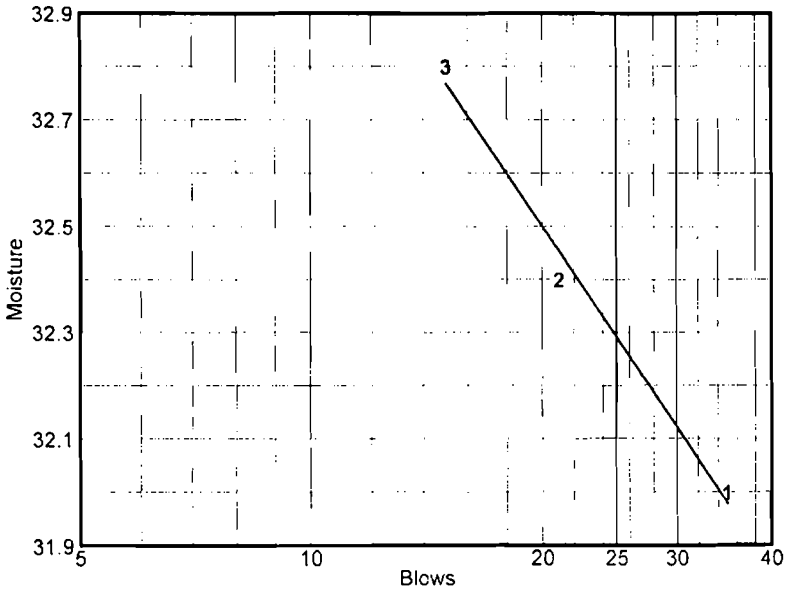
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: UD-5
Elev. or Depth: 133.5'/88.48' **Sample Length(in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 28.6
USCS Class.: SM **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by: JM
Reviewed by: SP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	35.14	33.68	31.7			
Dry+Tare	31.66	30.55	28.74			
Tare	20.78	20.88	19.72			
# Blows	35	21	15			
Moisture	32.0	32.4	32.8			



Liquid Limit= 32
Plastic Limit= 25
Plasticity Index= 7

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	26.45	26.48		
Dry+Tare	25.33	25.28		
Tare	20.85	20.44		
Moisture	25.0	24.8		

LIQUID AND PLASTIC LIMIT TEST DATA

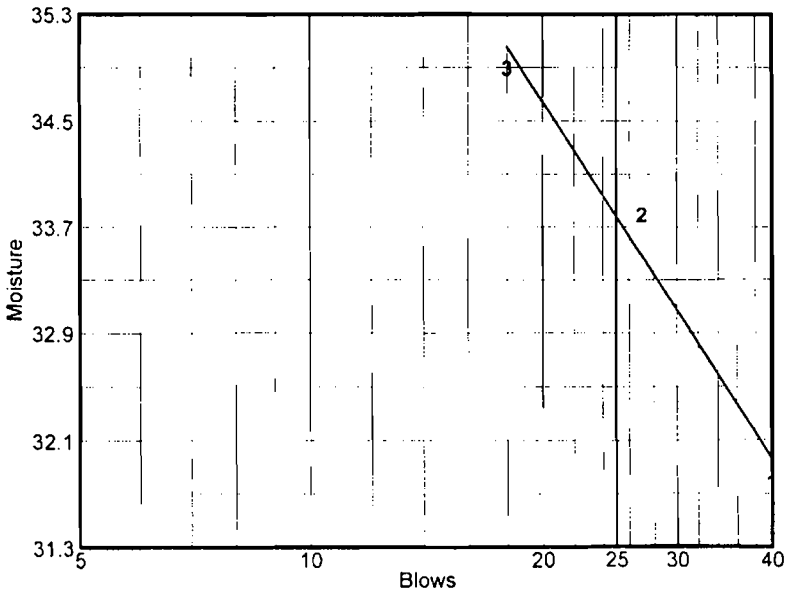
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 33
Elev. or Depth: 153.5'/68.48' **Sample Length(in./cm.):**
Location:
Description: Sandy Clay with Gravel
Date: **Natural Moisture:** 23.3
USCS Class.: CL **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.60	33.21	34.56			
Dry+Tare	31.36	30.04	30.88			
Tare	21.17	20.65	20.33			
# Blows	40	27	18			
Moisture	31.8	33.8	34.9			



Liquid Limit= 34
Plastic Limit= 21
Plasticity Index= 13

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.97	26.56		
Dry+Tare	24.94	25.61		
Tare	19.95	21.09		
Moisture	20.6	21.0		

LIQUID AND PLASTIC LIMIT TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1002
Sample No.: 38
Elev. or Depth: 188.5'/33.48' **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 40.7
USCS Class.: SM **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP

LIQUID AND PLASTIC LIMIT TEST DATA

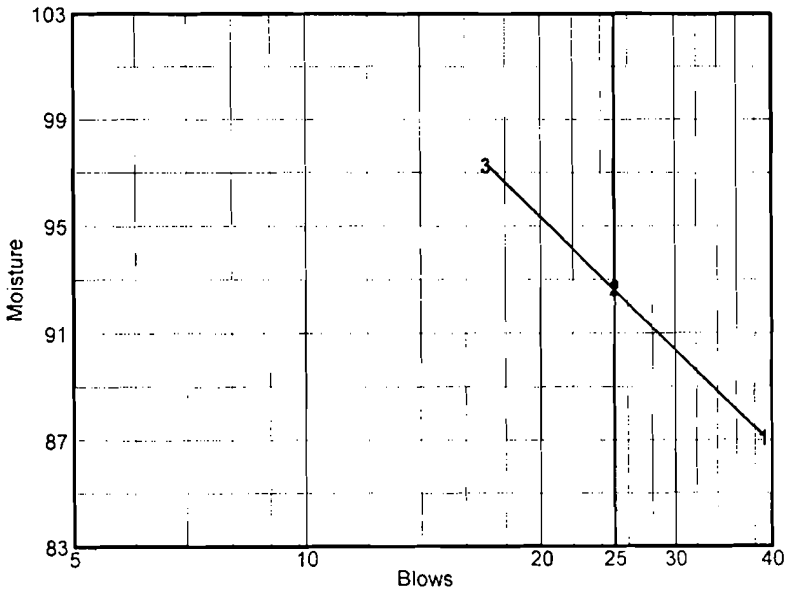
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 17
Elev. or Depth: 88.0'/135.21' **Sample Length(in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 67.4
USCS Class.: SM **AASHTO Class.:** A-2-7(7)
Testing Remarks: Tested by:JM
Reviewed by: SP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.97	31.12	29.2			
Dry+Tare	26.89	26.07	24.84			
Tare	21.06	20.62	20.36			
# Blows	39	25	17			
Moisture	87.1	92.7	97.3			



Liquid Limit= 93
Plastic Limit= 42
Plasticity Index= 51

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.95	25.96		
Dry+Tare	24.36	24.29		
Tare	20.62	20.35		
Moisture	42.5	42.4		

LIQUID AND PLASTIC LIMIT TEST DATA

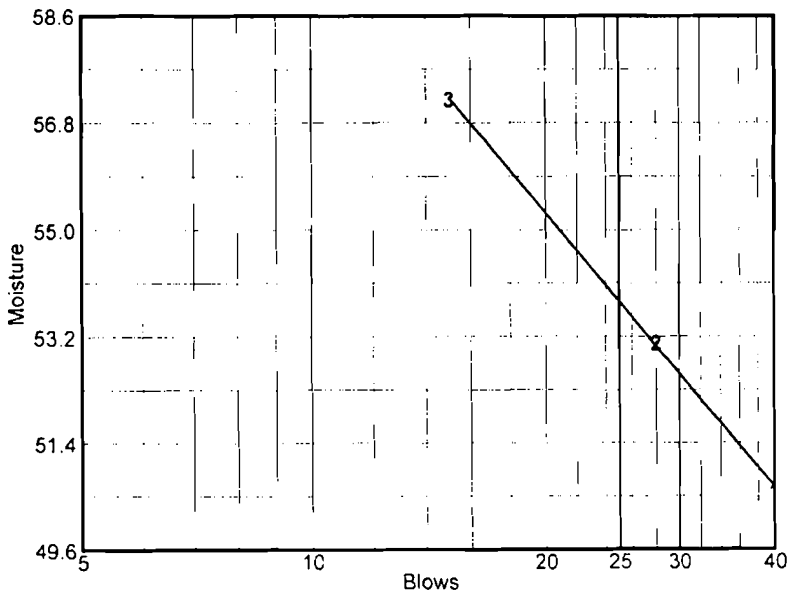
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: UD-1
Elev. or Depth: 93.0'/130.21' **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 30.6
USCS Class.: SM **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.2	28.6	29.7			
Dry+Tare	26.99	25.87	26.39			
Tare	20.65	20.73	20.6			
# Blows	40	28	15			
Moisture	50.6	53.1	57.2			



Liquid Limit= 54
Plastic Limit= 32
Plasticity Index= 22

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.49	25.62		
Dry+Tare	24.2	24.24		
Tare	20.14	19.88		
Moisture	31.8	31.7		

LIQUID AND PLASTIC LIMIT TEST DATA

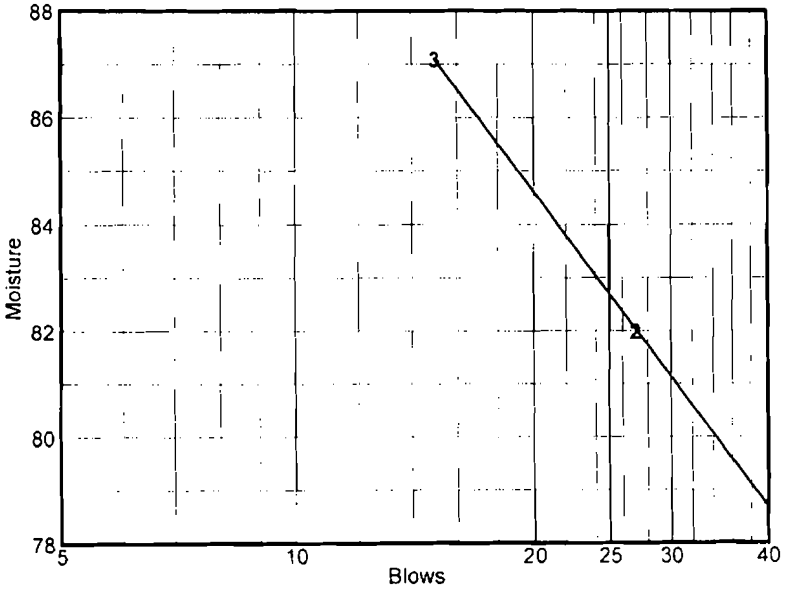
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 22
Elev. or Depth: 104.7'/118.51' **Sample Length(in./cm.):**
Location:
Description: Silty Sand with Shells
Date: **Natural Moisture:** 40.6
USCS Class.: SM **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by: JM
Reviewed by:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.19	28.61	29.56			
Dry+Tare	26.68	25.38	25.79			
Tare	22.22	21.44	21.46			
# Blows	40	27	15			
Moisture	78.7	82.0	87.1			



Liquid Limit= 83
Plastic Limit= 51
Plasticity Index= 32

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.11	25.92		
Dry+Tare	23.33	24.2		
Tare	19.83	20.82		
Moisture	50.9	50.9		

LIQUID AND PLASTIC LIMIT TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 27
Elev. or Depth: 121.7'/101.51' **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 28.0
USCS Class.: SM **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP

LIQUID AND PLASTIC LIMIT TEST DATA

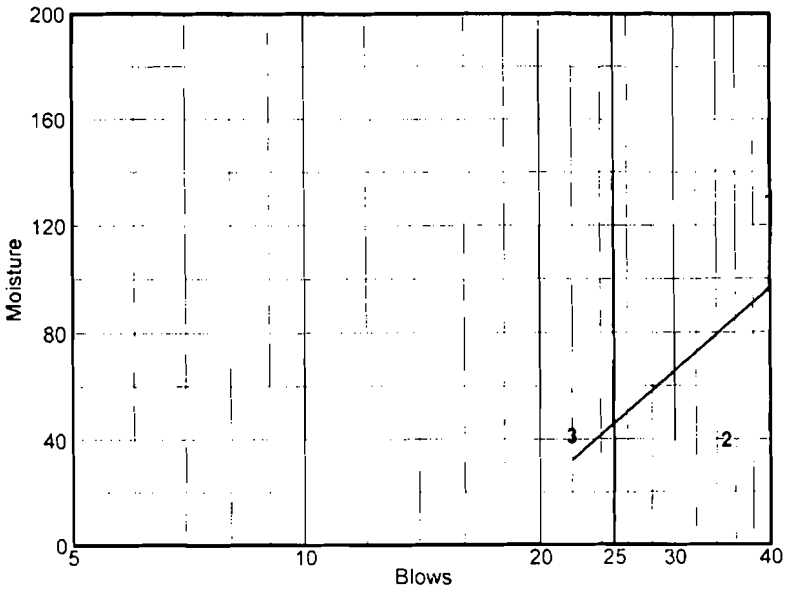
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 31
Elev. or Depth: 141.7'/81.51' **Sample Length(in./cm.):**
Location:
Description: Silty Sand with Shells
Date: **Natural Moisture:** 25.9
USCS Class.: SM **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by:JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.31	30.15	28.87			
Dry+Tare	24.56	27.62	26.32			
Tare	20.13	21.3	20.19			
# Blows	40	35	22			
Moisture	129.8	40.0	41.6			



Liquid Limit= 46
Plastic Limit= 28
Plasticity Index= 18

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.56	25.84		
Dry+Tare	24.4	24.63		
Tare	20.25	20.3		
Moisture	28.0	27.9		

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LIQUID AND PLASTIC LIMIT TEST DATA

Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-10C3
Sample No.: 36
Elev. or Depth: 165.7'/57.51' **Sample Length(in./cm.):**
Location:
Description: Sand with Silt
Date: **Natural Moisture:** 23.6
USCS Class.: SP-SM **AASHTO Class.:** A-3
Testing Remarks: Tested by: JM
Reviewed by: SP

Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP

LIQUID AND PLASTIC LIMIT TEST DATA

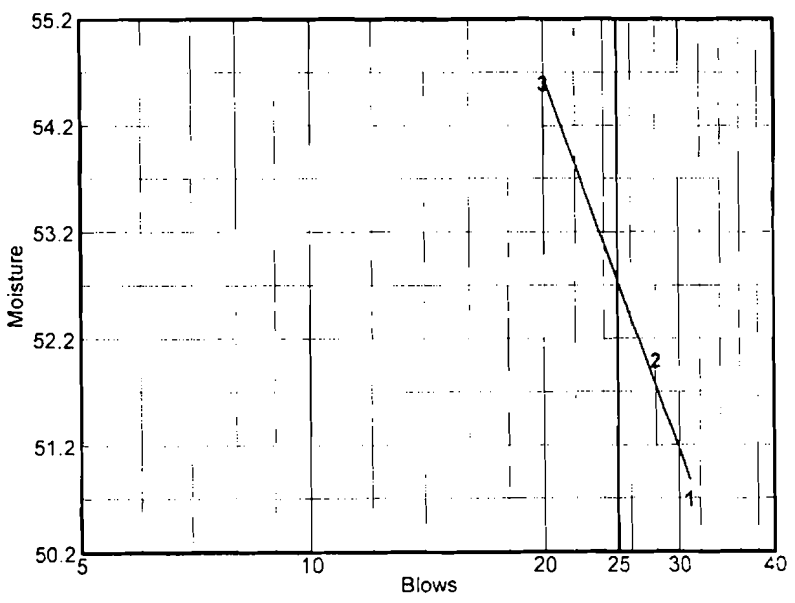
Client: Southern Nuclear Co.
Project: AIWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 66
Elev. or Depth: 315.7'/-92.49' **Sample Length(in./cm.):**
Location:
Description: Gravel with Sand
Date: **Natural Moisture:** 32.7
USCS Class.: GW **AASHTO Class.:** A-2-7(0)
Testing Remarks: Tested by: JM
Reviewed by: SP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.89	29.57	32.48			
Dry+Tare	27.29	26.39	28.2			
Tare	20.19	20.28	20.36			
# Blows	31	28	20			
Moisture	50.7	52.0	54.6			



Liquid Limit= 53
Plastic Limit= 38
Plasticity Index= 15

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.81	26.17		
Dry+Tare	24.26	24.53		
Tare	20.22	20.26		
Moisture	38.4	38.4		

LIQUID AND PLASTIC LIMIT TEST DATA

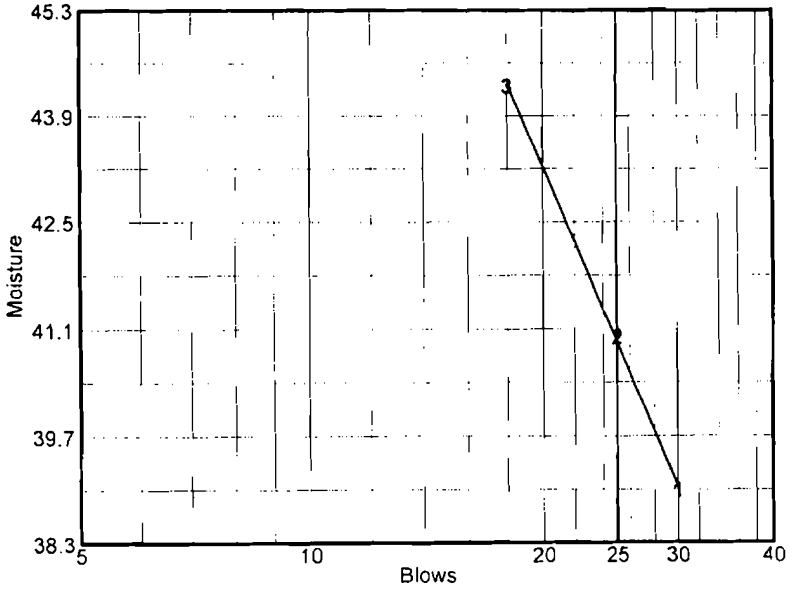
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1003
Sample No.: 73
Elev. or Depth: 350.7'/-127.49' **Sample Length(in./cm.):**
Location:
Description: Sandy Clay
Date: **Natural Moisture:** 21.3
USCS Class.: CL **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.23	28.76	28.6			
Dry+Tare	30.16	26.36	26.07			
Tare	22.28	20.51	20.36			
# Blows	30	25	18			
Moisture	39.0	41.0	44.3			



Liquid Limit= 41
Plastic Limit= 22
Plasticity Index= 19

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.44	26.57		
Dry+Tare	24.51	25.62		
Tare	20.32	21.33		
Moisture	22.2	22.1		

LIQUID AND PLASTIC LIMIT TEST DATA

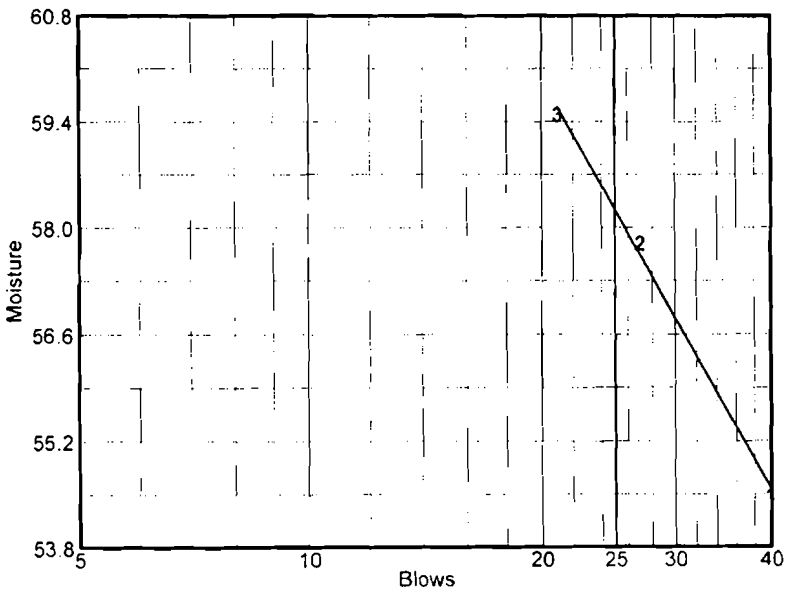
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 16
Elev. or Depth: 43.5'/206.28' **Sample Length(in./cm.):**
Location:
Description: Sandy Clay
Date: **Natural Moisture:** 46.2
USCS Class.: CH **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.31	32.12	32.05			
Dry+Tare	27.54	27.92	27.98			
Tare	20.62	20.65	21.14			
# Blows	40	27	21			
Moisture	54.5	57.8	59.5			



Liquid Limit= 58
Plastic Limit= 24
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.26	26.01		
Dry+Tare	24.24	24.87		
Tare	19.94	20.05		
Moisture	23.7	23.7		

LIQUID AND PLASTIC LIMIT TEST DATA

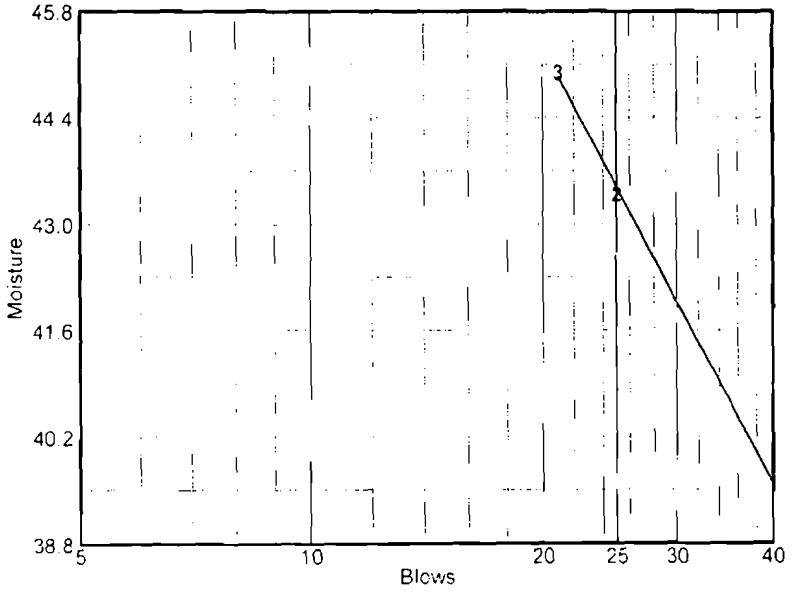
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: 32
Elev. or Depth: 123.5'/126.28' **Sample Length(in./cm.):**
Location:
Description: Clayey Gravel with Sand
Date: **Natural Moisture:** 19.7
USCS Class.: GC **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by: JM
Reviewed by: JL

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.76	31.22	28.63			
Dry+Tare	27.00	27.98	26.00			
Tare	20.03	20.51	20.16			
# Blows	40	25	21			
Moisture	39.6	43.4	45.0			



Liquid Limit= 43
Plastic Limit= 19
Plasticity Index= 24

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	26.24	26.86		
Dry+Tare	25.37	25.94		
Tare	20.78	20.98		
Moisture	19.0	18.5		

LIQUID AND PLASTIC LIMIT TEST DATA

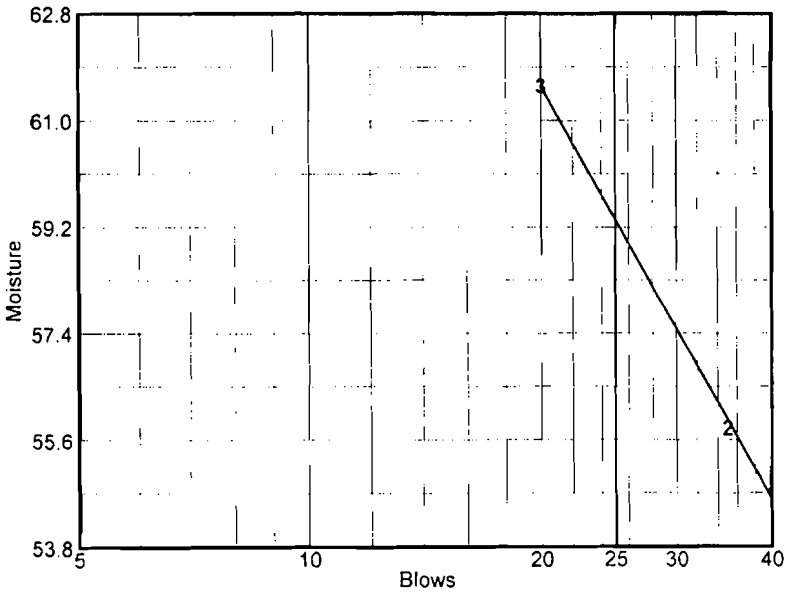
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-1 Upper
Elev. or Depth: 144.0'/105.78' **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 44.6
USCS Class.: SM **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.17	29.47	28.94			
Dry+Tare	29.38	26.64	25.78			
Tare	22.45	21.57	20.65			
# Blows	40	35	20			
Moisture	54.7	55.8	61.6			



Liquid Limit= 59
Plastic Limit= 38
Plasticity Index= 21

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.4	25.8		
Dry+Tare	23.97	24.21		
Tare	20.17	20.		
Moisture	37.6	37.8		

LIQUID AND PLASTIC LIMIT TEST DATA

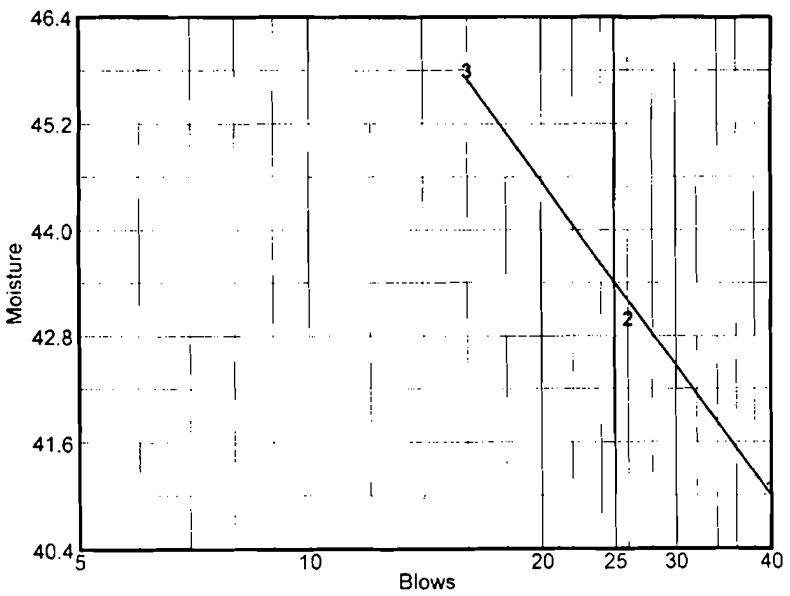
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-2
Elev. or Depth: 153.5'/96.28' **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: **Natural Moisture:** 30.1
USCS Class.: SM **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.2	28.01	29.03			
Dry+Tare	26.5	25.58	26.45			
Tare	19.93	19.93	20.82			
# Blows	40	26	16			
Moisture	41.1	43.0	45.8			



Liquid Limit= 43
Plastic Limit= 27
Plasticity Index= 16

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.57	25.92		
Dry+Tare	24.46	24.74		
Tare	20.42	20.43		
Moisture	27.5	27.4		

LIQUID AND PLASTIC LIMIT TEST DATA

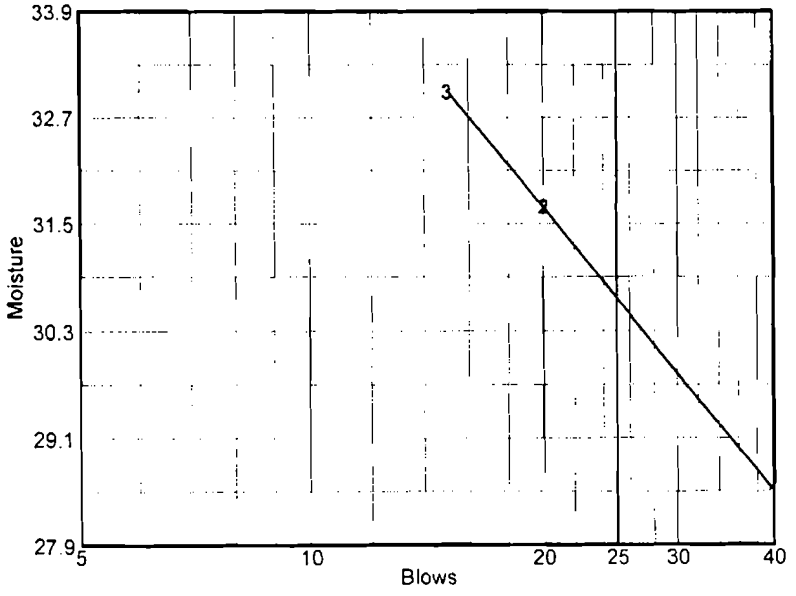
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-3 Upper
Elev. or Depth: 163.5'/86.28' **Sample Length(in./cm.):**
Location:
Description: Clayey Gravel with Sand
Date: **Natural Moisture:** 25.1
USCS Class.: GC **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.33	29.46	29.54			
Dry+Tare	28.95	27.31	27.18			
Tare	20.6	20.53	20.03			
# Blows	40	20	15			
Moisture	28.5	31.7	33.0			



Liquid Limit= 31
Plastic Limit= 22
Plasticity Index= 9

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	26.4	28.28		
Dry+Tare	25.31	27.03		
Tare	20.33	21.35		
Moisture	21.9	22.0		

LIQUID AND PLASTIC LIMIT TEST DATA

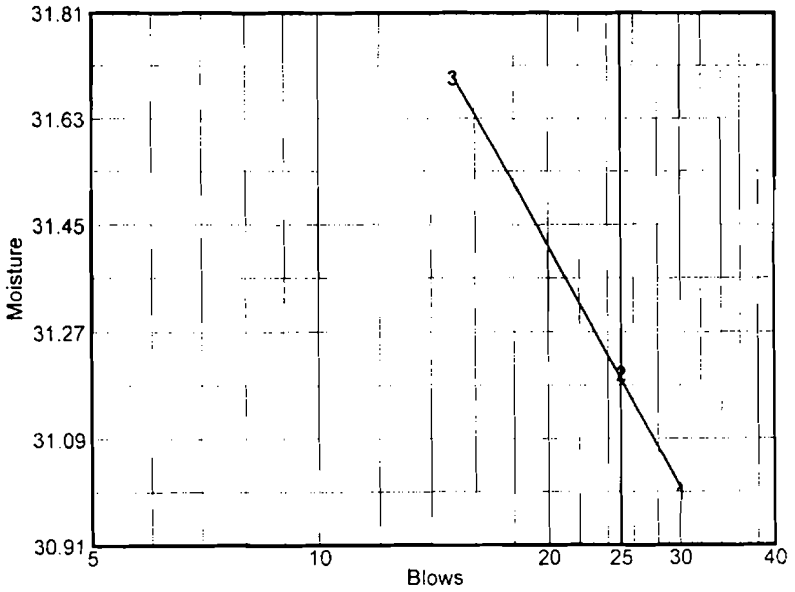
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-4 Upper
Elev. or Depth: 177.0'/72.78' **Sample Length(in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 20.8
USCS Class.: SM **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.93	31.14	30.89			
Dry+Tare	30.12	28.7	28.43			
Tare	21.05	20.87	20.68			
# Blows	30	25	15			
Moisture	31.0	31.2	31.7			



Liquid Limit= 31
Plastic Limit= 22
Plasticity Index= 9

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.67	25.79		
Dry+Tare	24.67	24.85		
Tare	20.08	20.52		
Moisture	21.8	21.7		

LIQUID AND PLASTIC LIMIT TEST DATA

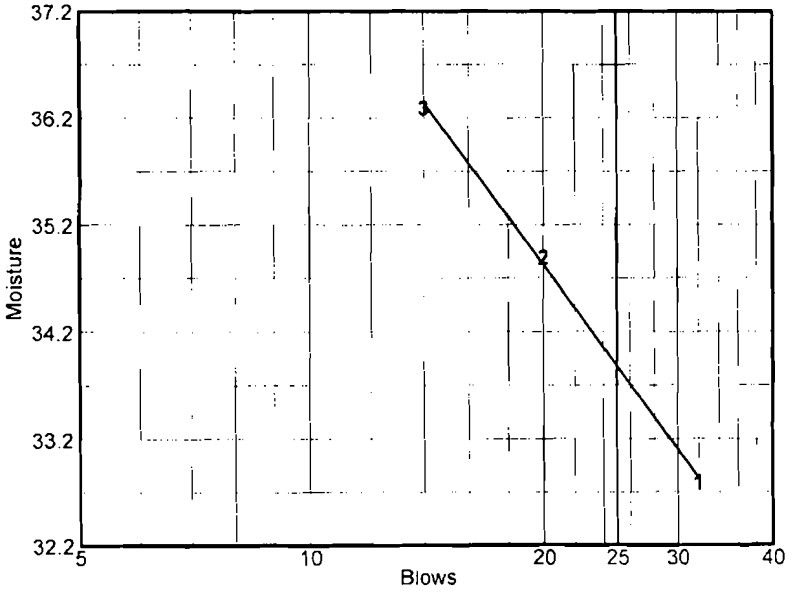
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-5
Elev. or Depth: 188.5'/61.28' **Sample Length(in./cm.):**
Location:
Description: Silty Sand with Gravel
Date: **Natural Moisture:** 29.0
USCS Class.: SM **AASHTO Class.:** A-1-b
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.89	31.15	29.17			
Dry+Tare	30.61	28.31	27.04			
Tare	20.62	20.17	21.17			
# Blows	32	20	14			
Moisture	32.8	34.9	36.3			



Liquid Limit= 34
Plastic Limit= 27
Plasticity Index= 7

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.48	26.50		
Dry+Tare	24.38	25.36		
Tare	20.35	21.19		
Moisture	27.3	27.3		

LIQUID AND PLASTIC LIMIT TEST DATA

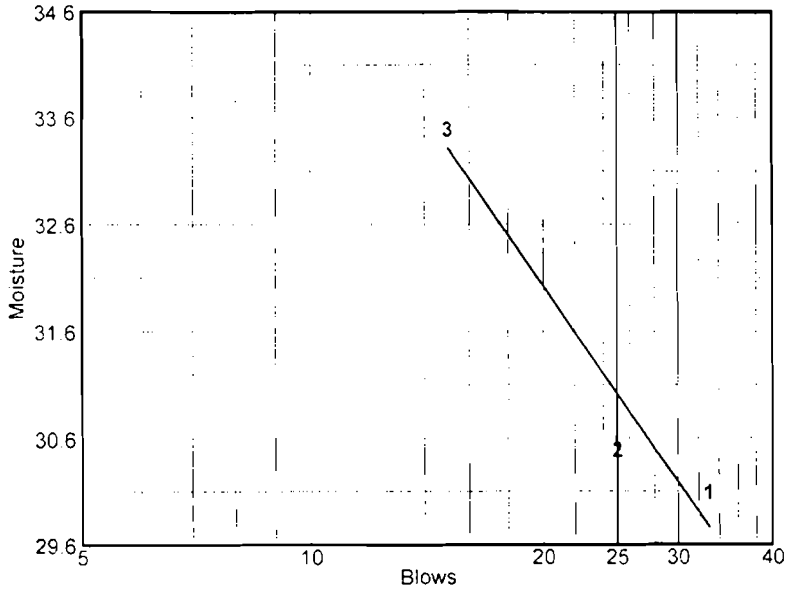
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1004
Sample No.: UD-6
Elev. or Depth: 198.5'/51.28' **Sample Length(in./cm.):**
Location:
Description: Clayey Sand
Date: **Natural Moisture:** 26.2
USCS Class.: SC **AASHTO Class.:** A-2-4(0)
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.83	30.36	29.38			
Dry+Tare	27.79	28.21	27.29			
Tare	21.01	21.16	21.05			
# Blows	33	25	15			
Moisture	30.1	30.5	33.5			



Liquid Limit= 31
Plastic Limit= 21
Plasticity Index= 10

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.54	25.02		
Dry+Tare	24.66	24.16		
Tare	20.40	19.99		
Moisture	20.7	20.6		

LIQUID AND PLASTIC LIMIT TEST DATA

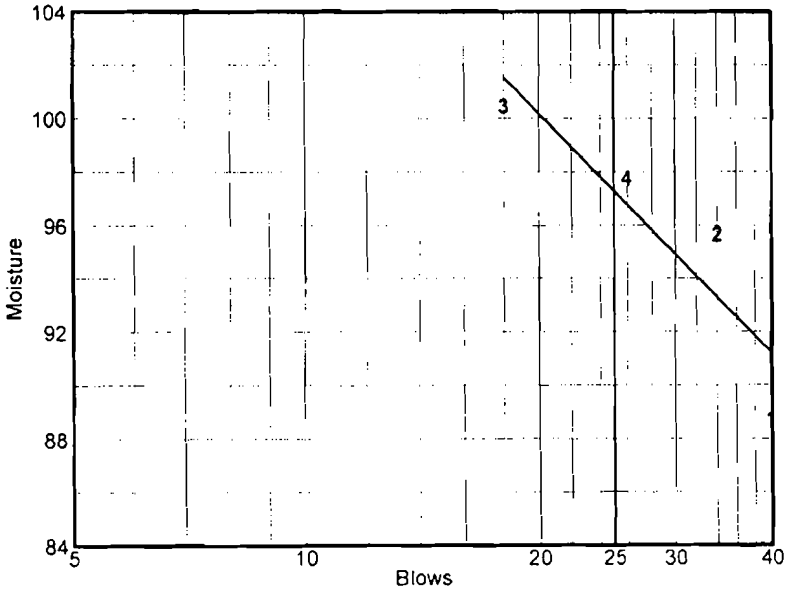
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 19
Elev. or Depth: 58.5'/197.45' **Sample Length(in./cm.):**
Location:
Description: Sandy Silty Clay
Date: **Natural Moisture:** 92.8
USCS Class.: CH **AASHTO Class.:** A-4(C)
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.58	27.96	28.54	30.16		
Dry+Tare	24.79	24.14	24.71	25.69		
Tare	20.52	20.15	20.90	21.12		
# Blows	40	34	18	26		
Moisture	88.8	95.7	100.5	97.8		



Liquid Limit= 97
Plastic Limit= 30
Plasticity Index= 67

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	26.29	26.27		
Dry+Tare	25.06	24.98		
Tare	20.95	20.64		
Moisture	29.9	29.7		

LIQUID AND PLASTIC LIMIT TEST DATA

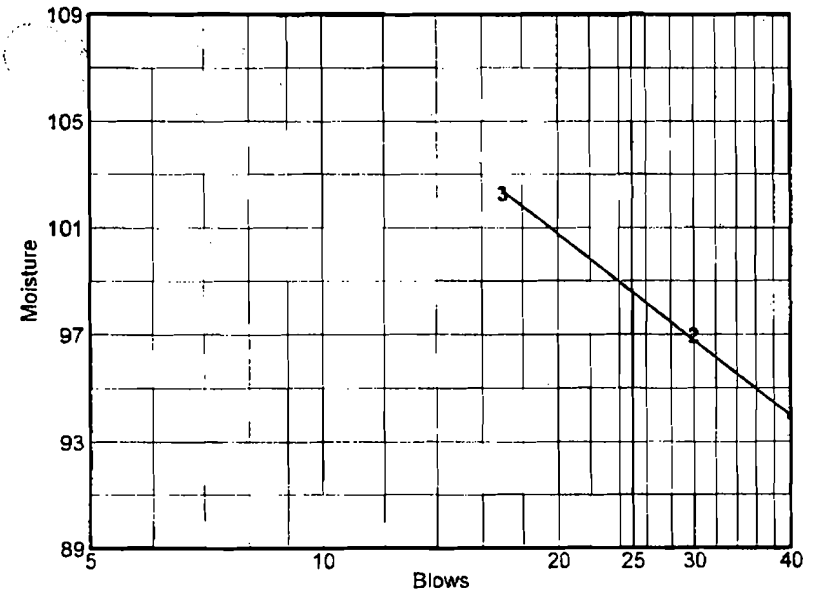
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1006
Sample No.: 32
Elev. or Depth: 123.5'/132.45' **Sample Length(in./cm.):**
Location:
Description: Silt with Sand
Date: **Natural Moisture:** 53.7
USCS Class.: MH **AASHTO Class.:** A-4(0)
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.90	25.52	25.72			
Dry+Tare	24.16	22.91	23.02			
Tare	21.24	20.22	20.38			
# Blows	40	30	17			
Moisture	93.8	97.0	102.3			



Liquid Limit= 99
Plastic Limit= 43
Plasticity Index= 56

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.80	25.67		
Dry+Tare	24.17	24.11		
Tare	20.37	20.47		
.sture	42.9	42.9		

LIQUID AND PLASTIC LIMIT TEST DATA

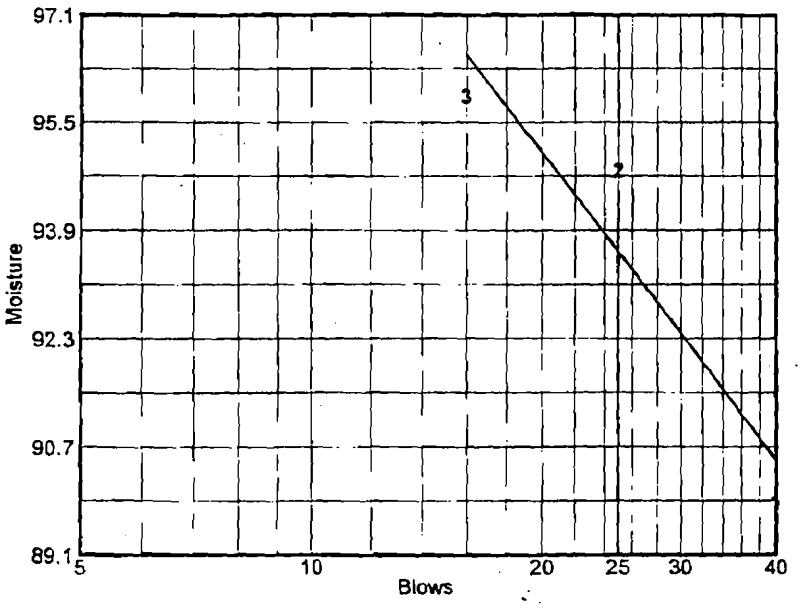
Client: Southern Nuclear Co.
Project: ALWR ESP
Project Number: 6141-05-0227.16

Sample Data

Source: B-1C10
Sample No.: 27
Elev. or Depth: 98.5'/120.1' **Sample Length (in./cm.):**
Location:
Description: Clayey sand
Date: **Natural Moisture:** 49.9
USCS Class.: SC **AASHTO Class.:** A-7-5(19)
Testing Remarks: Tested by: JM
Reviewed by: PDP

Liquid Limit Data

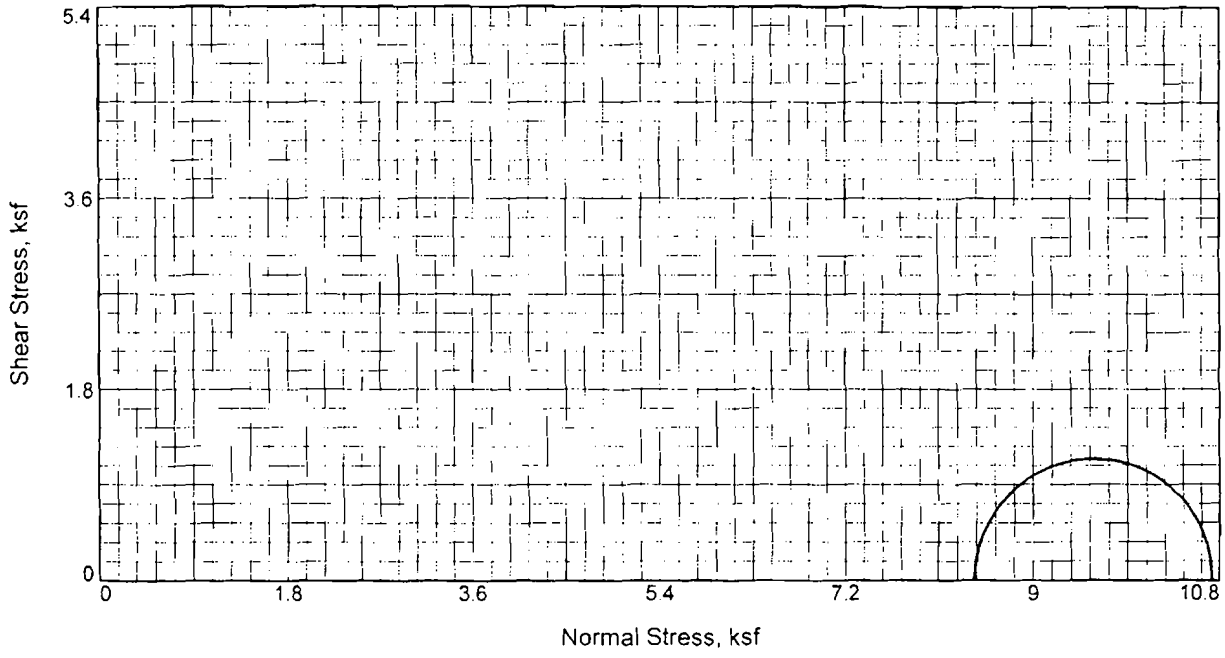
Run No.	1	2	3	4	5	6
Wet+Tare	27.13	27.01	26.85			
Dry+Tare	24.03	23.72	24.02			
Tare	20.58	20.25	21.07			
# Blows	40	25	16			
Moisture	89.9	94.8	95.9			

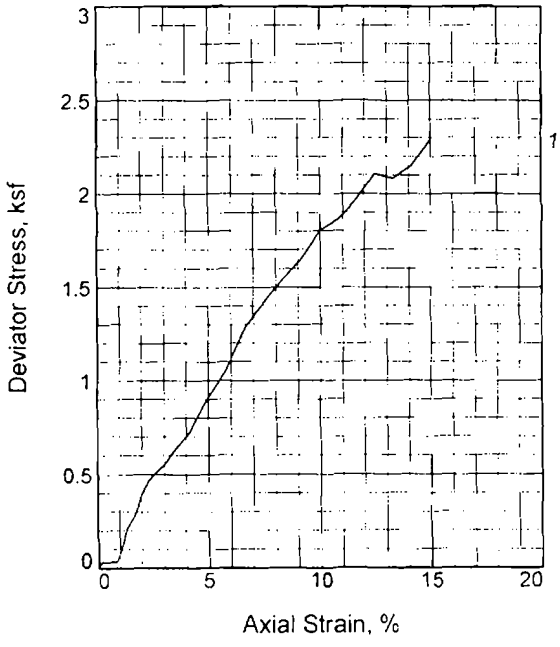


Liquid Limit= 94
Plastic Limit= 36
Plasticity Index= 58

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	25.34	25.68		
Dry+Tare	24.02	24.32		
Tare	20.24	20.57		
Moisture	34.9	36.3		





Sample No.		1
Initial	Water Content,	42.9
	Dry Density, pcf	72.5
	Saturation,	88.8
	Void Ratio	1.2810
	Diameter, in.	2.88
	Height, in.	6.01
At Test	Water Content.	48.3
	Dry Density, pcf	72.5
	Saturation,	100.0
	Void Ratio	1.2810
	Diameter, in.	2.88
	Height, in.	6.01
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		8.4
Fail. Stress, ksf		2.3
Strain, %		15.0
Ult. Stress, ksf		
Strain. %		
σ_1 Failure, ksf		10.7
σ_3 Failure, ksf		8.4

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Silty Gravel with Sand

LL= 72 **PL=** 37 **PI=** 35
Specific Gravity= 2.65
Remarks: Tested By: JL
Reviewed By: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

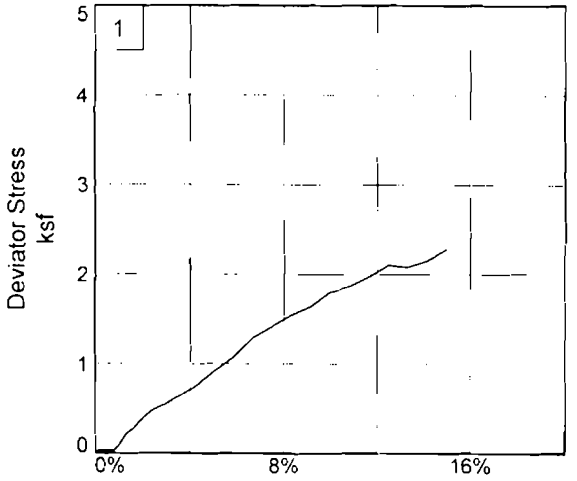
Project: ALWR ESP

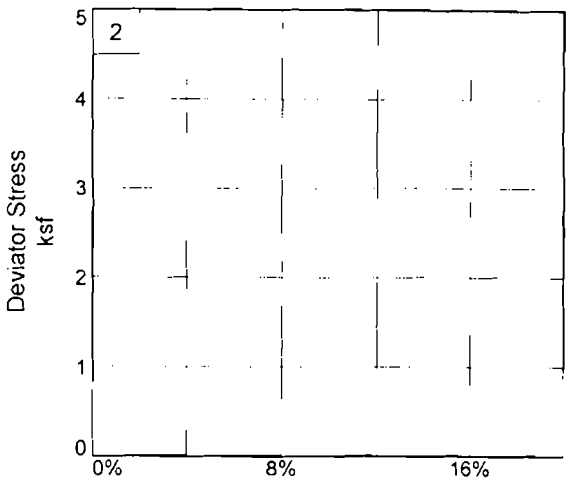
Source of Sample: B1002 **Depth:** 92.0'
Sample Number: UD-1 Upper

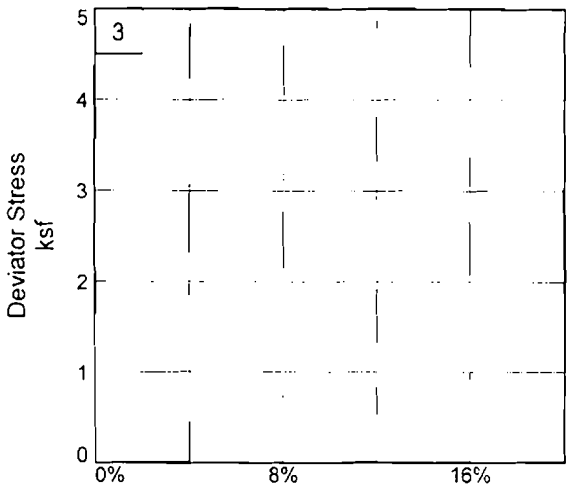
Proj. No.: 6141-05-0227 16 **Date:**

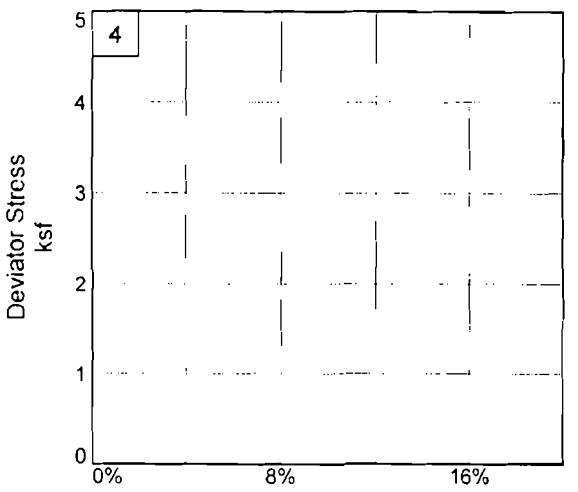
TRIAXIAL SHEAR TEST REPORT

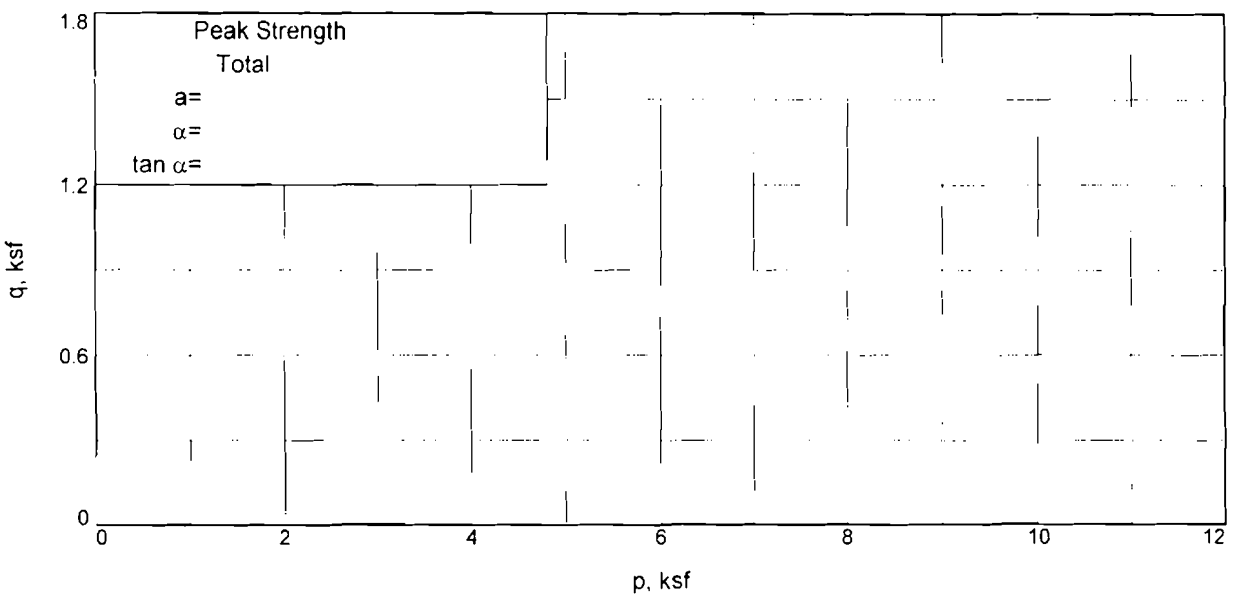
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.
Project: ALWR ESP
Source of Sample: B1002 **Depth:** 92.0' **Sample Number:** UD-1 Upper
Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:03 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1002
Depth: 92.0' **Sample Number:** UD-1 Upper
Description: Silty Gravel with Sand
Remarks: Tested By: JL
Reviewed By: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL=**72 **PL=**37 **PI=**35
Test Method: COE uniform strain

Parameters for Specimen No. 1

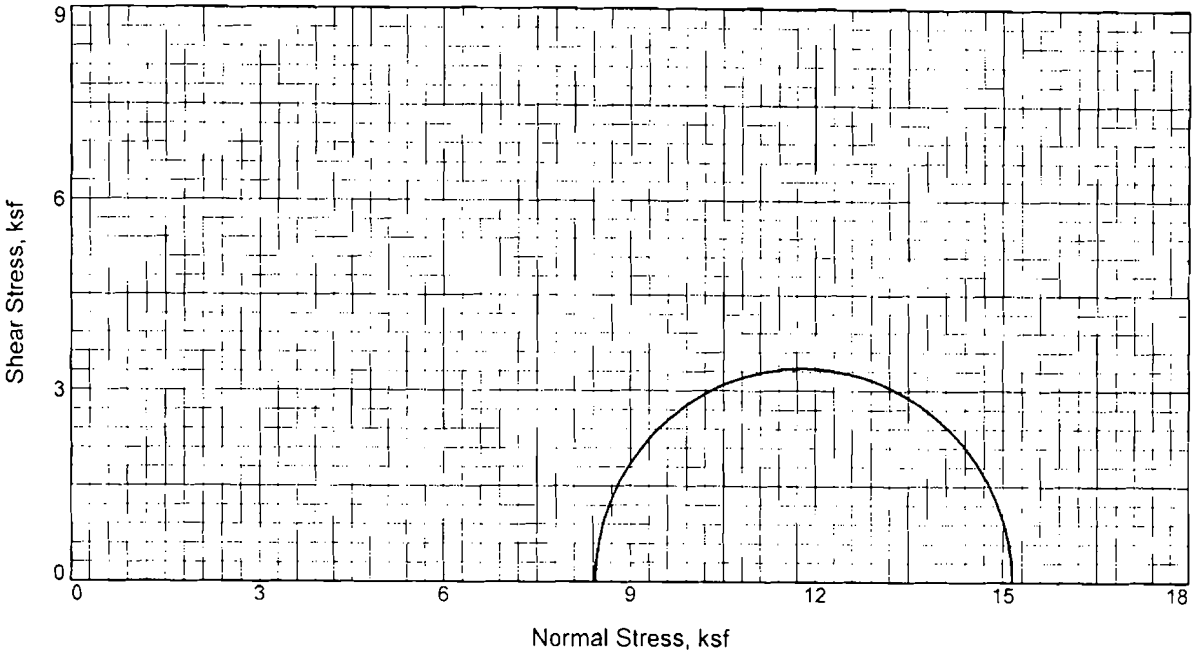
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1115.000
Moisture content: Dry soil+tare, gms.			794.800
Moisture content: Tare, gms.			48.940
Moisture, %	42.9	48.3	42.9
Moist specimen weight, gms.	1066.1		
Diameter, in.	2.88	2.88	
Area, in.^{2}	6.51	6.51	
Height, in.	6.01	6.01	
Net decrease in height, in.		0.00	
Wet Density, pcf	103.7	107.6	
Dry density, pcf	72.5	72.5	
Void ratio	1.2810	1.2810	
Saturation, %	88.8	100.0	

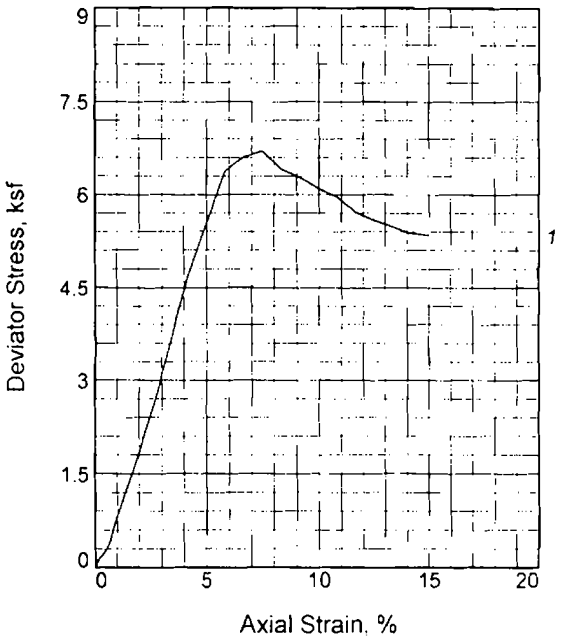
Test Readings for Specimen No. 1

Cell pressure = 58.60 psi (8.44 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.02
Fail. Stress = 2.29 ksf **at reading no.** 27

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.10	0.0	0.0	0.00	8.44	8.44	1.00		8.44
1	0.0100	1.60	1.5	0.2	0.03	8.44	8.47	1.00		8.45
2	0.0200	1.50	1.4	0.3	0.03	8.44	8.47	1.00		8.45
3	0.0300	1.50	1.4	0.5	0.03	8.44	8.47	1.00		8.45
4	0.0400	1.60	1.5	0.7	0.03	8.44	8.47	1.00		8.45
5	0.0500	1.60	1.5	0.8	0.03	8.44	8.47	1.00		8.45
6	0.0600	3.30	3.2	1.0	0.07	8.44	8.51	1.01		8.47
7	0.0800	9.70	9.6	1.3	0.21	8.44	8.65	1.02		8.54
8	0.1000	12.90	12.8	1.7	0.28	8.44	8.72	1.03		8.58
9	0.1200	18.00	17.9	2.0	0.39	8.44	8.83	1.05		8.63
10	0.1400	21.80	21.7	2.3	0.47	8.44	8.91	1.06		8.67
11	0.1600	24.00	23.9	2.7	0.51	8.44	8.95	1.06		8.70
12	0.1800	25.80	25.7	3.0	0.55	8.44	8.99	1.07		8.71
13	0.2000	28.40	28.3	3.3	0.60	8.44	9.04	1.07		8.74
14	0.2500	34.30	34.2	4.2	0.72	8.44	9.16	1.09		8.80
15	0.3000	43.40	43.3	5.0	0.91	8.44	9.35	1.11		8.89
16	0.3500	51.30	51.2	5.8	1.07	8.44	9.50	1.13		8.97
17	0.4000	62.60	62.5	6.7	1.29	8.44	9.73	1.15		9.08
18	0.4500	69.40	69.3	7.5	1.42	8.44	9.86	1.17		9.15
19	0.5000	76.40	76.3	8.3	1.55	8.44	9.98	1.18		9.21
20	0.5500	82.20	82.1	9.1	1.65	8.44	10.09	1.20		9.26
21	0.6000	90.80	90.7	10.0	1.80	8.44	10.24	1.21		9.34
22	0.6500	94.60	94.5	10.8	1.86	8.44	10.30	1.22		9.37
23	0.7000	101.00	100.9	11.6	1.97	8.44	10.41	1.23		9.42
24	0.7500	108.90	108.8	12.5	2.11	8.44	10.54	1.25		9.49
25	0.8000	108.80	108.7	13.3	2.08	8.44	10.52	1.25		9.48
26	0.8500	113.50	113.4	14.1	2.15	8.44	10.59	1.26		9.51
27	0.9000	121.70	121.6	15.0	2.29	8.44	10.72	1.27		9.58





Sample No.		1
Initial	Water Content,	40.6
	Dry Density, pcf	72.8
	Saturation,	84.6
	Void Ratio	1.2719
	Diameter, in.	2.89
	Height, in.	6.02
At Test	Water Content,	48.0
	Dry Density, pcf	72.8
	Saturation,	100.0
	Void Ratio	1.2719
	Diameter, in.	2.89
	Height, in.	6.02
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		8.4
Fail. Stress, ksf		6.7
Strain, %		7.5
Ult. Stress, ksf		
Strain, %		
σ_1 Failure, ksf		15.1
σ_3 Failure, ksf		8.4

Type of Test:
Unconsolidated Undrained

Sample Type: UD

Description: Silty Gravel with Sand

Specific Gravity= 2.65

Remarks: Tested by: JM/JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

Project: ALWR ESP

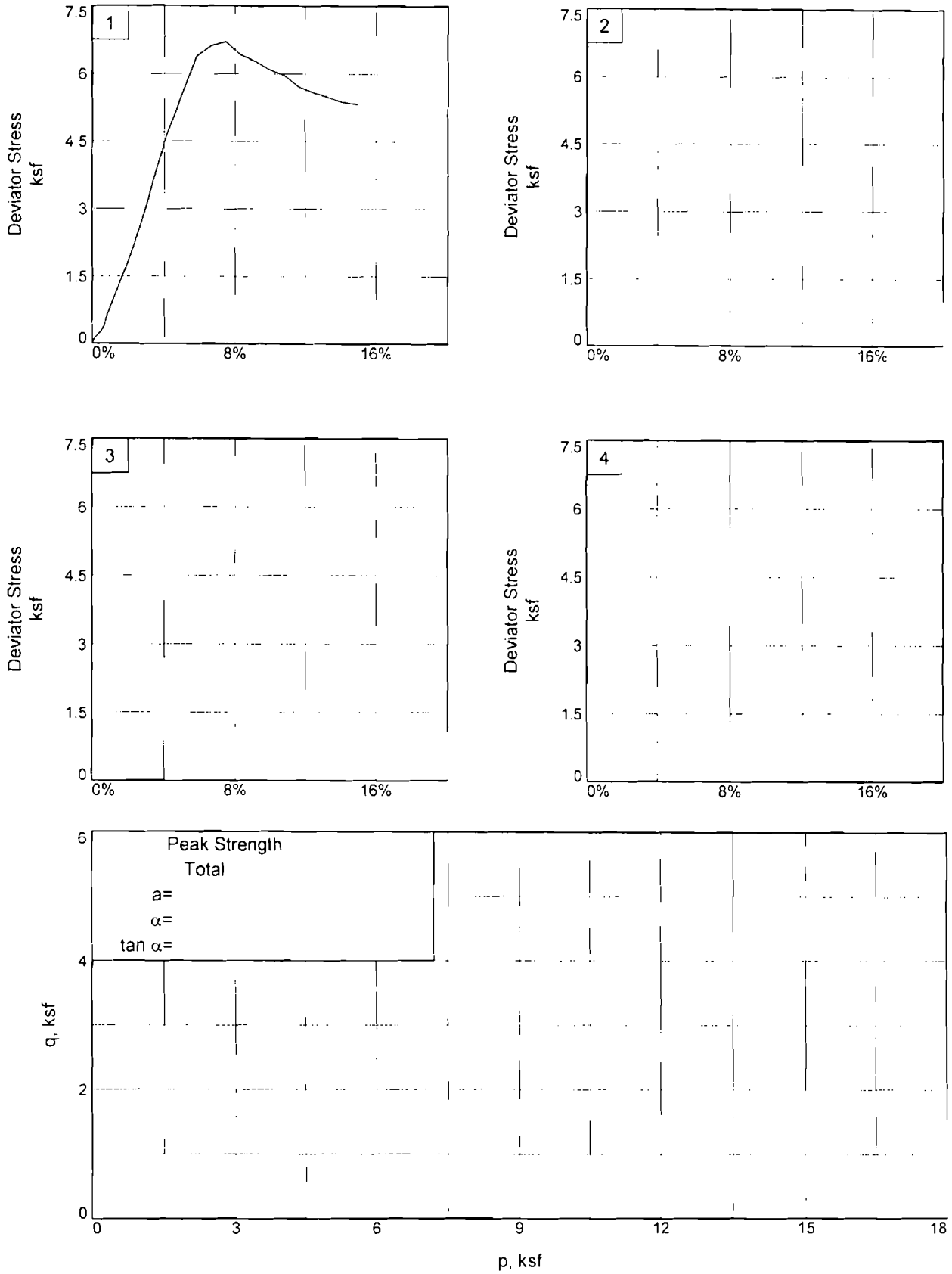
Source of Sample: B1002 **Depth:** 92.0'

Sample Number: UD-1 Middle

Proj. No.: 5741-05-0227 16 **Date:**

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.



Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1002 **Depth:** 92.0' **Sample Number:** UD-1 Middle

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:03 AM

Date:			
Client:	Southern Nuclear Co.		
Project:	ALWR ESP		
Project No.:	6141-05-0227.16		
Location:	B1002		
Depth:	92.0'	**Sample Number:**	UD-1 Middle
Description:	Silty Gravel with Sand		
Remarks:	Tested by: JM/JL		
	Reviewed by: PDP		
	Specific Gravity (2.65) Assumed		
Type of Sample:	UD		
Specific Gravity=2.65	**LL=**	**PL=**	**PI=**
Test Method:	COE uniform strain		

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1148.500
Moisture content: Dry soil+tare, gms.			843.000
Moisture content: Tare, gms.			90.530
Moisture, %	40.6	48.0	40.6
Moist specimen weight, gms.	1058.0		
Diameter, in.	2.89	2.89	
Area, in.²	6.54	6.54	
Height, in.	6.02	6.02	
Net decrease in height, in.		0.00	
Wet Density, pcf	102.4	107.8	
Dry density, pcf	72.8	72.8	
Void ratio	1.2719	1.2719	
Saturation, %	84.6	100.0	

Test Readings for Specimen No. 1

Cell pressure = 58.60 psi (8.44 ksf)

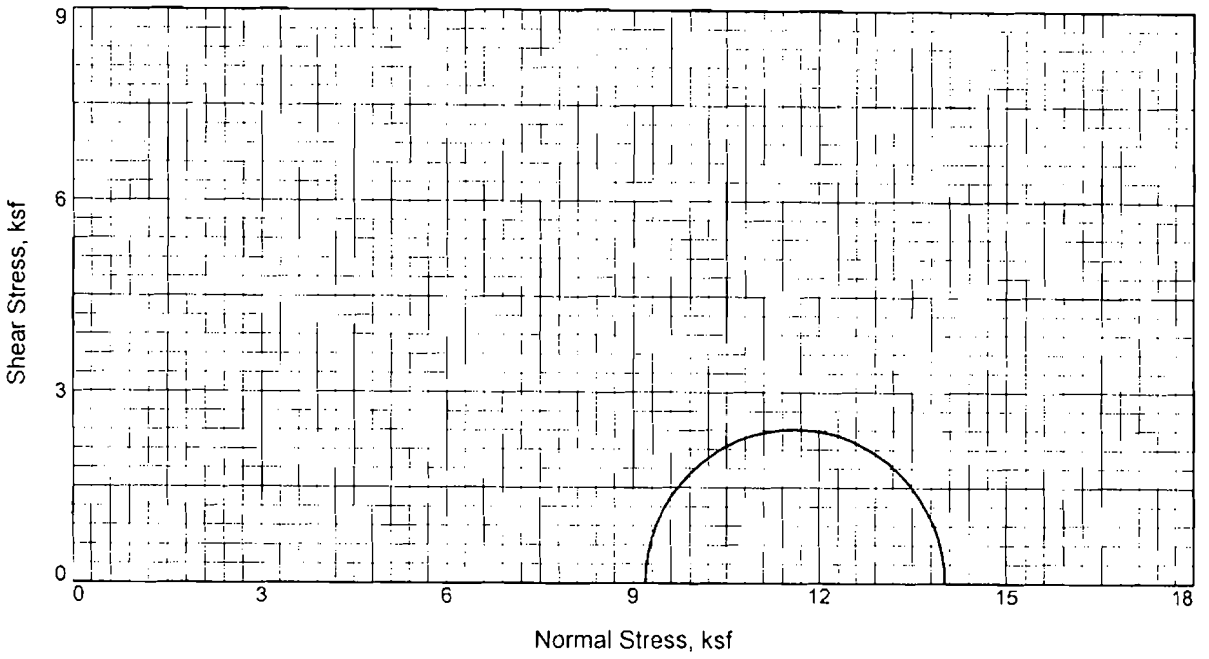
Back pressure = 0.00 psi (0.00 ksf)

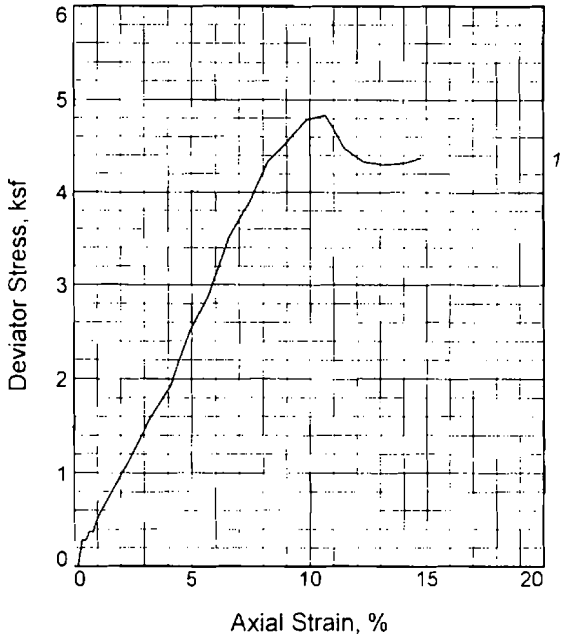
Strain rate, in./min. = 0.02

Fail. Stress = 6.71 ksf **at reading no.** 18

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	2.10	0.0	0.0	0.00	8.44	8.44	1.00		8.44
1	0.0100	8.40	6.3	0.2	0.14	8.44	8.58	1.02		8.51
2	0.0200	11.50	9.4	0.3	0.21	8.44	8.64	1.02		8.54
3	0.0300	15.00	12.9	0.5	0.28	8.44	8.72	1.03		8.58
4	0.0400	20.40	18.3	0.7	0.40	8.44	8.84	1.05		8.64
5	0.0500	31.20	29.1	0.8	0.64	8.44	9.07	1.08		8.76
6	0.0600	39.90	37.8	1.0	0.82	8.44	9.26	1.10		8.85
7	0.0800	55.10	53.0	1.3	1.15	8.44	9.59	1.14		9.01
8	0.1000	70.80	68.7	1.7	1.49	8.44	9.93	1.18		9.18
9	0.1200	87.60	85.5	2.0	1.84	8.44	10.28	1.22		9.36
10	0.1400	105.70	103.6	2.3	2.23	8.44	10.67	1.26		9.55
11	0.1600	124.20	122.1	2.7	2.62	8.44	11.05	1.31		9.75
12	0.1800	145.90	143.8	3.0	3.07	8.44	11.51	1.36		9.97
13	0.2000	167.90	165.8	3.3	3.53	8.44	11.97	1.42		10.20
14	0.2500	223.00	220.9	4.2	4.66	8.44	13.10	1.55		10.77
15	0.3000	266.20	264.1	5.0	5.52	8.44	13.96	1.65		11.20
16	0.3500	310.10	308.0	5.8	6.39	8.44	14.82	1.76		11.63
17	0.4000	324.00	321.9	6.6	6.62	8.44	15.05	1.78		11.75
18	0.4500	331.50	329.4	7.5	6.71	8.44	15.15	1.80		11.79
19	0.5000	320.20	318.1	8.3	6.42	8.44	14.86	1.76		11.65
20	0.5500	316.20	314.1	9.1	6.28	8.44	14.72	1.74		11.58
21	0.6000	309.80	307.7	10.0	6.10	8.44	14.54	1.72		11.49
22	0.6500	306.10	304.0	10.8	5.97	8.44	14.41	1.71		11.42
23	0.7000	296.10	294.0	11.6	5.72	8.44	14.16	1.68		11.30
24	0.7500	292.10	290.0	12.5	5.59	8.44	14.03	1.66		11.23
25	0.8000	289.80	287.7	13.3	5.49	8.44	13.93	1.65		11.18
26	0.8500	286.70	284.6	14.1	5.38	8.44	13.82	1.64		11.13
27	0.9000	287.20	285.1	15.0	5.34	8.44	13.78	1.63		11.11





Sample No.		1
Initial	Water Content,	26.5
	Dry Density, pcf	90.5
	Saturation,	84.7
	Void Ratio	0.8276
	Diameter, in.	2.87
	Height, in.	6.09
At Test	Water Content,	31.2
	Dry Density, pcf	90.5
	Saturation,	100.0
	Void Ratio	0.8276
	Diameter, in.	2.87
	Height, in.	6.09
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		9.2
Fail. Stress, ksf		4.8
Ult. Stress, ksf		
σ_1 Failure, ksf		14.0
σ_3 Failure, ksf		9.2

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Sandy Silty Clay

LL= 34 **PL=** 22 **PI=** 12
Specific Gravity= 2.65
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

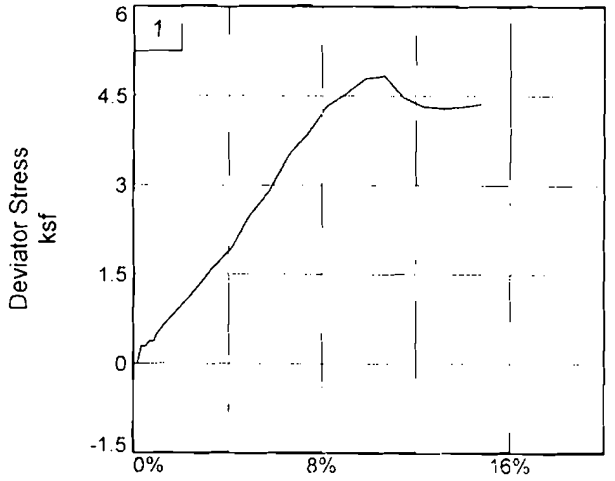
Client: Southern Nuclear Co.

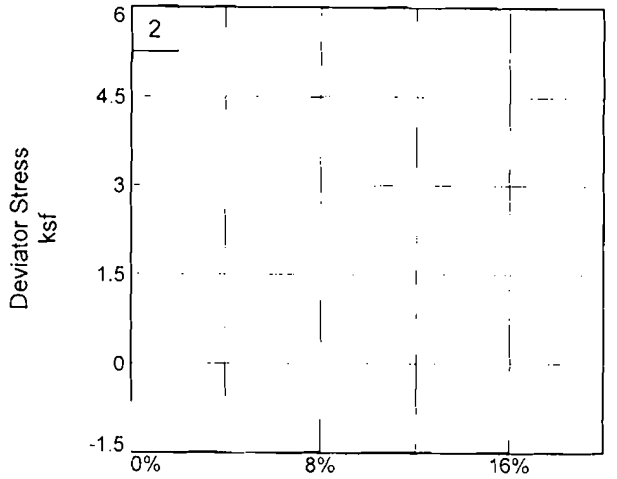
Project: ALWR ESP

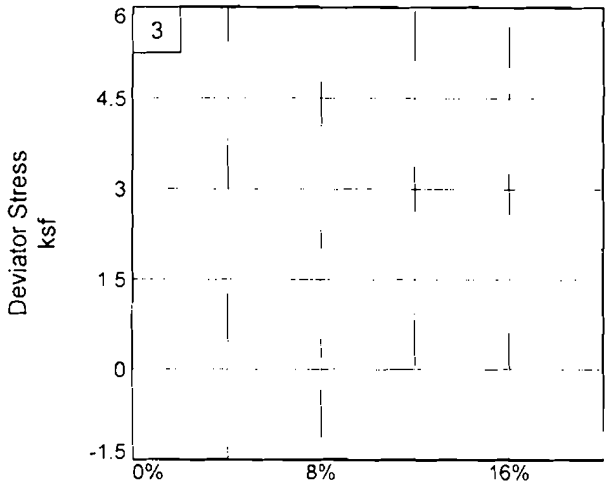
Source of Sample: B1002 **Depth:** 103.5'
Sample Number: UD-2
Proj. No.: 6141-05-0227 16 **Date:**

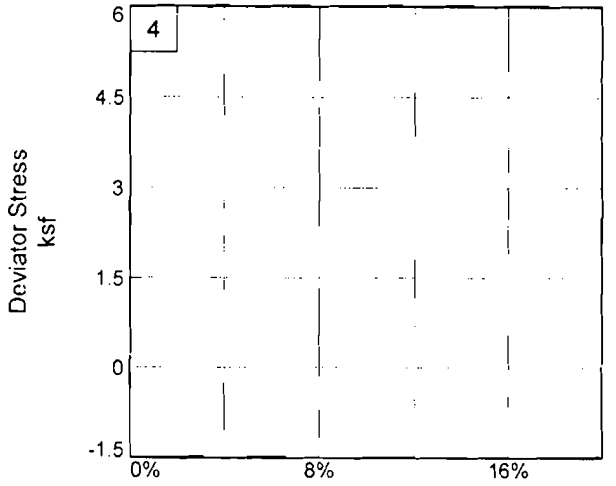
TRIAXIAL SHEAR TEST REPORT

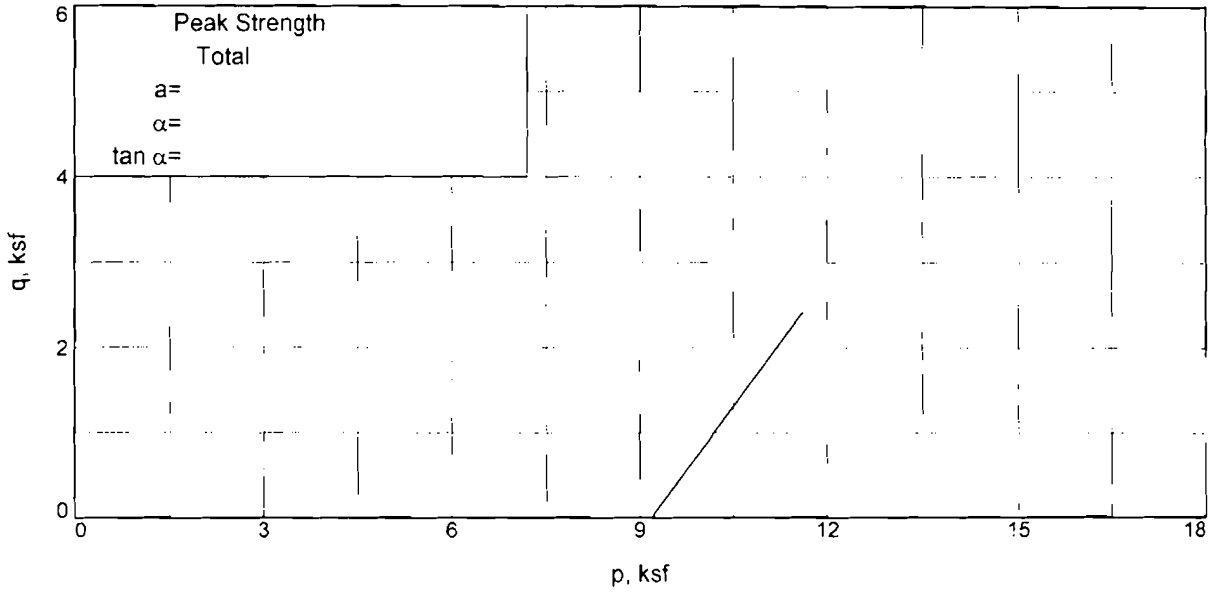
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.
Project: ALWR ESP
Source of Sample: B1002 **Depth:** 103.5' **Sample Number:** UD-2
Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:03 AM

Date:	
Client:	Southern Nuclear Co.
Project:	ALWR ESP
Project No.:	6141-05-0227.16
Location:	B1002
Depth:	103.5'
Sample Number:	UD-2
Description:	Sandy Silty Clay
Remarks:	Tested by: JL
	Reviewed by: PDP
	Specific Gravity (2.65) Assumed
Type of Sample:	UD

Specific Gravity=2.65 **LL=**34 **PL=**22 **PI=**12

Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1276.700
Moisture content: Dry soil+tare, gms.			1028.600
Moisture content: Tare, gms.			91.070
Moisture, %	26.5	31.2	26.5
Moist specimen weight, gms.	1185.6		
Diameter, in.	2.87	2.87	
Area, in.^{2}	6.47	6.47	
Height, in.	6.09	6.09	
Net decrease in height, in.		0.00	
Wet Density, pcf	114.5	118.8	
Dry density, pcf	90.5	90.5	
Void ratio	0.8276	0.8276	
Saturation, %	84.7	100.0	

Test Readings for Specimen No. 1

Cell pressure = 63.80 psi (9.19 ksf)

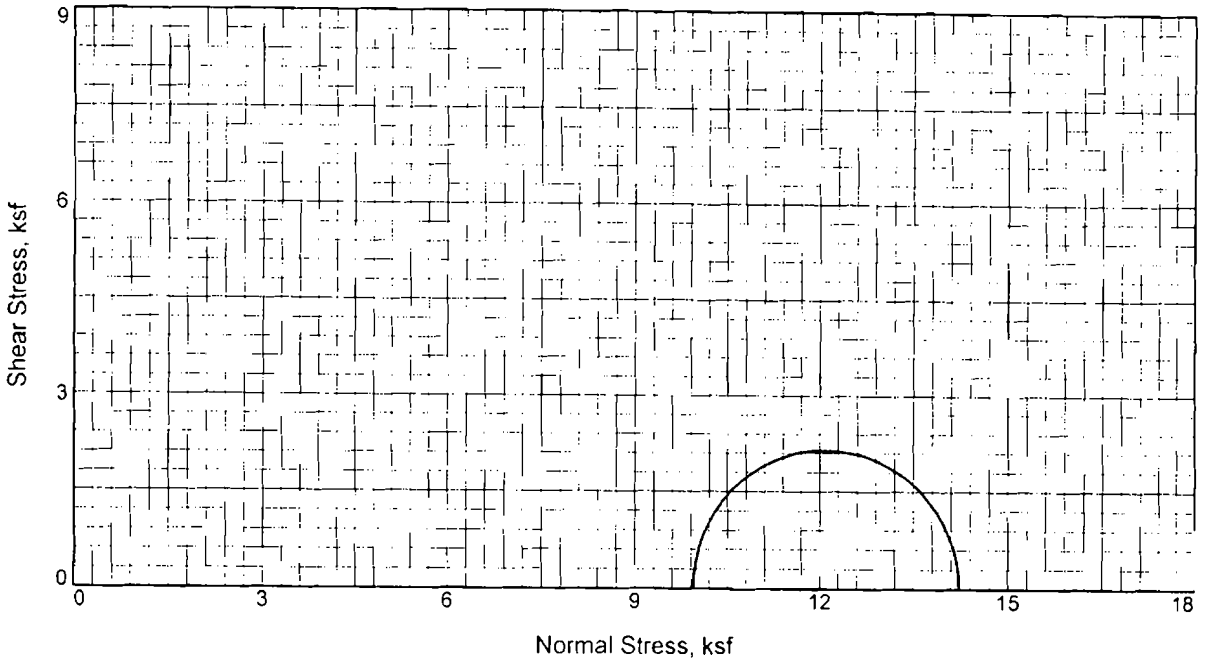
Back pressure = 0.00 psi (0.00 ksf)

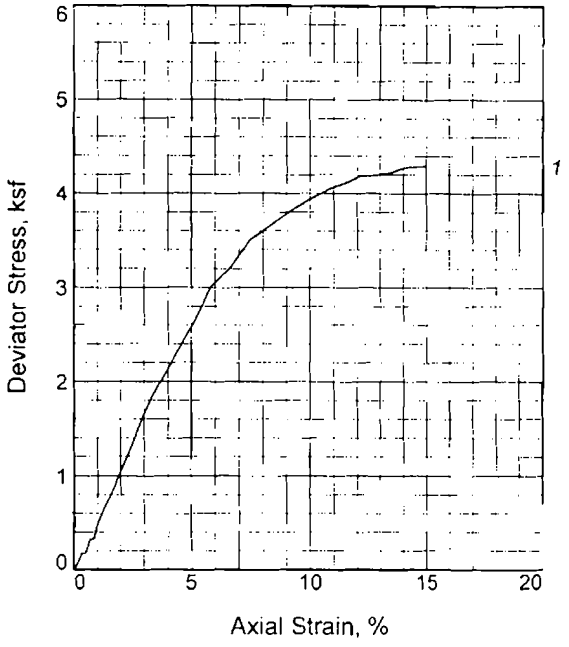
Strain rate, in./min. = 0.02

Fail. Stress = 4.83 ksf **at reading no.** 22

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.20	0.0	0.0	0.00	9.19	9.19	1.00		9.19
1	0.0100	0.10	-0.1	0.2	0.00	9.19	9.18	1.00		9.19
2	0.0200	13.00	12.8	0.3	0.28	9.19	9.47	1.03		9.33
3	0.0300	13.00	12.8	0.5	0.28	9.19	9.47	1.03		9.33
4	0.0400	17.10	16.9	0.7	0.37	9.19	9.56	1.04		9.37
5	0.0500	17.10	16.9	0.8	0.37	9.19	9.56	1.04		9.37
6	0.0600	23.20	23.0	1.0	0.51	9.19	9.69	1.06		9.44
7	0.0800	30.60	30.4	1.3	0.67	9.19	9.85	1.07		9.52
8	0.1000	37.50	37.3	1.6	0.82	9.19	10.00	1.09		9.60
9	0.1200	44.20	44.0	2.0	0.96	9.19	10.15	1.10		9.67
10	0.1400	51.30	51.1	2.3	1.11	9.19	10.30	1.12		9.74
11	0.1600	58.60	58.4	2.6	1.26	9.19	10.45	1.14		9.82
12	0.1800	66.30	66.1	3.0	1.43	9.19	10.61	1.16		9.90
13	0.2000	74.30	74.1	3.3	1.59	9.19	10.78	1.17		9.98
14	0.2500	91.10	90.9	4.1	1.94	9.19	11.13	1.21		10.16
15	0.3000	118.90	118.7	4.9	2.51	9.19	11.70	1.27		10.44
16	0.3500	139.20	139.0	5.7	2.91	9.19	12.10	1.32		10.64
17	0.4000	169.40	169.2	6.6	3.52	9.19	12.70	1.38		10.95
18	0.4500	188.00	187.8	7.4	3.87	9.19	13.06	1.42		11.12
19	0.5000	212.50	212.3	8.2	4.33	9.19	13.52	1.47		11.35
20	0.5500	224.70	224.5	9.0	4.54	9.19	13.73	1.49		11.46
21	0.6000	238.80	238.6	9.8	4.78	9.19	13.97	1.52		11.58
22	0.6500	243.50	243.3	10.7	4.83	9.19	14.02	1.53		11.60
23	0.7000	227.40	227.2	11.5	4.47	9.19	13.66	1.49		11.42
24	0.7500	222.20	222.0	12.3	4.33	9.19	13.52	1.47		11.35
25	0.8000	222.90	222.7	13.1	4.30	9.19	13.49	1.47		11.34
26	0.8500	225.80	225.6	13.9	4.32	9.19	13.51	1.47		11.35
27	0.9000	230.70	230.5	14.8	4.37	9.19	13.56	1.48		11.37





Sample No.		1
Initial	Water Content,	16.3
	Dry Density, pcf	114.3
	Saturation,	96.7
	Void Ratio	0.4478
	Diameter, in.	2.87
	Height, in.	6.01
At Test	Water Content,	16.9
	Dry Density, pcf	114.3
	Saturation,	100.0
	Void Ratio	0.4478
	Diameter, in.	2.87
	Height, in.	6.01
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		9.9
Fail. Stress, ksf		4.3
Ult. Stress, ksf		
σ_1 Failure, ksf		14.2
σ_3 Failure, ksf		9.9

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Clayey Sand

LL= 29 **PL=** 19 **PI=** 10
Specific Gravity= 2.65
Remarks: Tested By: JL
Reviewed By: PDP
Specific Gravity (2.65) Assumed

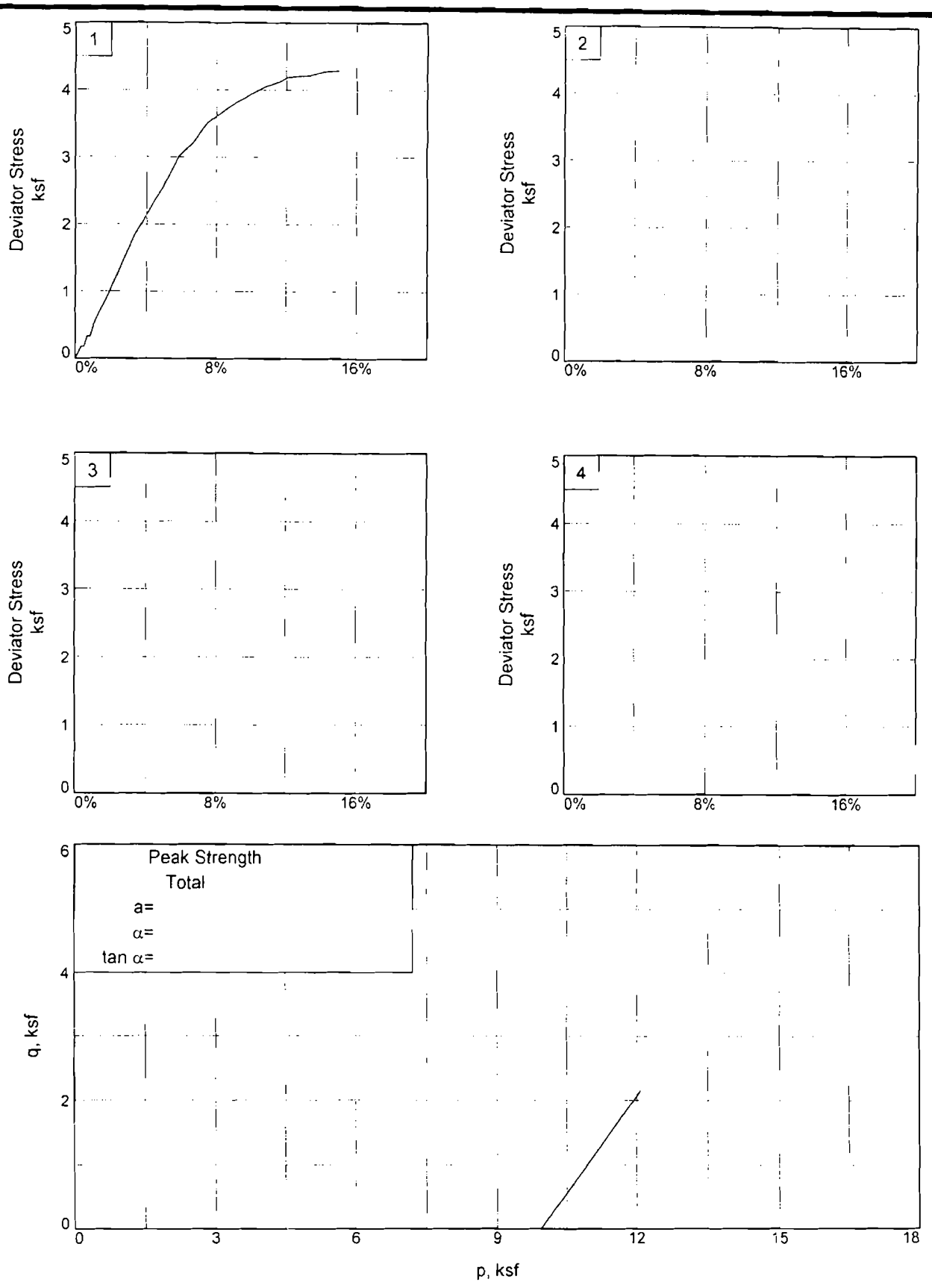
Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1002 **Depth:** 113.5'
Sample Number: UD-3
Proj. No.: 6141-05-0227 15 **Date:**

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.



Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1002 **Depth:** 113.5' **Sample Number:** UD-3

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:03 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1002
Depth: 113.5' **Sample Number:** UD-3
Description: Clayey Sand
Remarks: Tested By: JL
Reviewed By: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL**=29 **PL**=19 **PI**=10
Test Method: COE uniform strain

Parameters for Specimen No. 1

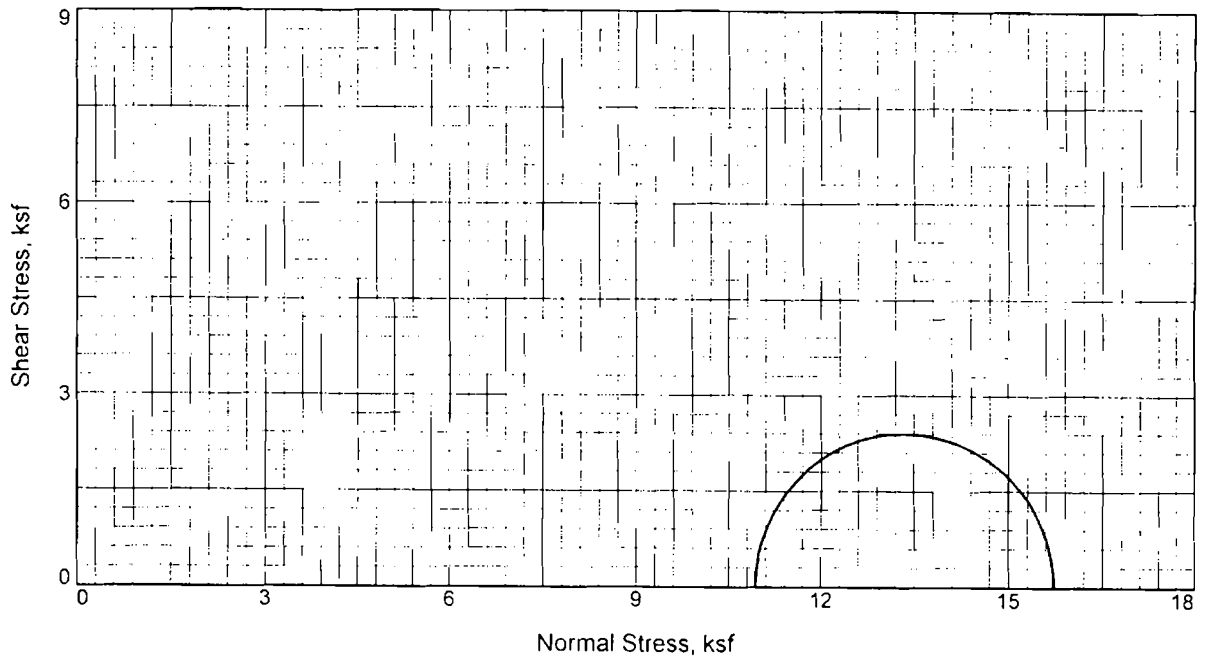
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1475.600
Moisture content: Dry soil+tare, gms.			1284.900
Moisture content: Tare, gms.			117.960
Moisture, %	16.3	16.9	16.3
Moist specimen weight, gms.	1357.7		
Diameter, in.	2.87	2.87	
Area, in.^{2}	6.47	6.47	
Height, in.	6.01	6.01	
Net decrease in height, in.		0.00	
Wet Density, pcf	132.9	133.6	
Dry density, pcf	114.3	114.3	
Void ratio	0.4478	0.4478	
Saturation, %	96.7	100.0	

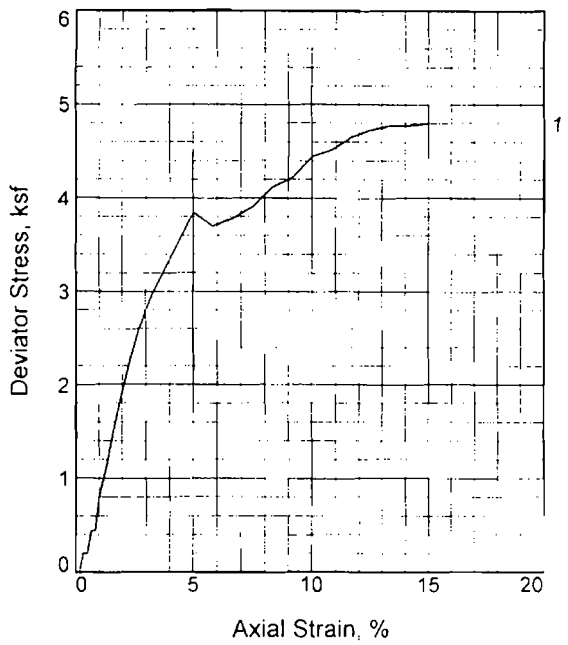
Test Readings for Specimen No. 1

Cell pressure = 69.00 psi (9.94 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.02
Fail. Stress = 4.29 ksf **at reading no.** 27

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.70	0.0	0.0	0.00	9.94	9.94	1.00		9.94
1	0.0100	4.10	3.4	0.2	0.08	9.94	10.01	1.01		9.97
2	0.0200	8.60	7.9	0.3	0.18	9.94	10.11	1.02		10.02
3	0.0300	8.60	7.9	0.5	0.17	9.94	10.11	1.02		10.02
4	0.0400	15.50	14.8	0.7	0.33	9.94	10.26	1.03		10.10
5	0.0500	15.50	14.8	0.8	0.33	9.94	10.26	1.03		10.10
6	0.0600	22.50	21.8	1.0	0.48	9.94	10.42	1.05		10.18
7	0.0800	31.80	31.1	1.3	0.68	9.94	10.62	1.07		10.28
8	0.1000	39.60	38.9	1.7	0.85	9.94	10.79	1.09		10.36
9	0.1200	48.20	47.5	2.0	1.04	9.94	10.97	1.10		10.45
10	0.1400	57.60	56.9	2.3	1.24	9.94	11.17	1.12		10.55
11	0.1600	67.60	66.9	2.7	1.45	9.94	11.39	1.15		10.66
12	0.1800	76.80	76.1	3.0	1.64	9.94	11.58	1.17		10.76
13	0.2000	86.10	85.4	3.3	1.84	9.94	11.77	1.18		10.85
14	0.2500	104.50	103.8	4.2	2.21	9.94	12.15	1.22		11.04
15	0.3000	122.60	121.9	5.0	2.58	9.94	12.51	1.26		11.23
16	0.3500	144.00	143.3	5.8	3.00	9.94	12.94	1.30		11.44
17	0.4000	155.70	155.0	6.7	3.22	9.94	13.16	1.32		11.55
18	0.4500	171.30	170.6	7.5	3.51	9.94	13.45	1.35		11.69
19	0.5000	180.10	179.4	8.3	3.66	9.94	13.60	1.37		11.77
20	0.5500	189.40	188.7	9.1	3.82	9.94	13.75	1.38		11.84
21	0.6000	197.10	196.4	10.0	3.94	9.94	13.87	1.40		11.90
22	0.6500	204.60	203.9	10.8	4.05	9.94	13.98	1.41		11.96
23	0.7000	210.40	209.7	11.6	4.12	9.94	14.06	1.42		12.00
24	0.7250	214.60	213.9	12.1	4.19	9.94	14.12	1.42		12.03
25	0.8000	219.00	218.3	13.3	4.21	9.94	14.15	1.42		12.04
26	0.8500	224.50	223.8	14.1	4.28	9.94	14.21	1.43		12.07
27	0.9000	227.50	226.8	15.0	4.29	9.94	14.23	1.43		12.08





Sample No.		1
Initial	Water Content,	29.8
	Dry Density, pcf	91.0
	Saturation,	96.5
	Void Ratio	0.8185
	Diameter, in.	2.87
	Height, in.	6.00
At Test	Water Content,	30.9
	Dry Density, pcf	91.0
	Saturation,	100.0
	Void Ratio	0.8185
	Diameter, in.	2.87
	Height, in.	6.00
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		10.9
Fail. Stress, ksf		4.8
Ult. Stress, ksf		
σ_1 Failure, ksf		15.7
σ_3 Failure, ksf		10.9

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Silty Sand with Gravel

LL= 32 **PL=** 25 **PI=** 7
Specific Gravity= 2.65
Remarks: Tested by JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

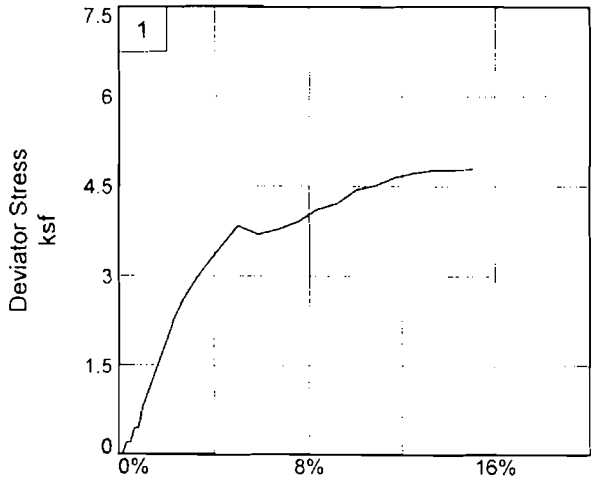
Project: ALWR ESP

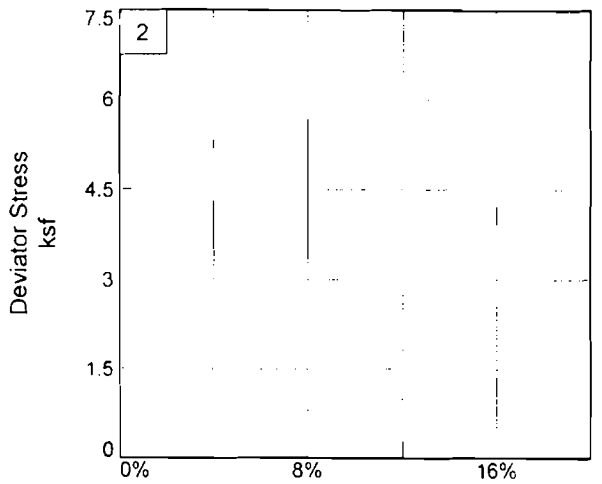
Source of Sample: B1002 **Depth:** 133.5'
Sample Number: UD-5

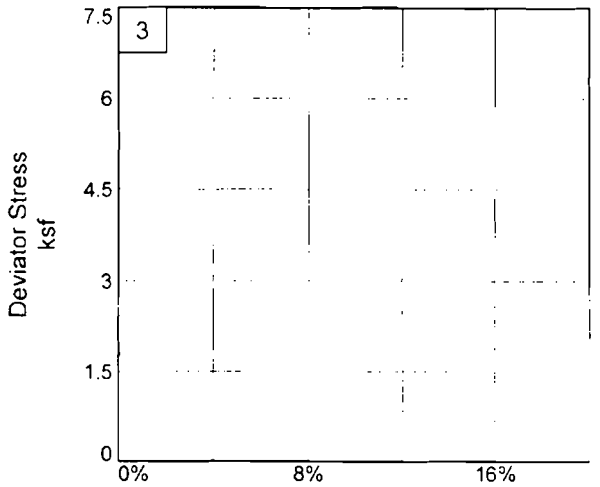
Proj. No.: 6141-05-0227-16 **Date:**

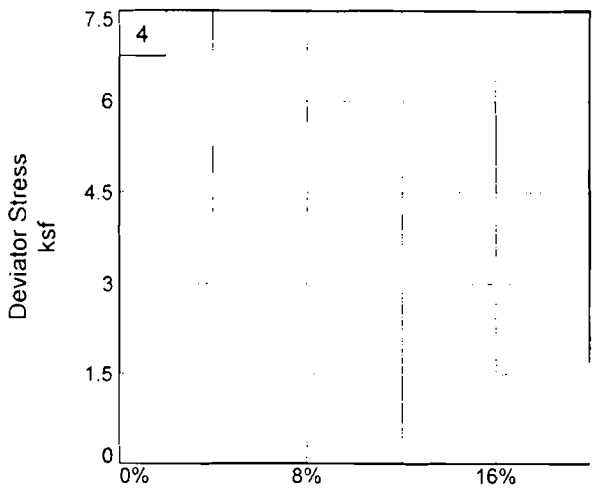
TRIAXIAL SHEAR TEST REPORT

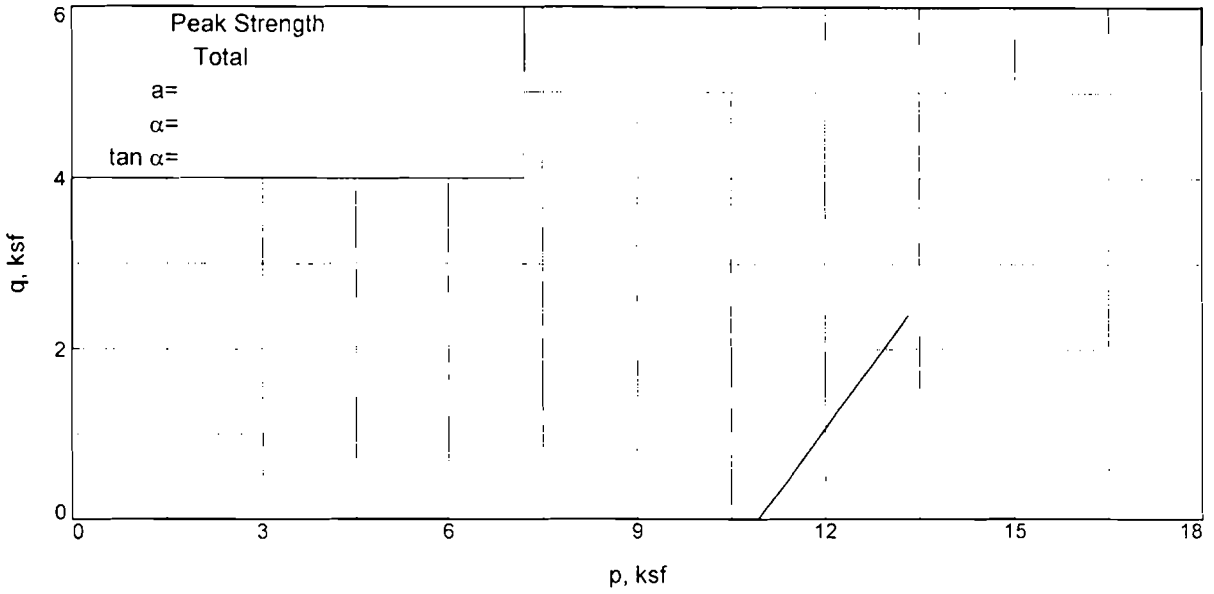
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1002 **Depth:** 133.5' **Sample Number:** UD-5

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:03 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1002
Depth: 133.5' **Sample Number:** UD-5
Description: Silty Sand with Gravel
Remarks: Tested by JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL=**32 **PL=**25 **PI=**7
Test Method: COE uniform strain

Parameters for Specimen No. 1

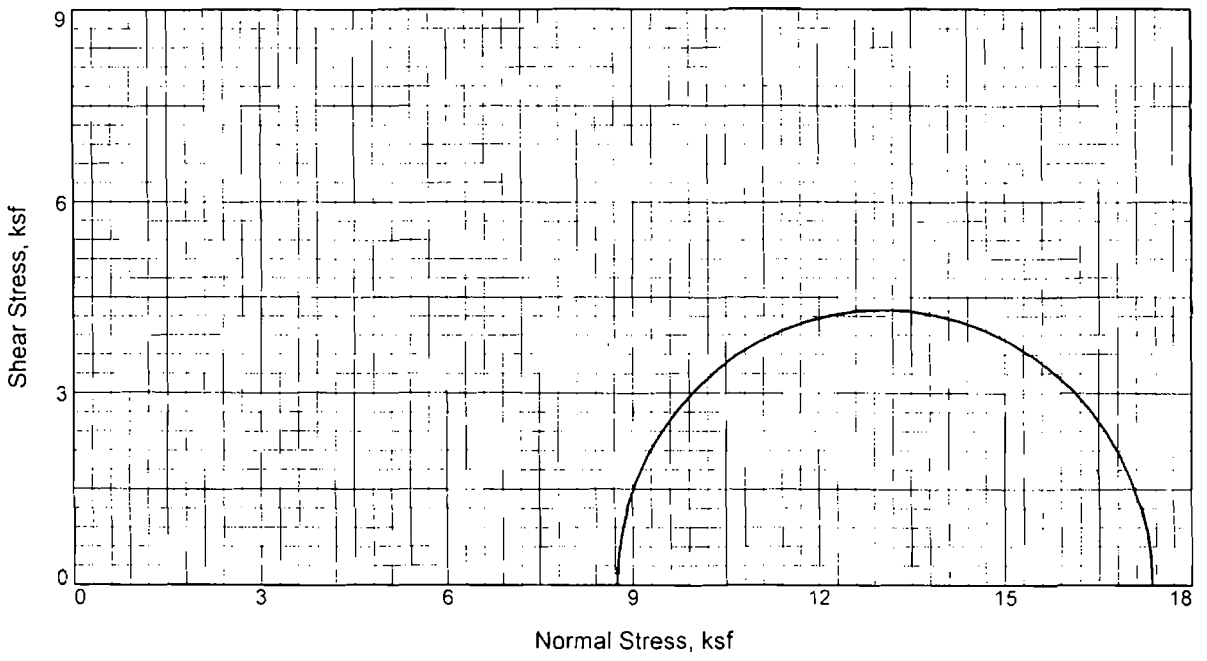
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1319.900
Moisture content: Dry soil+tare, gms.			1042.900
Moisture content: Tare, gms.			113.570
Moisture, %	29.8	30.9	29.8
Moist specimen weight, gms.	1206.4		
Diameter, in.	2.87	2.87	
Area, in.^{2}	6.49	6.49	
Height, in.	6.00	6.00	
Net decrease in height, in.		0.00	
Wet Density, pcf	118.1	119.1	
Dry density, pcf	91.0	91.0	
Void ratio	0.8185	0.8185	
Saturation, %	96.5	100.0	

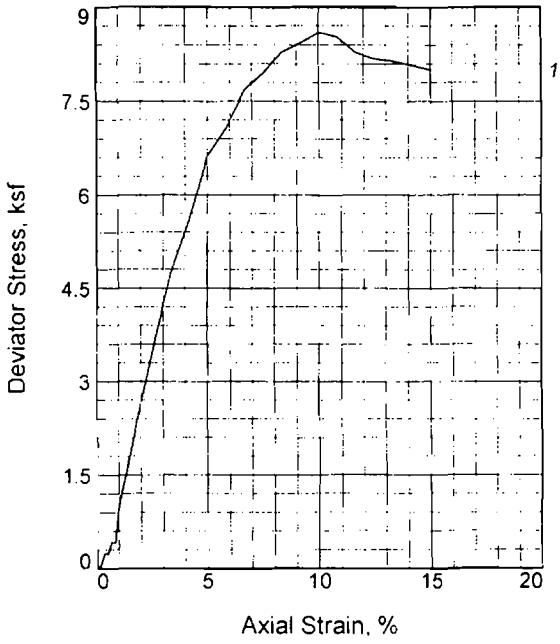
Test Readings for Specimen No. 1

Cell pressure = 75.90 psi (10.93 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.02
Fail. Stress = 4.80 ksf **at reading no.** 27

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.20	0.0	0.0	0.00	10.93	10.93	1.00		10.93
1	0.0100	0.20	0.0	0.2	0.00	10.93	10.93	1.00		10.93
2	0.0200	9.30	9.1	0.3	0.20	10.93	11.13	1.02		11.03
3	0.0300	9.30	9.1	0.5	0.20	10.93	11.13	1.02		11.03
4	0.0400	20.30	20.1	0.7	0.44	10.93	11.37	1.04		11.15
5	0.0500	20.30	20.1	0.8	0.44	10.93	11.37	1.04		11.15
6	0.0600	36.60	36.4	1.0	0.80	10.93	11.73	1.07		11.33
7	0.0800	53.40	53.2	1.3	1.17	10.93	12.09	1.11		11.51
8	0.1000	70.90	70.7	1.7	1.54	10.93	12.47	1.14		11.70
9	0.1200	88.40	88.2	2.0	1.92	10.93	12.85	1.18		11.89
10	0.1400	105.50	105.3	2.3	2.28	10.93	13.21	1.21		12.07
11	0.1600	119.40	119.2	2.7	2.58	10.93	13.50	1.24		12.22
12	0.1800	130.00	129.8	3.0	2.79	10.93	13.72	1.26		12.33
13	0.2000	140.30	140.1	3.3	3.01	10.93	13.94	1.28		12.43
14	0.2500	161.40	161.2	4.2	3.43	10.93	14.36	1.31		12.64
15	0.3000	182.50	182.3	5.0	3.84	10.93	14.77	1.35		12.85
16	0.3500	177.20	177.0	5.8	3.70	10.93	14.63	1.34		12.78
17	0.4000	182.80	182.6	6.7	3.78	10.93	14.71	1.35		12.82
18	0.4500	190.70	190.5	7.5	3.91	10.93	14.84	1.36		12.89
19	0.5000	202.60	202.4	8.3	4.12	10.93	15.05	1.38		12.99
20	0.5500	209.30	209.1	9.2	4.22	10.93	15.15	1.39		13.04
21	0.6000	222.70	222.5	10.0	4.44	10.93	15.37	1.41		13.15
22	0.6500	228.50	228.3	10.8	4.52	10.93	15.45	1.41		13.19
23	0.7000	237.50	237.3	11.7	4.65	10.93	15.58	1.43		13.26
24	0.7500	243.70	243.5	12.5	4.73	10.93	15.66	1.43		13.29
25	0.8000	248.20	248.0	13.3	4.77	10.93	15.70	1.44		13.32
26	0.8500	250.90	250.7	14.2	4.78	10.93	15.71	1.44		13.32
27	0.9000	254.60	254.4	15.0	4.80	10.93	15.73	1.44		13.33





Sample No.		1
Initial	Water Content,	29.5
	Dry Density, pcf	89.4
	Saturation,	91.9
	Void Ratio	0.8504
	Diameter, in.	2.85
	Height, in.	6.00
At Test	Water Content,	32.1
	Dry Density, pcf	89.4
	Saturation,	100.0
	Void Ratio	0.8504
	Diameter, in.	2.85
	Height, in.	6.00
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		8.7
Fail. Stress, ksf		8.6
Ult. Stress, ksf		
σ_1 Failure, ksf		17.3
σ_3 Failure, ksf		8.7

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Silty Sand

LL= 54 **PL=** 32 **PI=** 22
Specific Gravity= 2.65
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

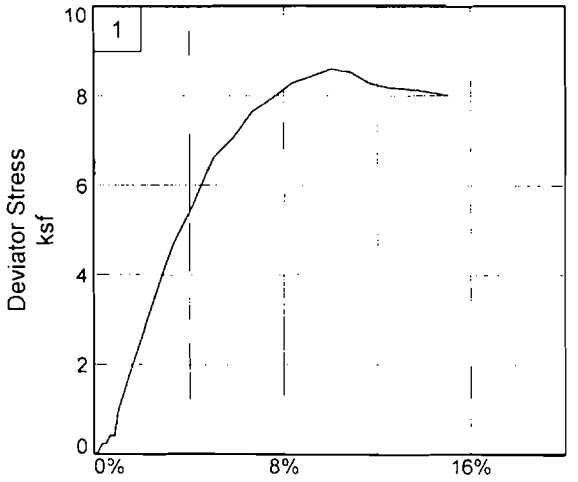
Project: ALWR ESP

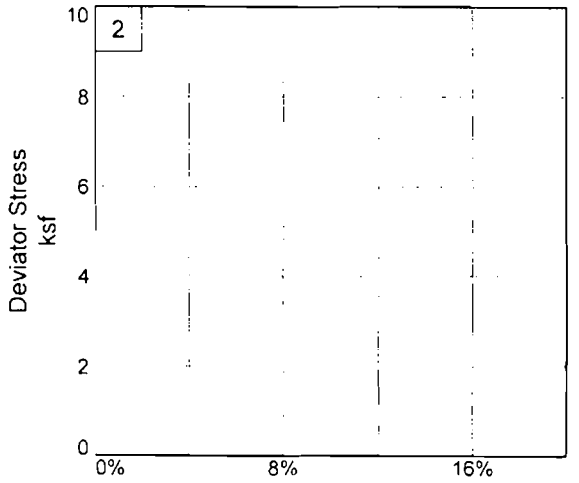
Source of Sample: B1003 **Depth:** 93.0'
Sample Number: UD-1

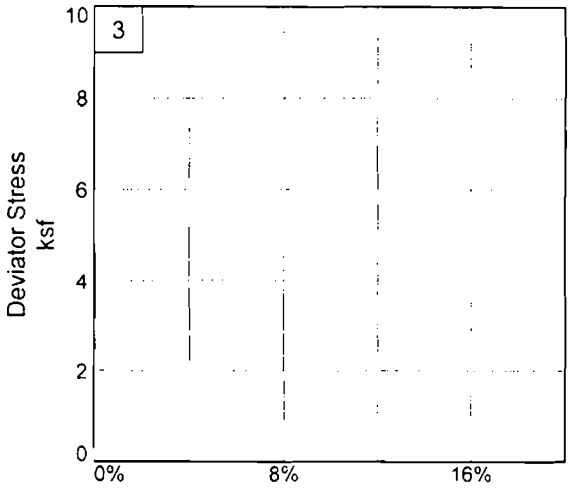
Proj. No.: 6141-05-0227 16 **Date:**

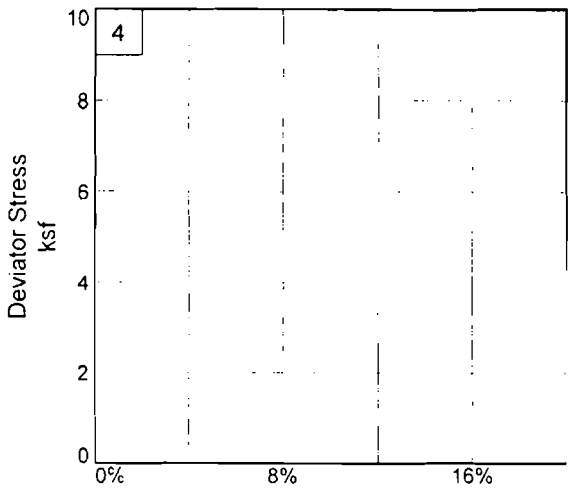
TRIAXIAL SHEAR TEST REPORT

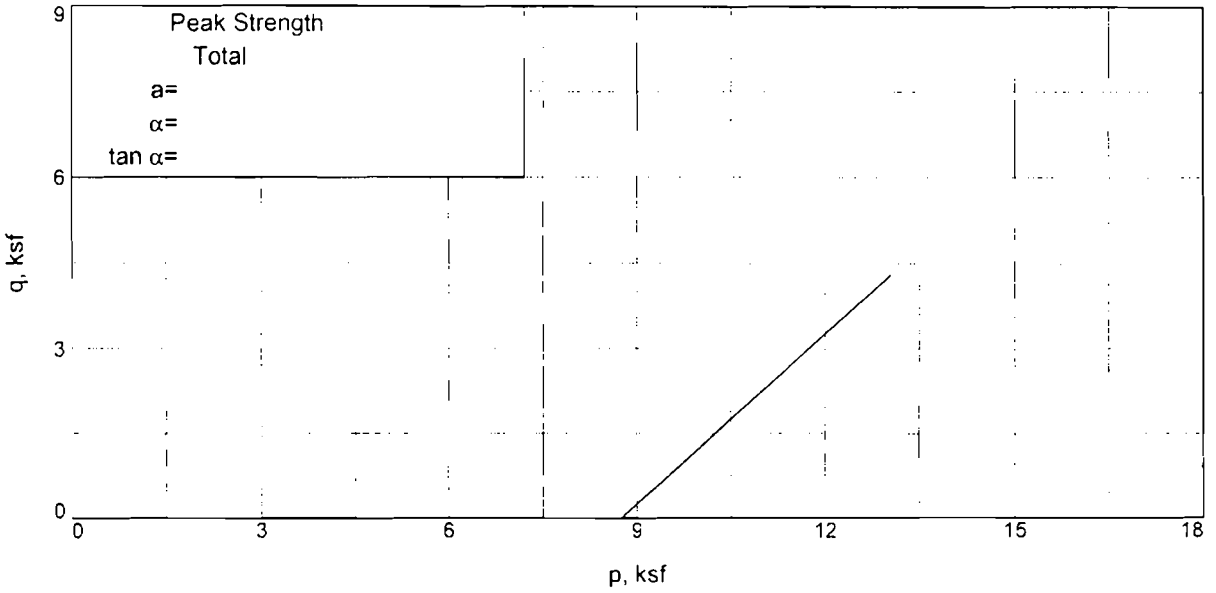
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.
Project: ALWR ESP
Source of Sample: B1003 **Depth:** 93.0' **Sample Number:** UD-1
Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:04 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1003
Depth: 93.0' **Sample Number:** UD-1
Description: Silty Sand
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL**=54 **PL**=32 **PI**=22
Test Method: COE uniform strain

Parameters for Specimen No. 1

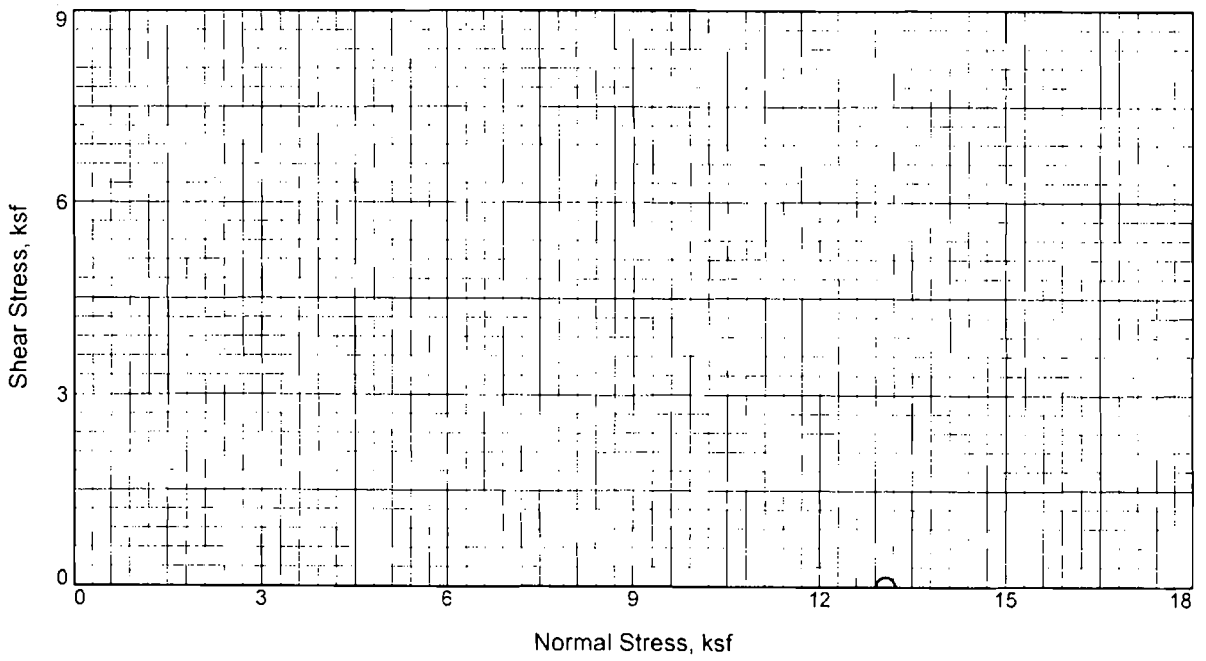
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1253.100
Moisture content: Dry soil+tare, gms.			987.800
Moisture content: Tare, gms.			88.430
Moisture, %	29.5	32.1	29.5
Moist specimen weight, gms.	1164.7		
Diameter, in.	2.85	2.85	
Area, in.^{2}	6.39	6.39	
Height, in.	6.00	6.00	
Net decrease in height, in.		0.00	
Wet Density, pcf	115.8	118.1	
Dry density, pcf	89.4	89.4	
Void ratio	0.8504	0.8504	
Saturation, %	91.9	100.0	

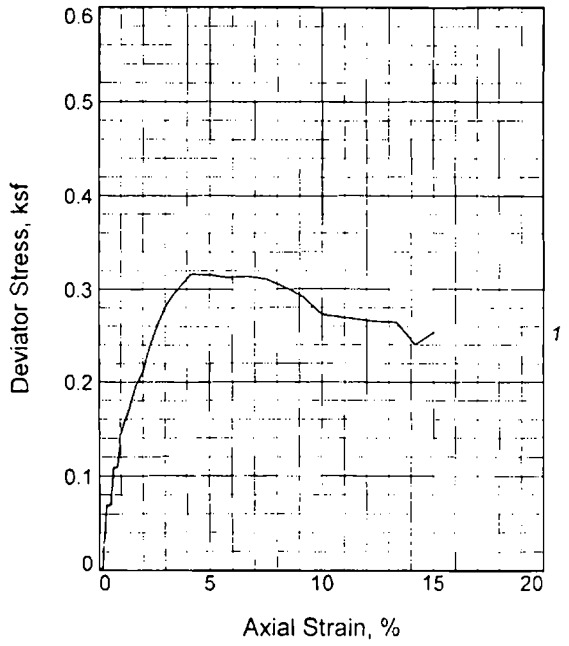
Test Readings for Specimen No. 1

Cell pressure = 60.70 psi (8.74 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.02
Fail. Stress = 8.60 ksf **at reading no.** 21

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	8.74	8.74	1.00		8.74
1	0.0100	1.50	1.5	0.2	0.03	8.74	8.77	1.00		8.76
2	0.0200	10.50	10.5	0.3	0.24	8.74	8.98	1.03		8.86
3	0.0300	10.50	10.5	0.5	0.24	8.74	8.98	1.03		8.86
4	0.0400	18.50	18.5	0.7	0.41	8.74	9.16	1.05		8.95
5	0.0500	18.50	18.5	0.8	0.41	8.74	9.15	1.05		8.95
6	0.0600	44.60	44.6	1.0	1.00	8.74	9.74	1.11		9.24
7	0.0800	69.90	69.9	1.3	1.55	8.74	10.30	1.18		9.52
8	0.1000	94.80	94.8	1.7	2.10	8.74	10.84	1.24		9.79
9	0.1200	119.40	119.4	2.0	2.64	8.74	11.38	1.30		10.06
10	0.1400	144.30	144.3	2.3	3.18	8.74	11.92	1.36		10.33
11	0.1600	169.00	169.0	2.7	3.71	8.74	12.45	1.42		10.59
12	0.1800	193.10	193.1	3.0	4.22	8.74	12.96	1.48		10.85
13	0.2000	216.40	216.4	3.3	4.72	8.74	13.46	1.54		11.10
14	0.2500	258.40	258.4	4.2	5.58	8.74	14.32	1.64		11.53
15	0.3000	309.30	309.3	5.0	6.62	8.74	15.36	1.76		12.05
16	0.3500	333.40	333.4	5.8	7.08	8.74	15.82	1.81		12.28
17	0.4000	364.70	364.7	6.7	7.67	8.74	16.41	1.88		12.58
18	0.4500	381.10	381.1	7.5	7.95	8.74	16.69	1.91		12.71
19	0.5000	400.90	400.9	8.3	8.28	8.74	17.02	1.95		12.88
20	0.5500	412.00	412.0	9.2	8.44	8.74	17.18	1.97		12.96
21	0.6000	424.00	424.0	10.0	8.60	8.74	17.34	1.98		13.04
22	0.6500	424.60	424.6	10.8	8.53	8.74	17.27	1.98		13.01
23	0.7000	416.00	416.0	11.7	8.28	8.74	17.02	1.95		12.88
24	0.7500	415.00	415.0	12.5	8.19	8.74	16.93	1.94		12.83
25	0.8000	417.20	417.2	13.3	8.15	8.74	16.89	1.93		12.82
26	0.8500	417.70	417.7	14.2	8.08	8.74	16.82	1.92		12.78
27	0.9000	417.70	417.7	15.0	8.00	8.74	16.74	1.92		12.74





Sample No.		1
Initial	Water Content,	52.0
	Dry Density, pcf	69.2
	Saturation,	99.1
	Void Ratio	1.3910
	Diameter, in.	2.86
	Height, in.	6.00
At Test	Water Content,	52.5
	Dry Density, pcf	69.2
	Saturation,	100.0
	Void Ratio	1.3910
	Diameter, in.	2.86
	Height, in.	6.00
Strain rate, in./min.		0.18
Back Pressure, ksf		0.0
Cell Pressure, ksf		12.9
Fail. Stress, ksf		0.3
Ult. Stress, ksf		
σ_1 Failure, ksf		13.2
σ_3 Failure, ksf		12.9

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Silty Sand

LL= 59 **PL=** 38 **PI=** 21
Specific Gravity= 2.65
Remarks: Tested by:JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Sample Observed to Contain Cuttings

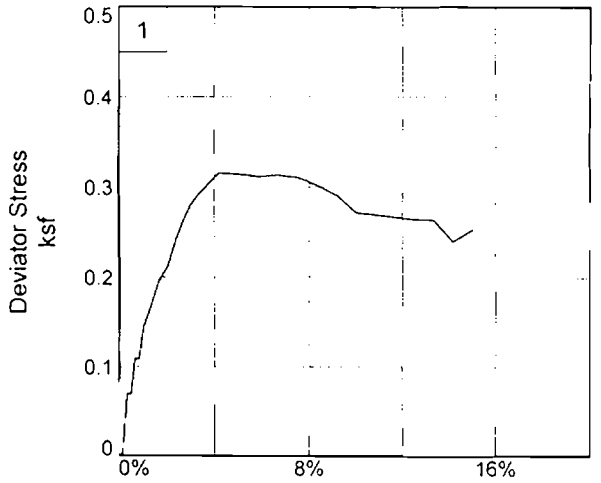
Client: Southern Nuclear Co.

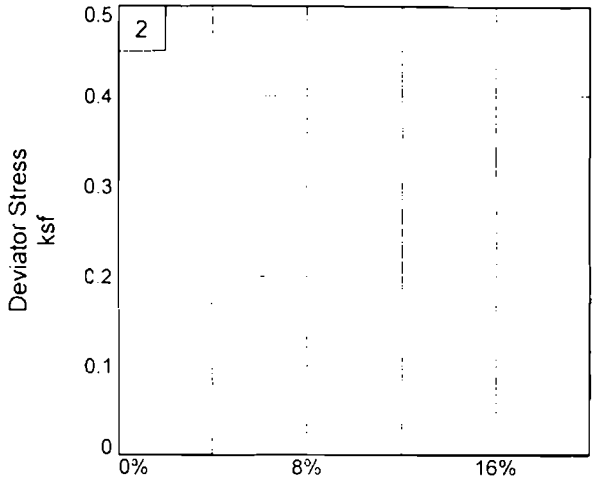
Project: ALWR ESP

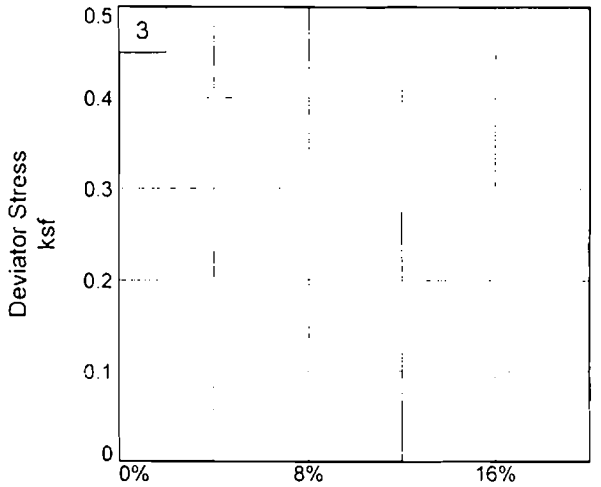
Source of Sample: B1004 **Depth:** 144.0'
Sample Number: UD-1 Upper
Proj. No.: 6141-05-0227 15 **Date:**

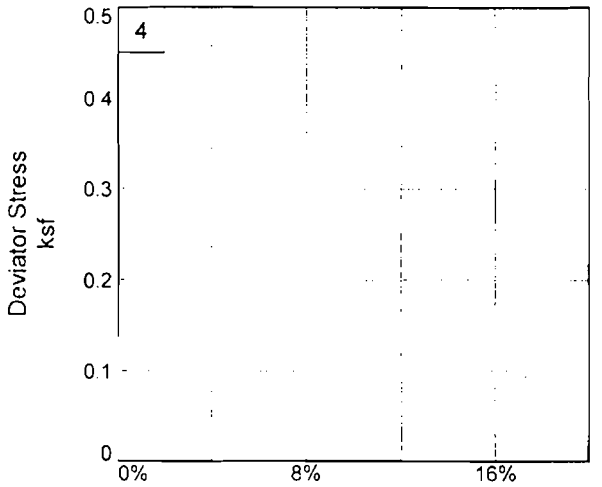
TRIAXIAL SHEAR TEST REPORT

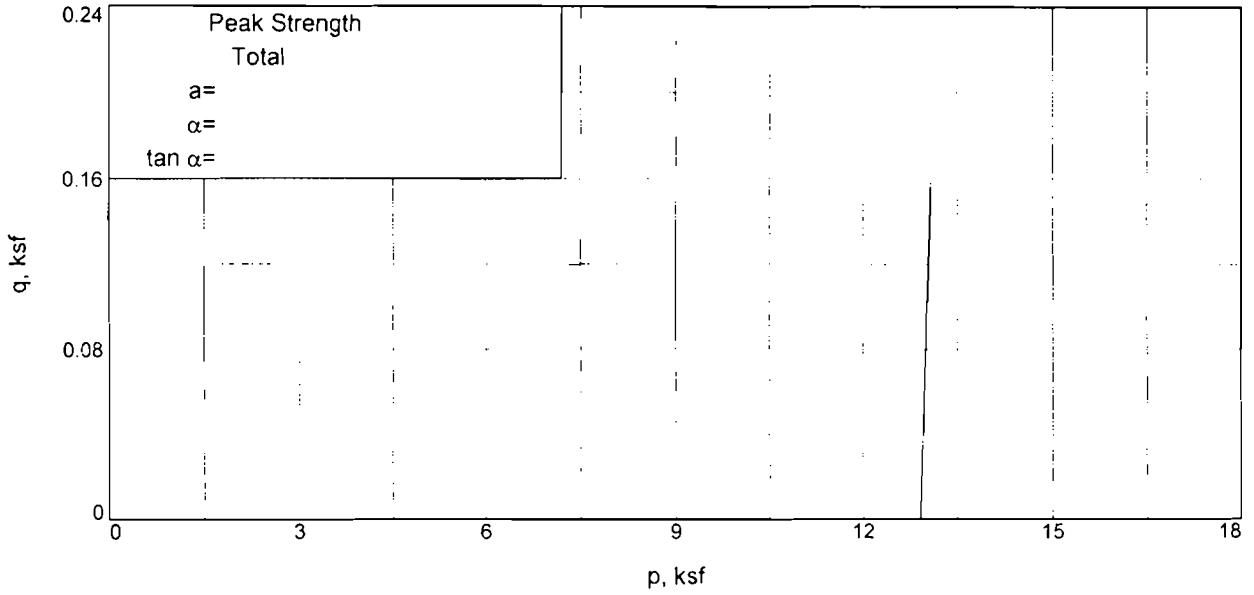
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.
Project: ALWR ESP
Source of Sample: B1004 **Depth:** 144.0' **Sample Number:** UD-1 Upper
Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:04 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1004
Depth: 144.0' **Sample Number:** UD-1 Upper
Description: Silty Sand
Remarks: Tested by:JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Sample Observed to Contain Cuttings
Type of Sample: UD
Specific Gravity=2.65 **LL=**59 **PL=**38 **PI=**21
Test Method: COE uniform strain

Parameters for Specimen No. 1

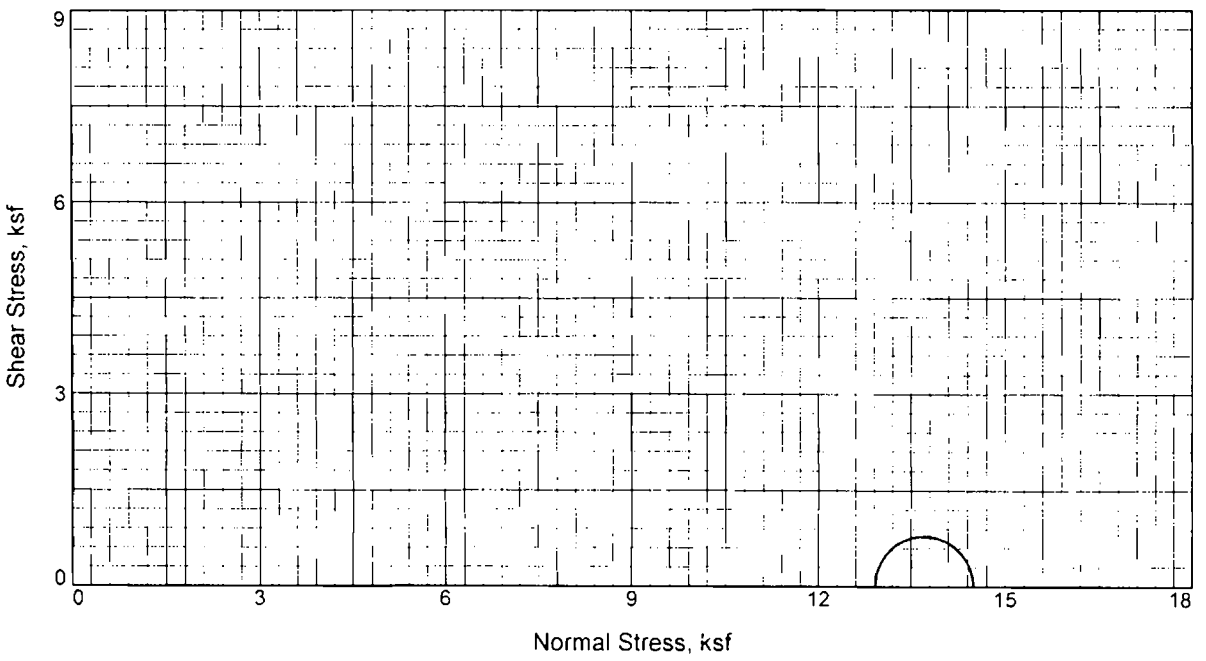
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1112.700
Moisture content: Dry soil+tare, gms.			749.000
Moisture content: Tare, gms.			49.640
Moisture, %	52.0	52.5	52.0
Moist specimen weight, gms.	1063.0		
Diameter, in.	2.86	2.86	
Area, in.^{2}	6.42	6.42	
Height, in.	6.00	6.00	
Net decrease in height, in.		0.00	
Wet Density, pcf	105.2	105.5	
Dry density, pcf	69.2	69.2	
Void ratio	1.3910	1.3910	
Saturation, %	99.1	100.0	

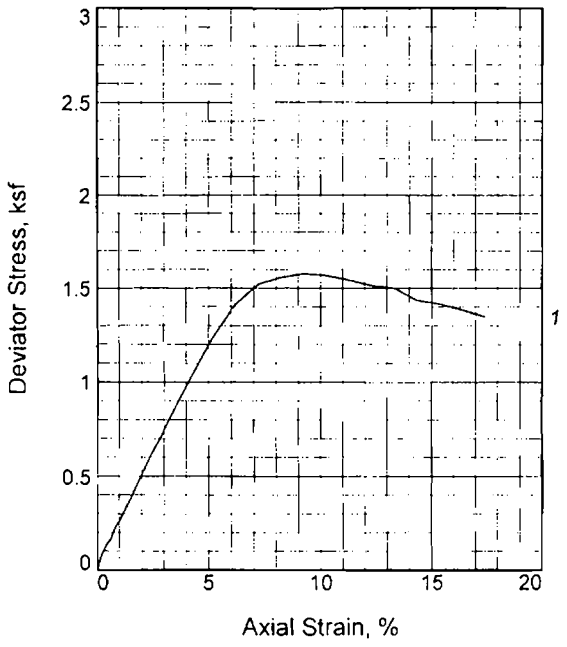
Test Readings for Specimen No. 1

Cell pressure = 89.70 psi (12.92 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.18
Fail. Stress = 0.32 ksf **at reading no.** 14

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	12.92	12.92	1.00		12.92
1	0.0100	0.10	0.1	0.2	0.00	12.92	12.92	1.00		12.92
2	0.0200	3.10	3.1	0.3	0.07	12.92	12.99	1.01		12.95
3	0.0300	3.10	3.1	0.5	0.07	12.92	12.99	1.01		12.95
4	0.0400	4.90	4.9	0.7	0.11	12.92	13.03	1.01		12.97
5	0.0500	4.90	4.9	0.8	0.11	12.92	13.03	1.01		12.97
6	0.0600	6.50	6.5	1.0	0.14	12.92	13.06	1.01		12.99
7	0.0800	7.60	7.6	1.3	0.17	12.92	13.09	1.01		13.00
8	0.1000	8.90	8.9	1.7	0.20	12.92	13.11	1.02		13.01
9	0.1200	9.60	9.6	2.0	0.21	12.92	13.13	1.02		13.02
10	0.1400	10.90	10.9	2.3	0.24	12.92	13.16	1.02		13.04
11	0.1600	12.00	12.0	2.7	0.26	12.92	13.18	1.02		13.05
12	0.1800	12.90	12.9	3.0	0.28	12.92	13.20	1.02		13.06
13	0.2000	13.50	13.5	3.3	0.29	12.92	13.21	1.02		13.06
14	0.2500	14.70	14.7	4.2	0.32	12.92	13.23	1.02		13.07
15	0.3000	14.80	14.8	5.0	0.32	12.92	13.23	1.02		13.07
16	0.3500	14.80	14.8	5.8	0.31	12.92	13.23	1.02		13.07
17	0.4000	15.00	15.0	6.7	0.31	12.92	13.23	1.02		13.07
18	0.4500	15.00	15.0	7.5	0.31	12.92	13.23	1.02		13.07
19	0.5000	14.70	14.7	8.3	0.30	12.92	13.22	1.02		13.07
20	0.5500	14.30	14.3	9.2	0.29	12.92	13.21	1.02		13.06
21	0.6000	13.50	13.5	10.0	0.27	12.92	13.19	1.02		13.05
22	0.6500	13.50	13.5	10.8	0.27	12.92	13.19	1.02		13.05
23	0.7000	13.50	13.5	11.7	0.27	12.92	13.18	1.02		13.05
24	0.7500	13.50	13.5	12.5	0.26	12.92	13.18	1.02		13.05
25	0.8000	13.60	13.6	13.3	0.26	12.92	13.18	1.02		13.05
26	0.8500	12.50	12.5	14.2	0.24	12.92	13.16	1.02		13.04
27	0.9000	13.30	13.3	15.0	0.25	12.92	13.17	1.02		13.04





Sample No.		1
Initial	Water Content,	29.8
	Dry Density, pcf	88.0
	Saturation,	89.7
	Void Ratio	0.8808
	Diameter, in.	2.87
	Height, in.	4.88
At Test	Water Content,	33.2
	Dry Density, pcf	88.0
	Saturation,	100.0
	Void Ratio	0.8808
	Diameter, in.	2.87
	Height, in.	4.88
Strain rate, in./min.		0.01
Back Pressure, ksf		0.0
Cell Pressure, ksf		12.9
Fail. Stress, ksf		1.6
Strain, %		9.2
Ult. Stress, ksf		
Strain, %		
σ_1 Failure, ksf		14.5
σ_3 Failure, ksf		12.9

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Silty Sand

Specific Gravity= 2.65
Remarks: Tested by: JM/JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Possible Disturbance Observed (Shell Trail in

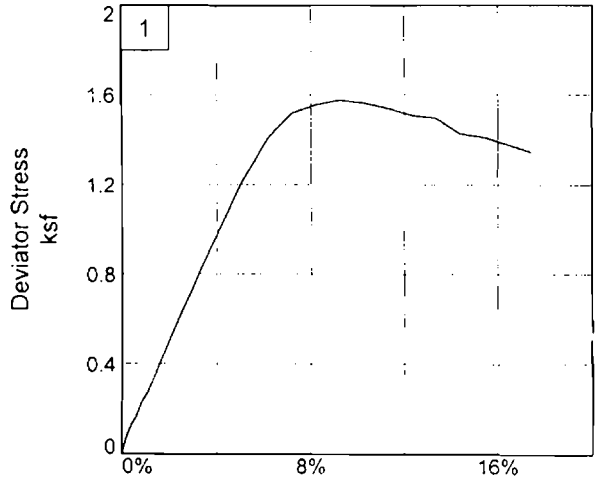
Client: Southern Nuclear Co.

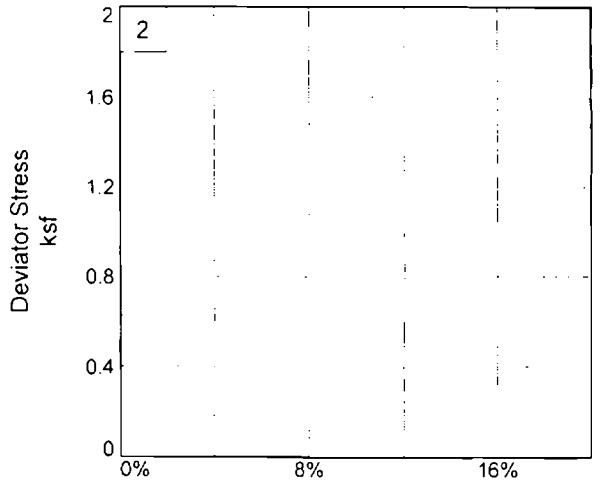
Project: ALWR ESP

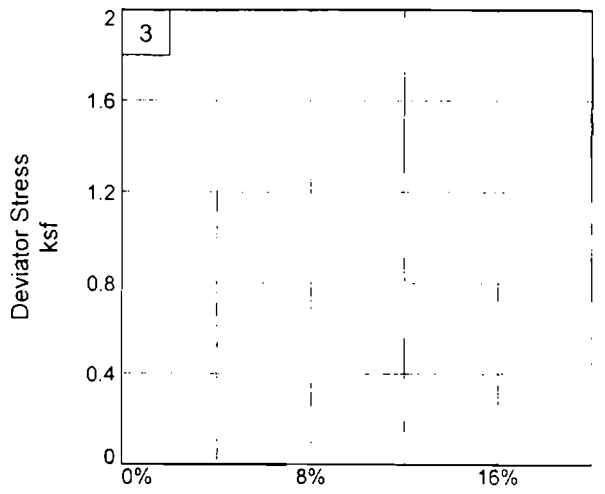
Source of Sample: B1004 **Depth:** 144.0'
Sample Number: UD-1 Middle
Proj. No.: 6141-05-0227 16 **Date:**

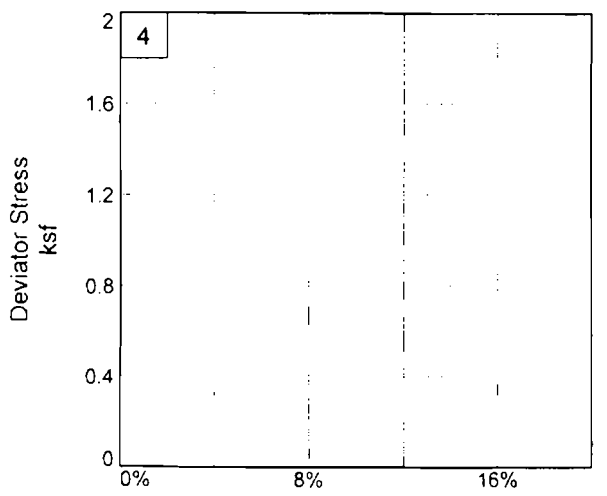
TRIAXIAL SHEAR TEST REPORT

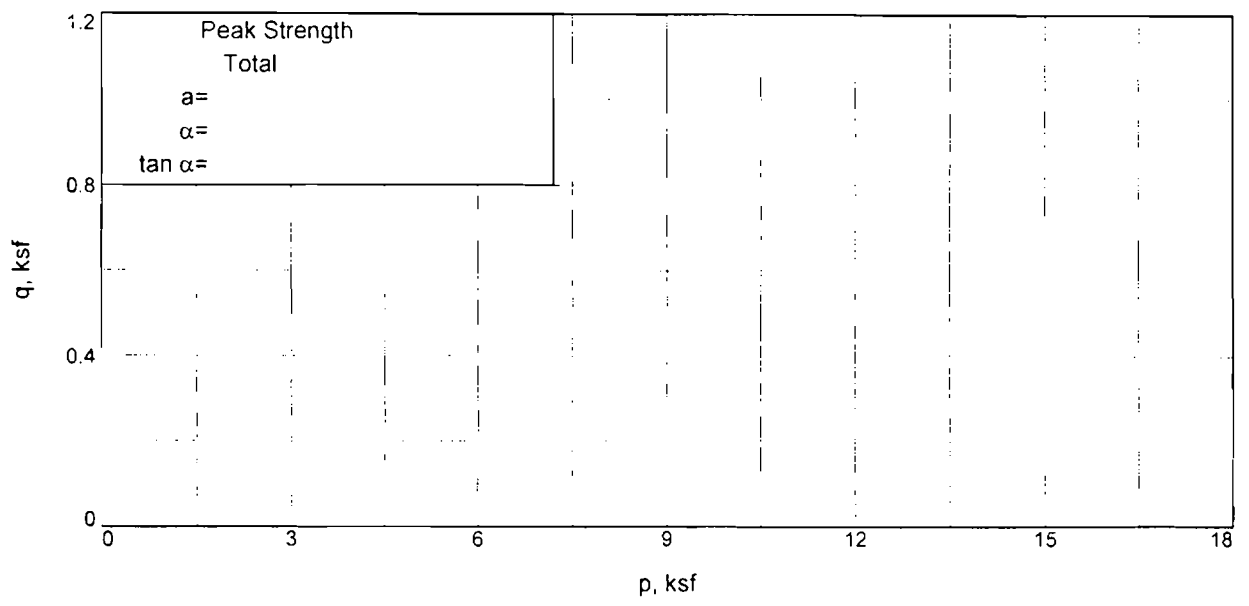
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.
Project: ALWR ESP
Source of Sample: B1004 **Depth:** 144.0' **Sample Number:** UD-1 Middle
Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:04 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1004
Depth: 144.0' **Sample Number:** UD-1 Middle
Description: Silty Sand
Remarks: Tested by: JM/JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Possible Disturbance Observed (Shell Trail in side of sample) after Test
Type of Sample: UD
Specific Gravity=2.65 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

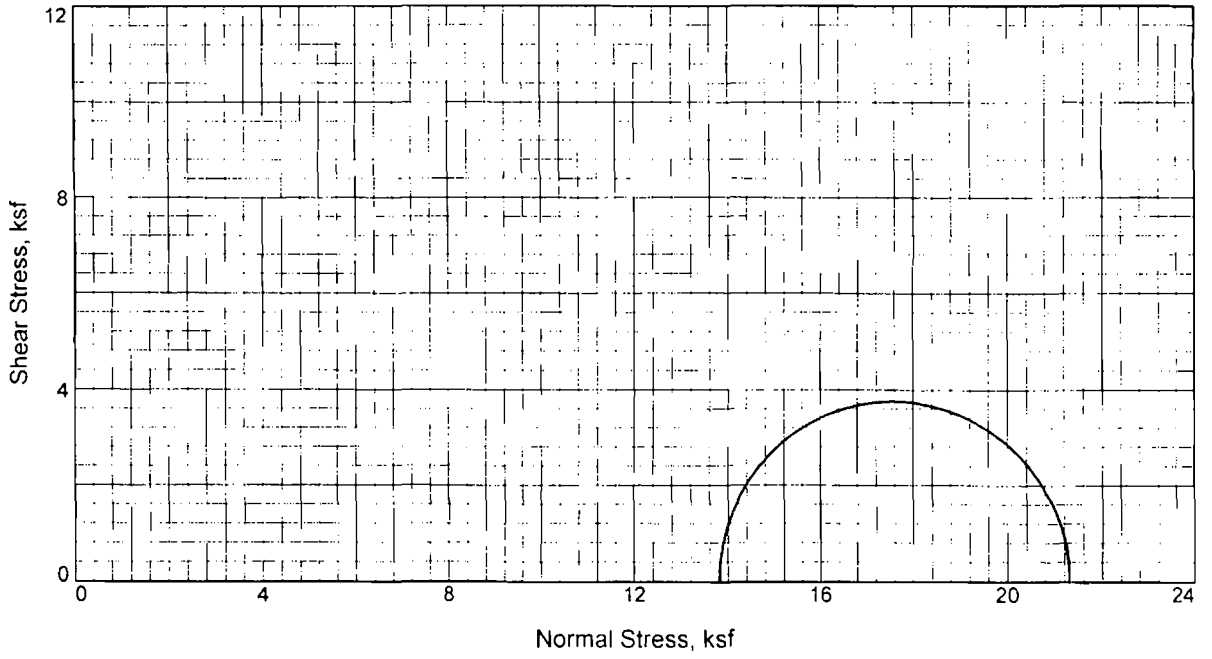
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1035.500
Moisture content: Dry soil+tare, gms.			817.900
Moisture content: Tare, gms.			87.690
Moisture, %	29.8	33.2	29.8
Moist specimen weight, gms.	947.8		
Diameter, in.	2.87	2.87	
Area, in.^{2}	6.49	6.49	
Height, in.	4.88	4.88	
Net decrease in height, in.		0.00	
Wet Density, pcf	114.2	117.2	
Dry density, pcf	88.0	88.0	
Void ratio	0.8808	0.8808	
Saturation, %	89.7	100.0	

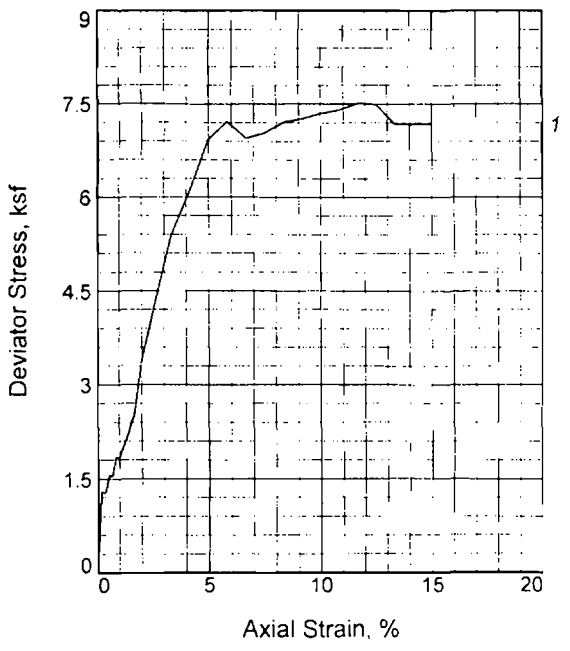
Test Readings for Specimen No. 1

Cell pressure = 89.70 psi (12.92 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.01
Fail. Stress = 1.58 ksf **at reading no.** 18

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	2.80	0.0	0.0	0.00	12.92	12.92	1.00		12.92
1	0.0100	6.50	3.7	0.2	0.08	12.92	13.00	1.01		12.96
2	0.0200	8.80	6.0	0.4	0.13	12.92	13.05	1.01		12.98
3	0.0300	10.40	7.6	0.6	0.17	12.92	13.08	1.01		13.00
4	0.0400	13.20	10.4	0.8	0.23	12.92	13.15	1.02		13.03
5	0.0500	14.80	12.0	1.0	0.26	12.92	13.18	1.02		13.05
6	0.0600	17.10	14.3	1.2	0.31	12.92	13.23	1.02		13.07
7	0.0800	21.90	19.1	1.6	0.42	12.92	13.33	1.03		13.13
8	0.1000	26.80	24.0	2.1	0.52	12.92	13.44	1.04		13.18
9	0.1200	31.50	28.7	2.5	0.62	12.92	13.54	1.05		13.23
10	0.1400	35.90	33.1	2.9	0.71	12.92	13.63	1.06		13.27
11	0.1600	40.80	38.0	3.3	0.82	12.92	13.73	1.06		13.32
12	0.1800	45.30	42.5	3.7	0.91	12.92	13.83	1.07		13.37
13	0.2000	49.80	47.0	4.1	1.00	12.92	13.92	1.08		13.42
14	0.2500	61.10	58.3	5.1	1.23	12.92	14.14	1.10		13.53
15	0.3000	70.50	67.7	6.2	1.41	12.92	14.33	1.11		13.62
16	0.3500	76.60	73.8	7.2	1.52	12.92	14.44	1.12		13.68
17	0.4000	79.20	76.4	8.2	1.56	12.92	14.47	1.12		13.70
18	0.4500	81.10	78.3	9.2	1.58	12.92	14.49	1.12		13.71
19	0.5000	81.40	78.6	10.3	1.57	12.92	14.48	1.12		13.70
20	0.5500	81.10	78.3	11.3	1.54	12.92	14.46	1.12		13.69
21	0.6000	80.50	77.7	12.3	1.51	12.92	14.43	1.12		13.67
22	0.6500	80.70	77.9	13.3	1.50	12.92	14.42	1.12		13.67
23	0.7000	78.10	75.3	14.4	1.43	12.92	14.35	1.11		13.63
24	0.7500	78.10	75.3	15.4	1.41	12.92	14.33	1.11		13.62
25	0.8000	77.30	74.5	16.4	1.38	12.92	14.30	1.11		13.61
26	0.8500	76.30	73.5	17.4	1.35	12.92	14.26	1.10		13.59





Sample No.		1
Initial	Water Content,	28.7
	Dry Density, pcf	92.7
	Saturation,	96.9
	Void Ratio	0.7841
	Diameter, in.	2.86
	Height, in.	6.01
At Test	Water Content,	29.6
	Dry Density, pcf	92.7
	Saturation,	100.0
	Void Ratio	0.7841
	Diameter, in.	2.86
	Height, in.	6.01
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		13.8
Fail. Stress, ksf		7.5
Ult. Stress, ksf		
σ_1 Failure, ksf		21.3
σ_3 Failure, ksf		13.8

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Silty Sand

LL= 43 **PL=** 27 **PI=** 16
Specific Gravity= 2.65
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

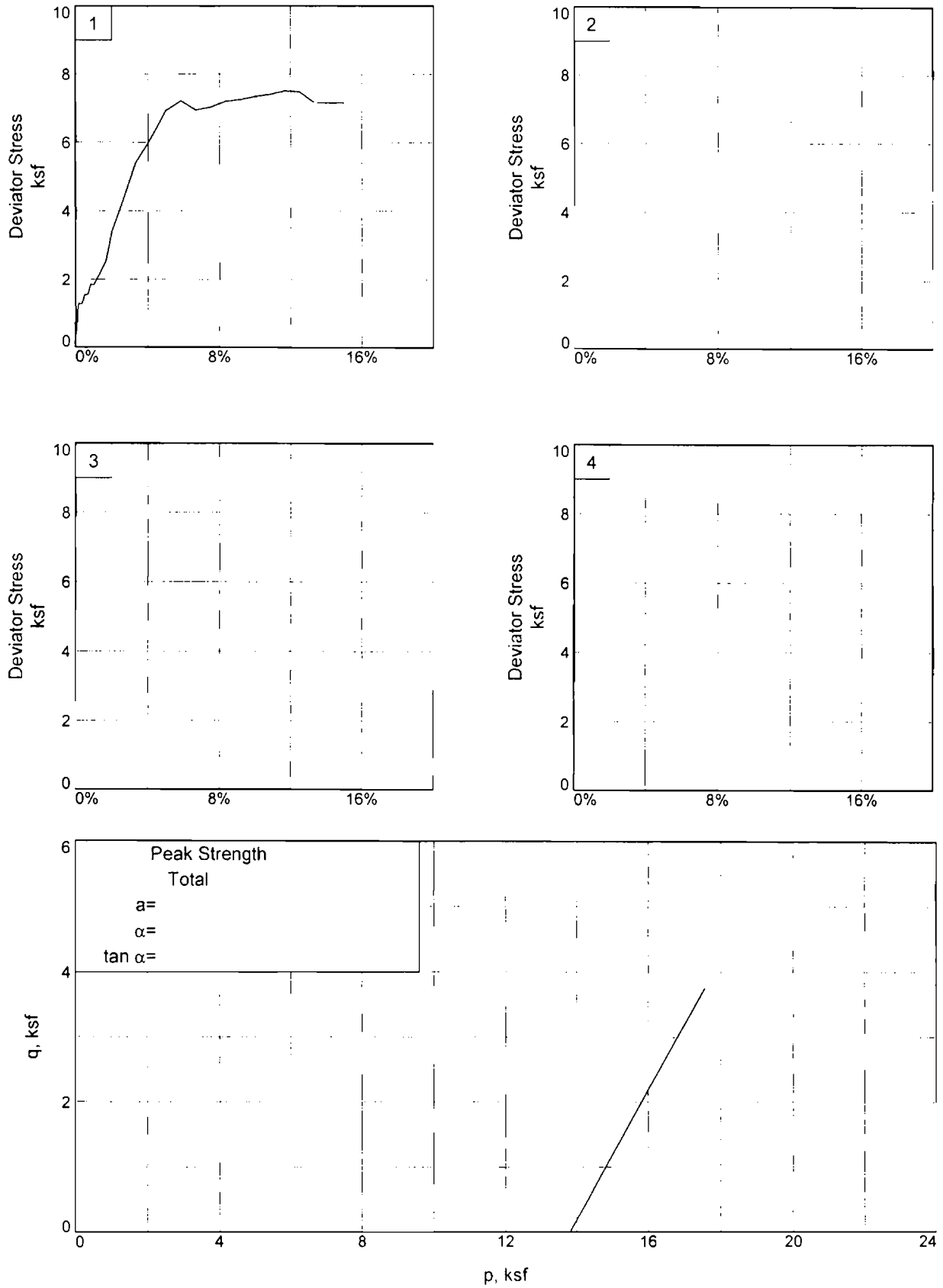
Project: ALWR ESP

Source of Sample: B1004 **Depth:** 153.5'
Sample Number: UD-2

Proj. No.: 6141-05-0227 16 **Date:**

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.



Client: Southern Nuclear Co.
Project: ALWR ESP
Source of Sample: B1004 **Depth:** 153.5' **Sample Number:** UD-2
Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:04 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1004
Depth: 153.5' **Sample Number:** UD-2
Description: Silty Sand
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL=**43 **PL=**27 **PI=**16
Test Method: COE uniform strain

Parameters for Specimen No. 1

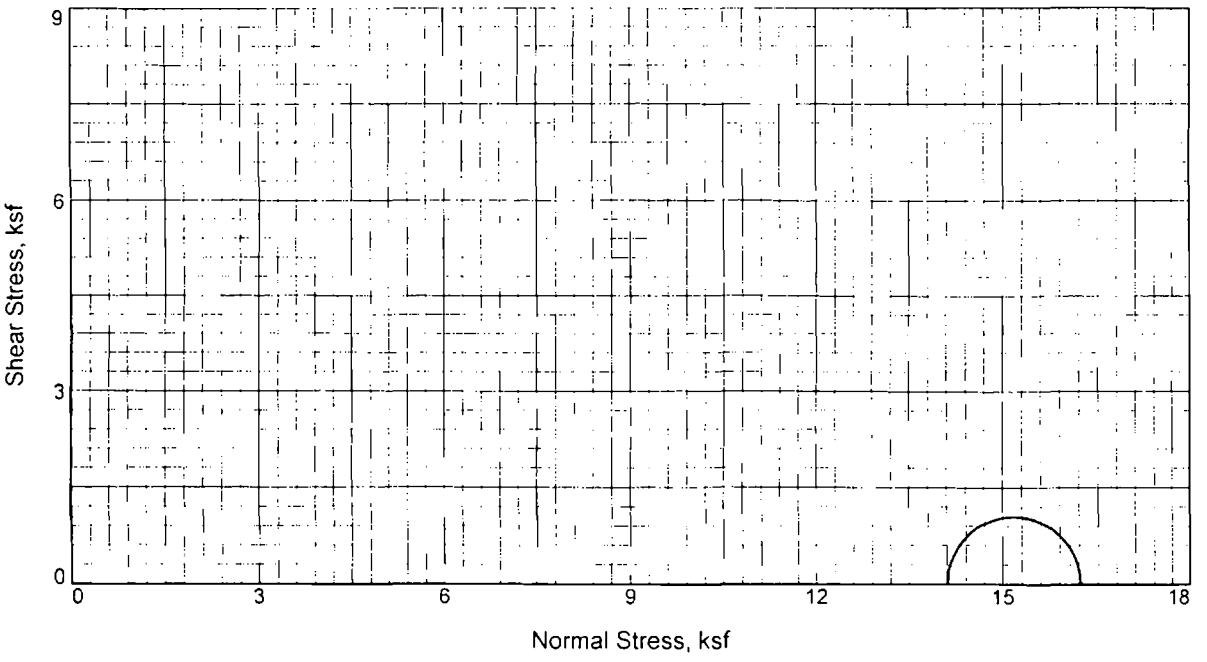
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1257.700
Moisture content: Dry soil+tare, gms.			989.100
Moisture content: Tare, gms.			52.270
Moisture, %	28.7	29.6	28.7
Moist specimen weight, gms.	1205.5		
Diameter, in.	2.86	2.86	
Area, in.^{2}	6.41	6.41	
Height, in.	6.01	6.01	
Net decrease in height, in.		0.00	
Wet Density, pcf	119.3	120.2	
Dry density, pcf	92.7	92.7	
Void ratio	0.7841	0.7841	
Saturation, %	96.9	100.0	

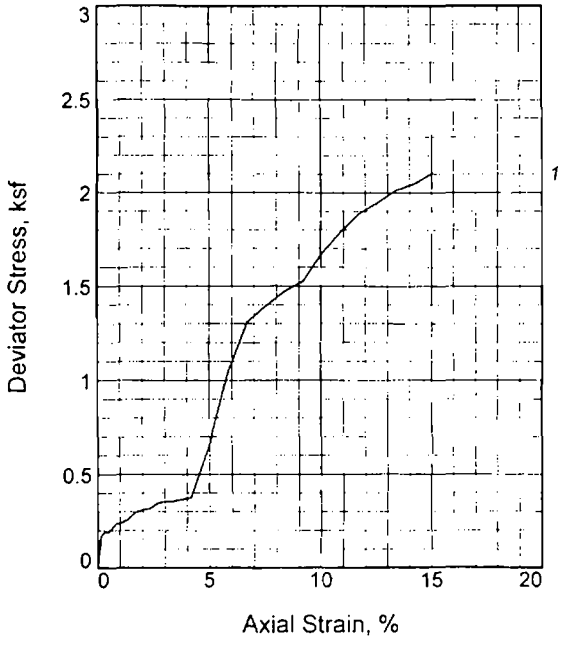
Test Readings for Specimen No. 1

Cell pressure = 95.90 psi (13.81 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.02
Fail. Stress = 7.51 ksf **at reading no.** 23

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.10	0.0	0.0	0.00	13.81	13.81	1.00		13.81
1	0.0100	57.10	57.0	0.2	1.28	13.81	15.09	1.09		14.45
2	0.0200	57.10	57.0	0.3	1.28	13.81	15.09	1.09		14.45
3	0.0300	69.30	69.2	0.5	1.55	13.81	15.36	1.11		14.58
4	0.0400	69.30	69.2	0.7	1.55	13.81	15.35	1.11		14.58
5	0.0500	82.90	82.8	0.8	1.85	13.81	15.66	1.13		14.73
6	0.0600	82.90	82.8	1.0	1.84	13.81	15.65	1.13		14.73
7	0.0800	97.80	97.7	1.3	2.17	13.81	15.98	1.16		14.89
8	0.1000	114.50	114.4	1.7	2.53	13.81	16.34	1.18		15.07
9	0.1200	154.30	154.2	2.0	3.40	13.81	17.21	1.25		15.51
10	0.1400	177.20	177.1	2.3	3.89	13.81	17.70	1.28		15.75
11	0.1600	201.20	201.1	2.7	4.40	13.81	18.21	1.32		16.01
12	0.1800	225.40	225.3	3.0	4.91	13.81	18.72	1.36		16.27
13	0.2000	249.10	249.0	3.3	5.41	13.81	19.22	1.39		16.51
14	0.2500	283.70	283.6	4.2	6.11	13.81	19.92	1.44		16.86
15	0.3000	324.60	324.5	5.0	6.93	13.81	20.74	1.50		17.27
16	0.3500	341.00	340.9	5.8	7.22	13.81	21.03	1.52		17.42
17	0.4000	331.30	331.2	6.7	6.95	13.81	20.76	1.50		17.28
18	0.4500	338.40	338.3	7.5	7.03	13.81	20.84	1.51		17.33
19	0.5000	349.70	349.6	8.3	7.20	13.81	21.01	1.52		17.41
20	0.5500	355.80	355.7	9.2	7.26	13.81	21.07	1.53		17.44
21	0.6000	363.10	363.0	10.0	7.34	13.81	21.15	1.53		17.48
22	0.6500	369.40	369.3	10.8	7.40	13.81	21.21	1.54		17.51
23	0.7000	378.30	378.2	11.7	7.51	13.81	21.32	1.54		17.56
24	0.7500	380.70	380.6	12.5	7.49	13.81	21.30	1.54		17.55
25	0.8000	368.90	368.8	13.3	7.19	13.81	21.00	1.52		17.40
26	0.8500	371.70	371.6	14.1	7.17	13.81	20.98	1.52		17.40
27	0.9000	375.70	375.6	15.0	7.18	13.81	20.99	1.52		17.40





Sample No.		1
Initial	Water Content,	30.2
	Dry Density, pcf	90.2
	Saturation,	96.1
	Void Ratio	0.8338
	Diameter, in.	2.88
	Height, in.	5.98
At Test	Water Content,	31.5
	Dry Density, pcf	90.2
	Saturation,	100.0
	Void Ratio	0.8338
	Diameter, in.	2.88
	Height, in.	5.98
Strain rate, in./min.		0.18
Back Pressure, ksf		0.0
Cell Pressure, ksf		14.1
Fail. Stress, ksf		2.1
Ult. Stress, ksf		
σ_1 Failure, ksf		16.2
σ_3 Failure, ksf		14.1

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Clayey Gravel with Sand

LL= 31 **PL=** 22 **PI=** 9
Specific Gravity= 2.65
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

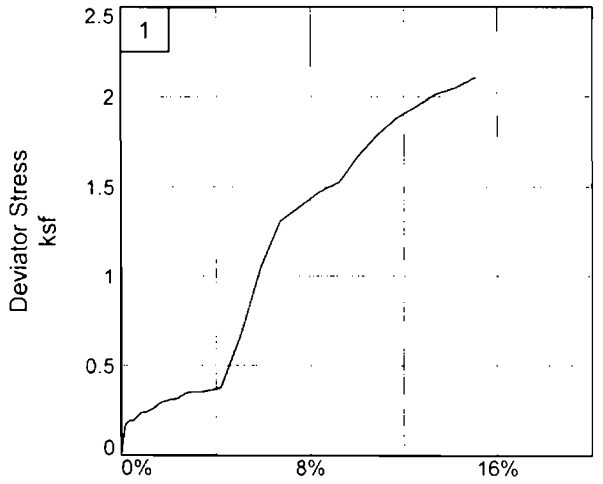
Client: Southern Nuclear Co.

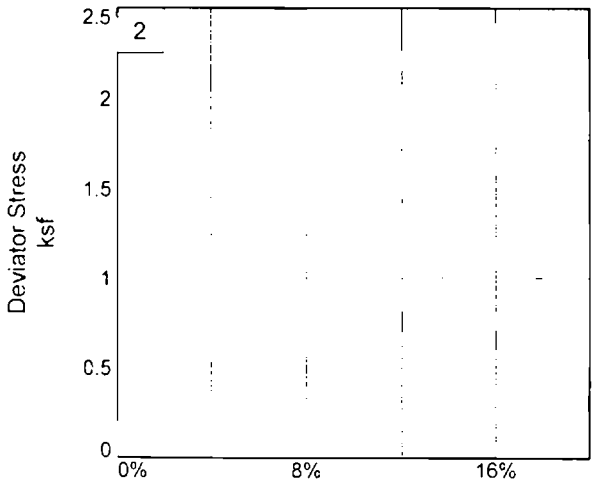
Project: ALWR ESP

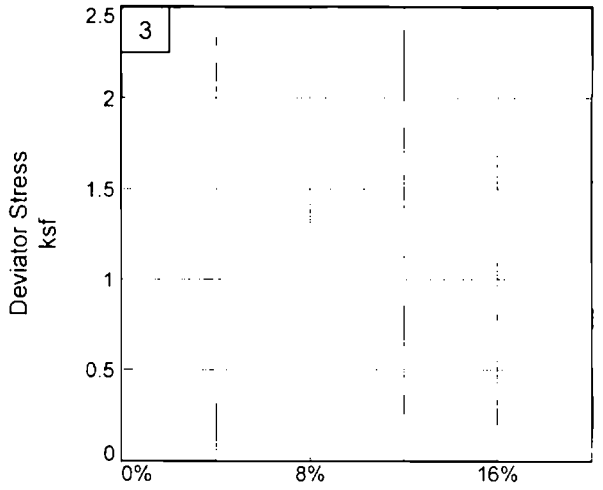
Source of Sample: B1004 **Depth:** 163.5'
Sample Number: UD-3 Upper
Proj. No.: 6141-05-0227 16 **Date:**

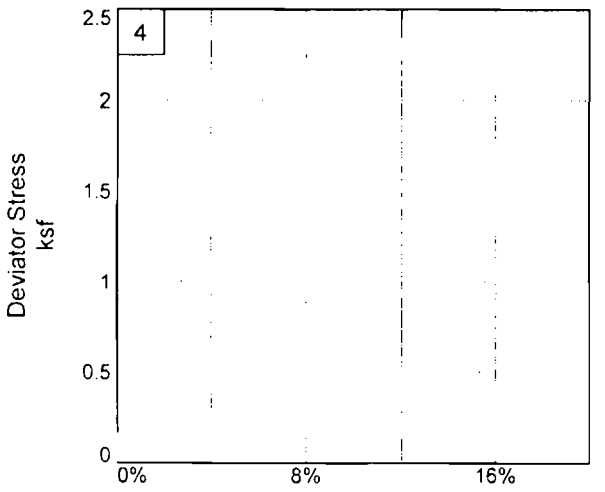
TRIAXIAL SHEAR TEST REPORT

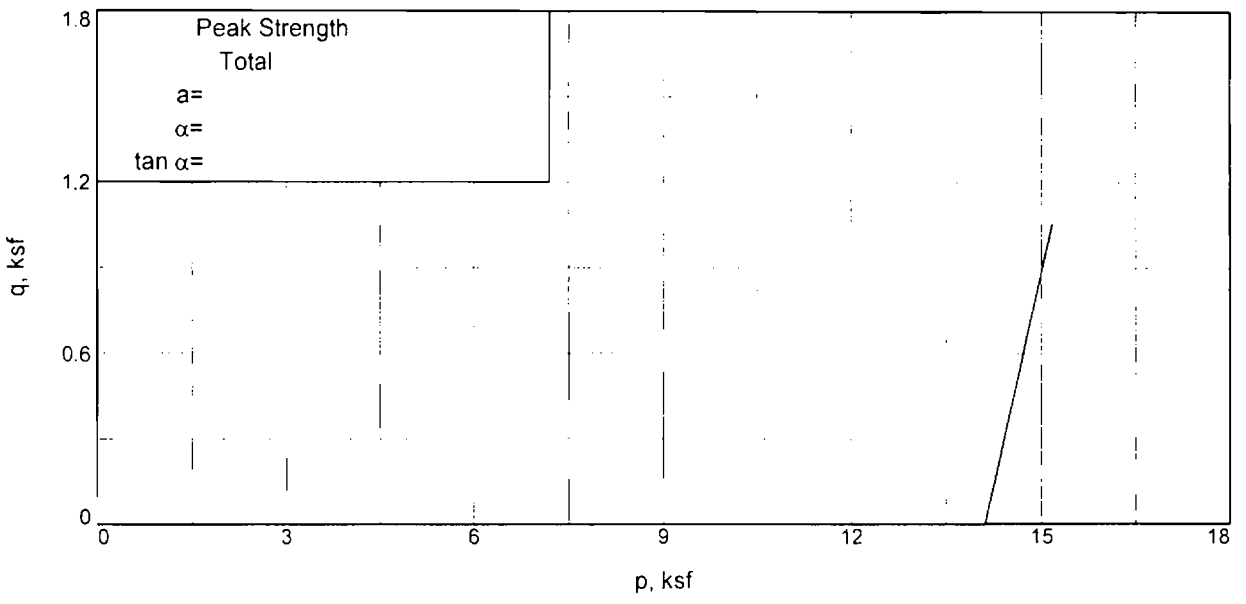
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1004 **Depth:** 163.5' **Sample Number:** UD-3 Upper

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:04 AM

Date:			
Client:	Southern Nuclear Co.		
Project:	ALWR ESP		
Project No.:	6141-05-0227.16		
Location:	B1004		
Depth:	163.5'	**Sample Number:**	UD-3 Upper
Description:	Clayey Gravel with Sand		
Remarks:	Tested by: JL		
	Reviewed by: PDP		
	Specific Gravity (2.65) Assumed		
Type of Sample:	UD		
Specific Gravity=2.65	**LL**=31	**PL**=22	**PI**=9
Test Method:	COE uniform strain		

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1283.800
Moisture content: Dry soil+tare, gms.			1005.200
Moisture content: Tare, gms.			83.640
Moisture, %	30.2	31.5	30.2
Moist specimen weight, gms.	1200.2		
Diameter, in.	2.88	2.88	
Area, in.²	6.51	6.51	
Height, in.	5.98	5.98	
Net decrease in height, in.		0.00	
Wet Density, pcf	117.5	118.6	
Dry density, pcf	90.2	90.2	
Void ratio	0.8338	0.8338	
Saturation, %	96.1	100.0	

Test Readings for Specimen No. 1

Cell pressure = 98.00 psi (14.11 ksf)

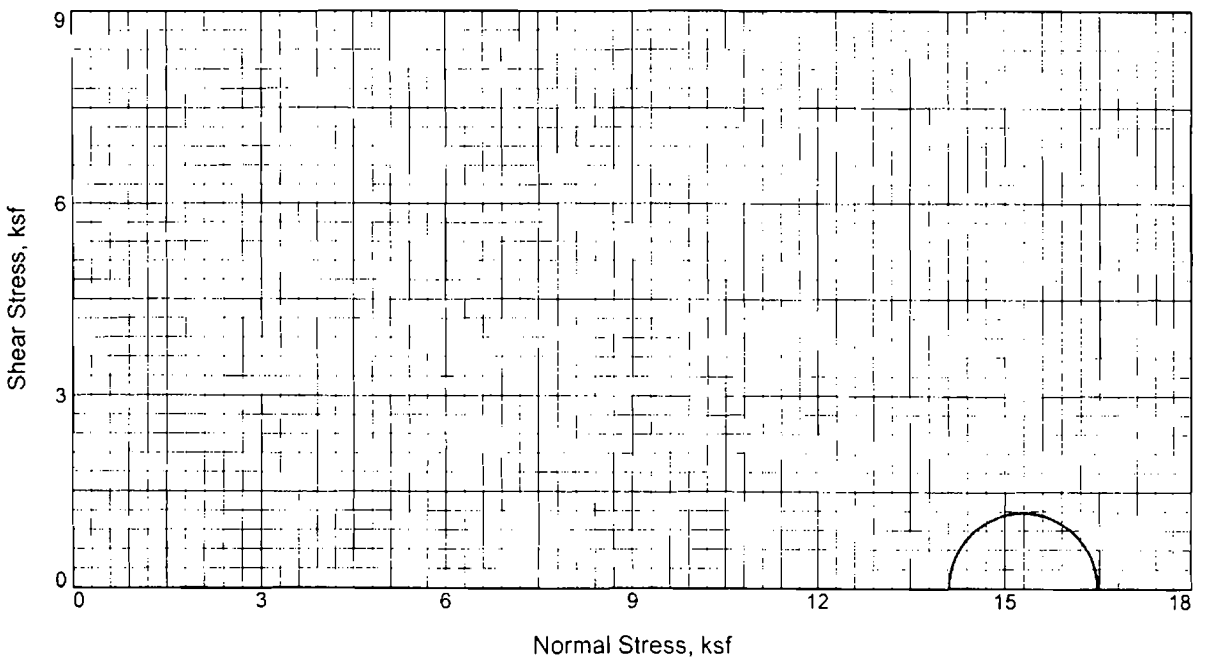
Back pressure = 0.00 psi (0.00 ksf)

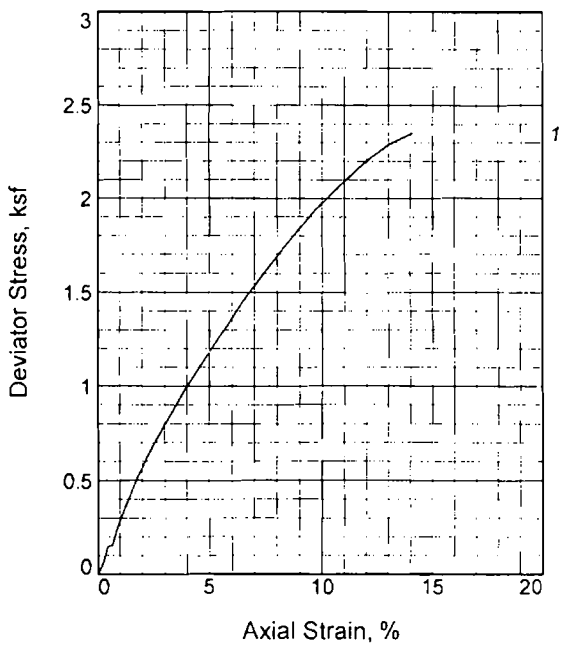
Strain rate, in./min. = 0.18

Fail. Stress = 2.11 ksf **at reading no.** 28

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	14.11	14.11	1.00		14.11
1	0.0100	7.70	7.7	0.2	0.17	14.11	14.28	1.01		14.20
2	0.0200	8.70	8.7	0.3	0.19	14.11	14.30	1.01		14.21
3	0.0300	8.70	8.7	0.5	0.19	14.11	14.30	1.01		14.21
4	0.0400	9.80	9.8	0.7	0.22	14.11	14.33	1.02		14.22
5	0.0400	9.80	9.8	0.7	0.22	14.11	14.33	1.02		14.22
6	0.0500	10.90	10.9	0.8	0.24	14.11	14.35	1.02		14.23
7	0.0600	10.90	10.9	1.0	0.24	14.11	14.35	1.02		14.23
8	0.0800	12.00	12.0	1.3	0.26	14.11	14.37	1.02		14.24
9	0.1000	13.60	13.6	1.7	0.30	14.11	14.41	1.02		14.26
10	0.1200	14.30	14.3	2.0	0.31	14.11	14.42	1.02		14.27
11	0.1400	14.70	14.7	2.3	0.32	14.11	14.43	1.02		14.27
12	0.1600	16.10	16.1	2.7	0.35	14.11	14.46	1.02		14.29
13	0.1800	16.50	16.5	3.0	0.35	14.11	14.47	1.03		14.29
14	0.2000	16.60	16.6	3.3	0.35	14.11	14.47	1.03		14.29
15	0.2500	17.70	17.7	4.2	0.38	14.11	14.49	1.03		14.30
16	0.3000	31.70	31.7	5.0	0.67	14.11	14.78	1.05		14.45
17	0.3500	50.40	50.4	5.9	1.05	14.11	15.16	1.07		14.64
18	0.4000	63.50	63.5	6.7	1.31	14.11	15.42	1.09		14.77
19	0.4500	68.10	68.1	7.5	1.39	14.11	15.50	1.10		14.81
20	0.5000	72.60	72.6	8.4	1.47	14.11	15.58	1.10		14.85
21	0.5500	76.00	76.0	9.2	1.53	14.11	15.64	1.11		14.88
22	0.6000	84.10	84.1	10.0	1.67	14.11	15.79	1.12		14.95
23	0.6500	90.90	90.9	10.9	1.79	14.11	15.90	1.13		15.01
24	0.7000	96.60	96.6	11.7	1.89	14.11	16.00	1.13		15.06
25	0.7500	100.60	100.6	12.5	1.95	14.11	16.06	1.14		15.09
26	0.8000	105.10	105.1	13.4	2.01	14.11	16.13	1.14		15.12
27	0.8500	108.00	108.0	14.2	2.05	14.11	16.16	1.15		15.14
28	0.9000	112.10	112.1	15.1	2.11	14.11	16.22	1.15		15.17





Sample No.		1
Initial	Water Content,	24.5
	Dry Density, pcf	100.9
	Saturation,	101.4
	Void Ratio	0.6404
	Diameter, in.	2.87
	Height, in.	4.61
At Test	Water Content,	24.2
	Dry Density, pcf	100.9
	Saturation,	100.0
	Void Ratio	0.6404
	Diameter, in.	2.87
	Height, in.	4.61
Strain rate, in./min.		0.01
Back Pressure, ksf		0.0
Cell Pressure, ksf		14.1
Fail. Stress, ksf		2.4
Strain, %		14.1
Ult. Stress, ksf		
Strain, %		
σ_1 Failure, ksf		16.5
σ_3 Failure, ksf		14.1

Type of Test:
Unconsolidated Undrained

Sample Type: UD

Description: Clayey Gravel with Sand

Specific Gravity= 2.65

Remarks: Tested by: JM/JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

Project: ALWR ESP

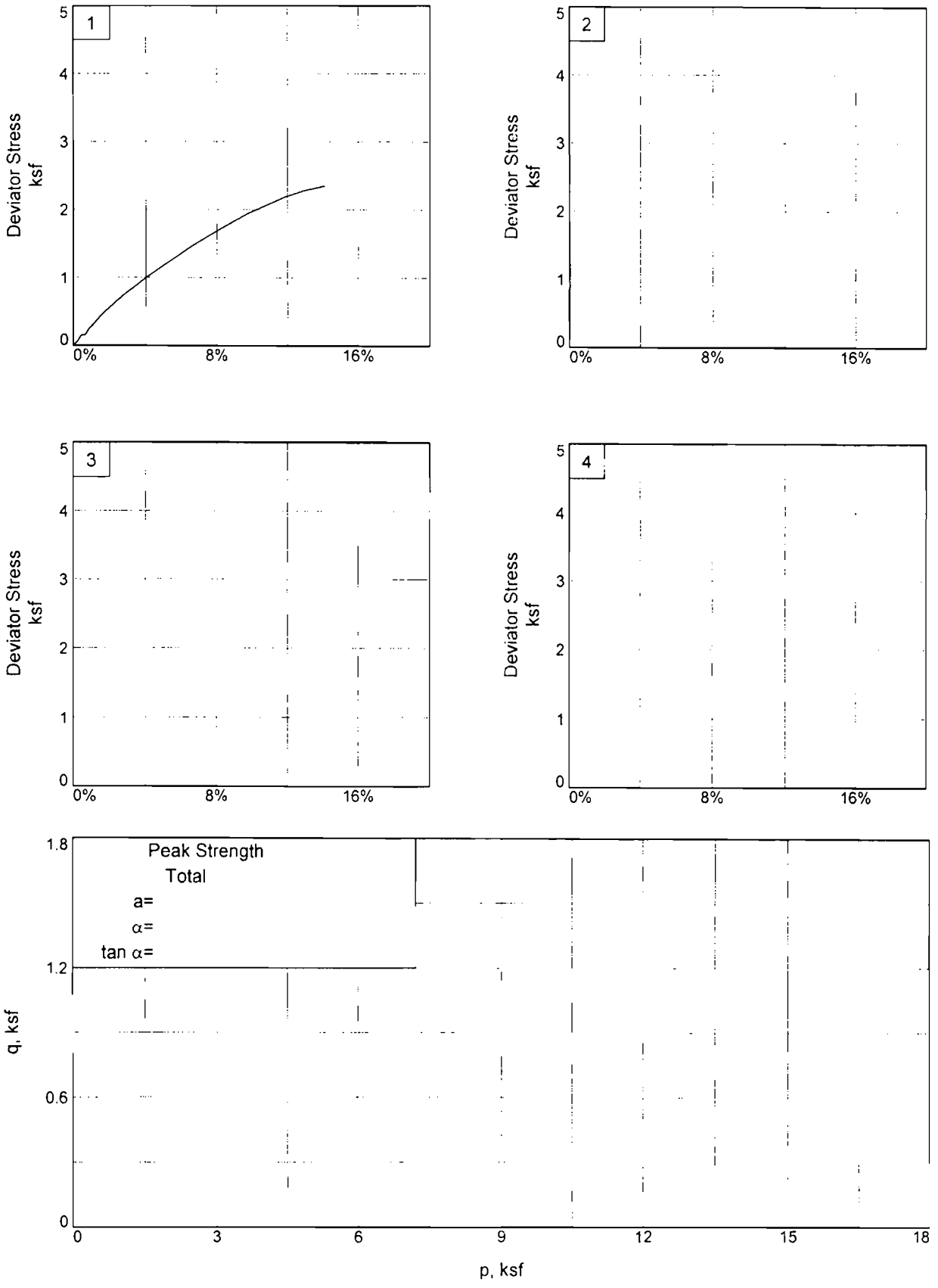
Source of Sample: B1004 **Depth:** 163.5'

Sample Number: UD-3 Middle

Proj. No.: 6141-05-0227 16 **Date:**

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.



Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1004 **Depth:** 163.5' **Sample Number:** UD-3 Middle

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:04 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1004
Depth: 163.5' **Sample Number:** UD-3 Middle
Description: Clayey Gravel with Sand
Remarks: Tested by: JM/JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

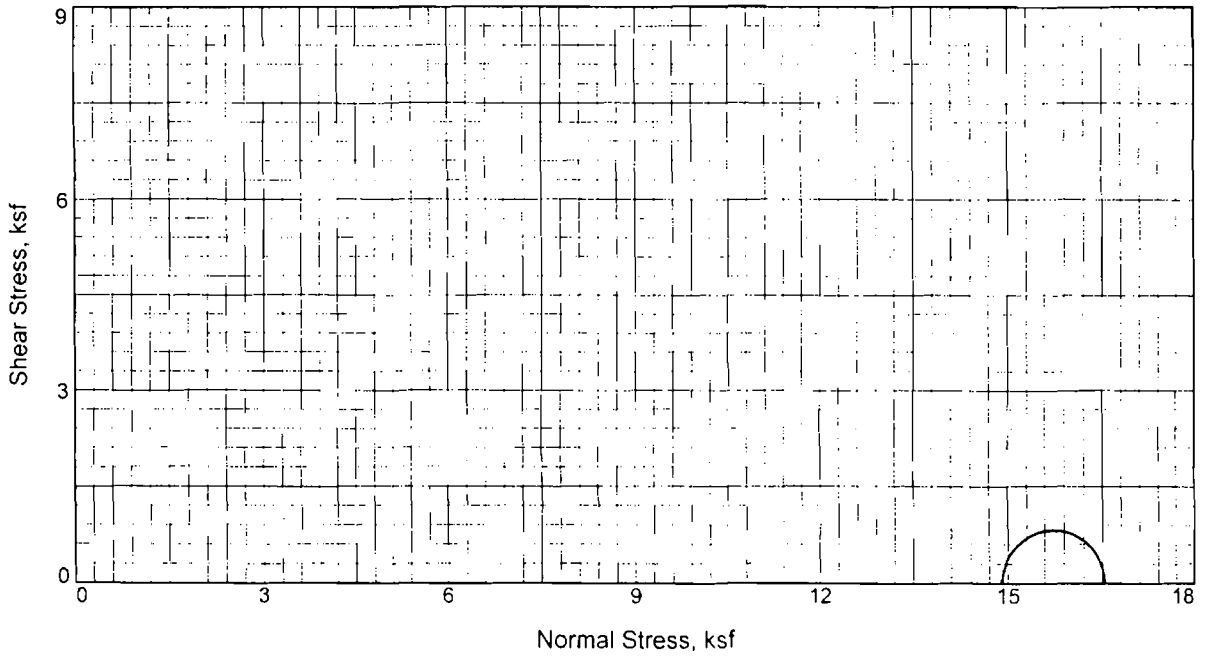
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1075.600
Moisture content: Dry soil+tare, gms.			881.400
Moisture content: Tare, gms.			89.000
Moisture, %	24.5	24.2	24.5
Moist specimen weight, gms.	986.6		
Diameter, in.	2.87	2.87	
Area, in.^{2}	6.49	6.49	
Height, in.	4.61	4.61	
Net decrease in height, in.		0.00	
Wet Density, pcf	125.6	125.2	
Dry density, pcf	100.9	100.9	
Void ratio	0.6404	0.6404	
Saturation, %	101.4	100.0	

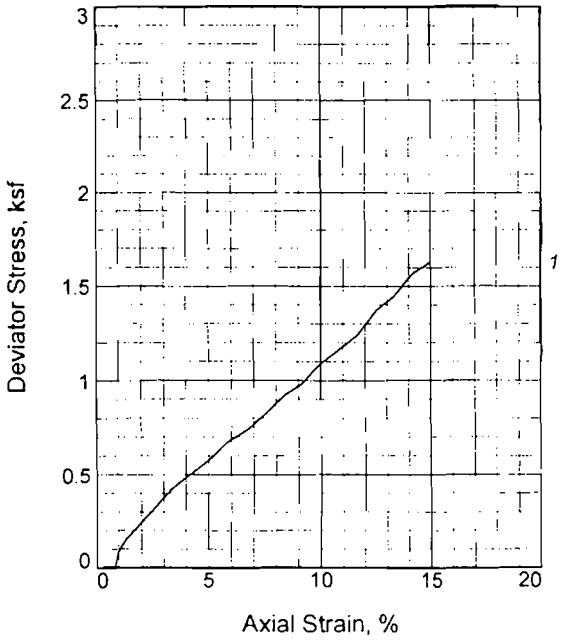
Test Readings for Specimen No. 1

Cell pressure = 98.00 psi (14.11 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.01
Fail. Stress = 2.35 ksf **at reading no.** 22

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	14.11	14.11	1.00		14.11
1	0.0100	2.40	2.4	0.2	0.05	14.11	14.17	1.00		14.14
2	0.0200	6.70	6.7	0.4	0.15	14.11	14.26	1.01		14.19
3	0.0300	7.10	7.1	0.7	0.16	14.11	14.27	1.01		14.19
4	0.0400	11.20	11.2	0.9	0.25	14.11	14.36	1.02		14.24
5	0.0500	14.20	14.2	1.1	0.31	14.11	14.42	1.02		14.27
6	0.0600	17.30	17.3	1.3	0.38	14.11	14.49	1.03		14.30
7	0.0800	23.00	23.0	1.7	0.50	14.11	14.61	1.04		14.36
8	0.1000	28.00	28.0	2.2	0.61	14.11	14.72	1.04		14.42
9	0.1200	32.70	32.7	2.6	0.71	14.11	14.82	1.05		14.47
10	0.1400	37.20	37.2	3.0	0.80	14.11	14.91	1.06		14.51
11	0.1600	41.40	41.4	3.5	0.89	14.11	15.00	1.06		14.56
12	0.1800	45.80	45.8	3.9	0.98	14.11	15.09	1.07		14.60
13	0.2000	49.90	49.9	4.3	1.06	14.11	15.17	1.08		14.64
14	0.2500	59.90	59.9	5.4	1.26	14.11	15.37	1.09		14.74
15	0.3000	70.20	70.2	6.5	1.46	14.11	15.57	1.10		14.84
16	0.3500	79.40	79.4	7.6	1.63	14.11	15.74	1.12		14.93
17	0.4000	88.50	88.5	8.7	1.79	14.11	15.91	1.13		15.01
18	0.4500	97.00	97.0	9.8	1.94	14.11	16.06	1.14		15.08
19	0.5000	104.70	104.7	10.8	2.07	14.11	16.18	1.15		15.15
20	0.5500	112.30	112.3	11.9	2.20	14.11	16.31	1.16		15.21
21	0.6000	118.60	118.6	13.0	2.29	14.11	16.40	1.16		15.26
22	0.6500	123.30	123.3	14.1	2.35	14.11	16.46	1.17		15.29





Sample No.		1
Initial	Water Content,	22.4
	Dry Density, pcf	101.8
	Saturation,	95.2
	Void Ratio	0.6244
	Diameter, in.	2.88
	Height, in.	6.00
At Test	Water Content,	23.6
	Dry Density, pcf	101.8
	Saturation,	100.0
	Void Ratio	0.6244
	Diameter, in.	2.88
	Height, in.	6.00
Strain rate, in./min.		0.18
Back Pressure, ksf		0.0
Cell Pressure, ksf		14.9
Fail. Stress, ksf		1.6
Ult. Stress, ksf		
σ_1 Failure, ksf		16.5
σ_3 Failure, ksf		14.9

Type of Test:
Unconsolidated Undrained

Sample Type: UD

Description: Silty Sand with Gravel

LL= 31 **PL=** 22 **PI=** 9

Specific Gravity= 2.65

Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

Project: ALWR ESP

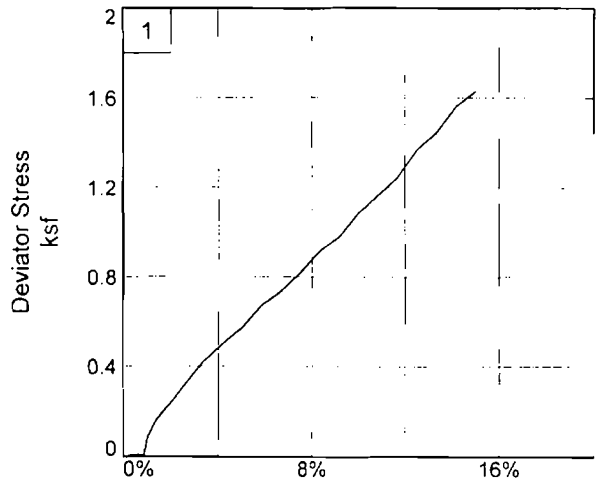
Source of Sample: B1004 **Depth:** 177.0'

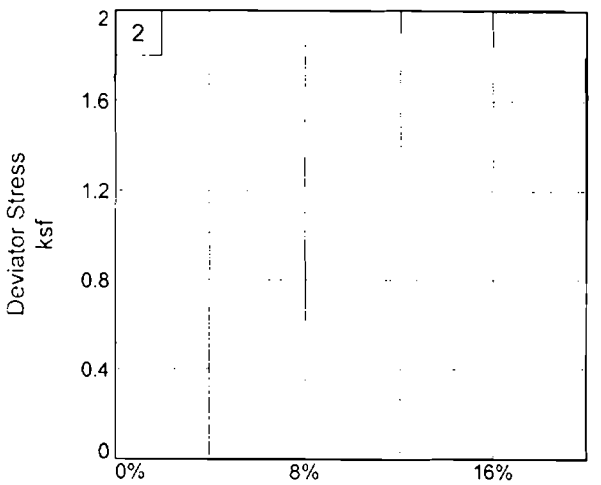
Sample Number: UD-4 Upper

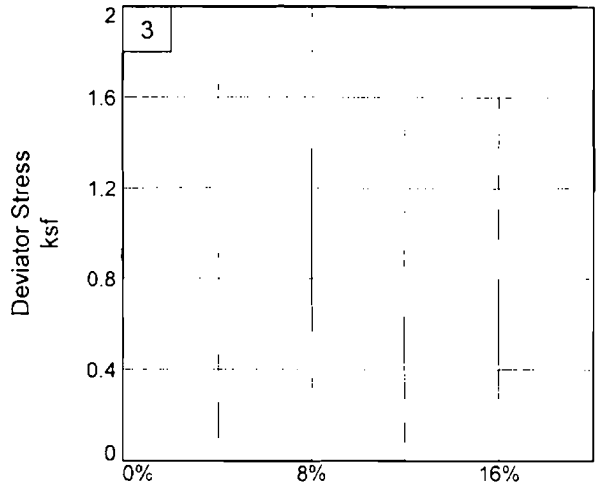
Proj. No.: 6241-05-0227 16 **Date:**

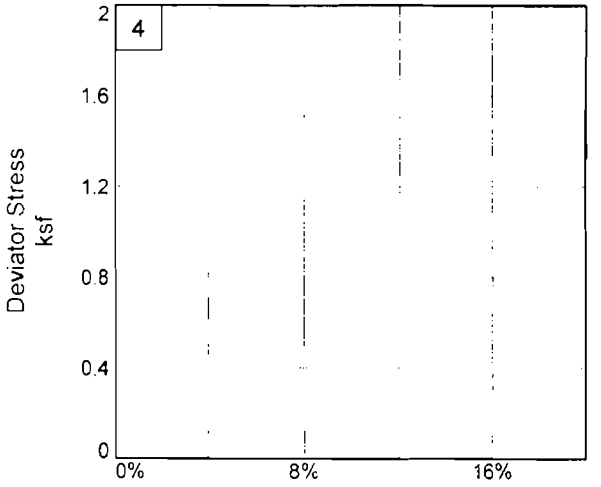
TRIAXIAL SHEAR TEST REPORT

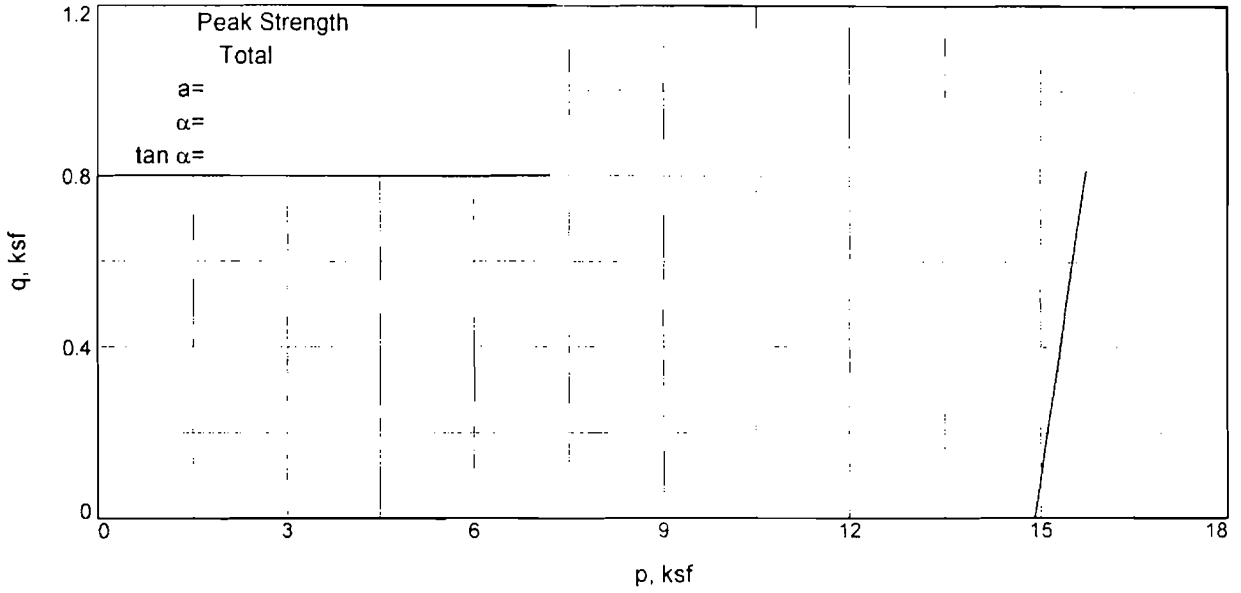
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.
Project: ALWR ESP
Source of Sample: B1004 **Depth:** 177.0' **Sample Number:** UD-4 Upper
Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:05 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1004
Depth: 177.0' **Sample Number:** UD-4 Upper
Description: Silty Sand with Gravel
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL=**31 **PL=**22 **PI=**9
Test Method: COE uniform strain

Parameters for Specimen No. 1

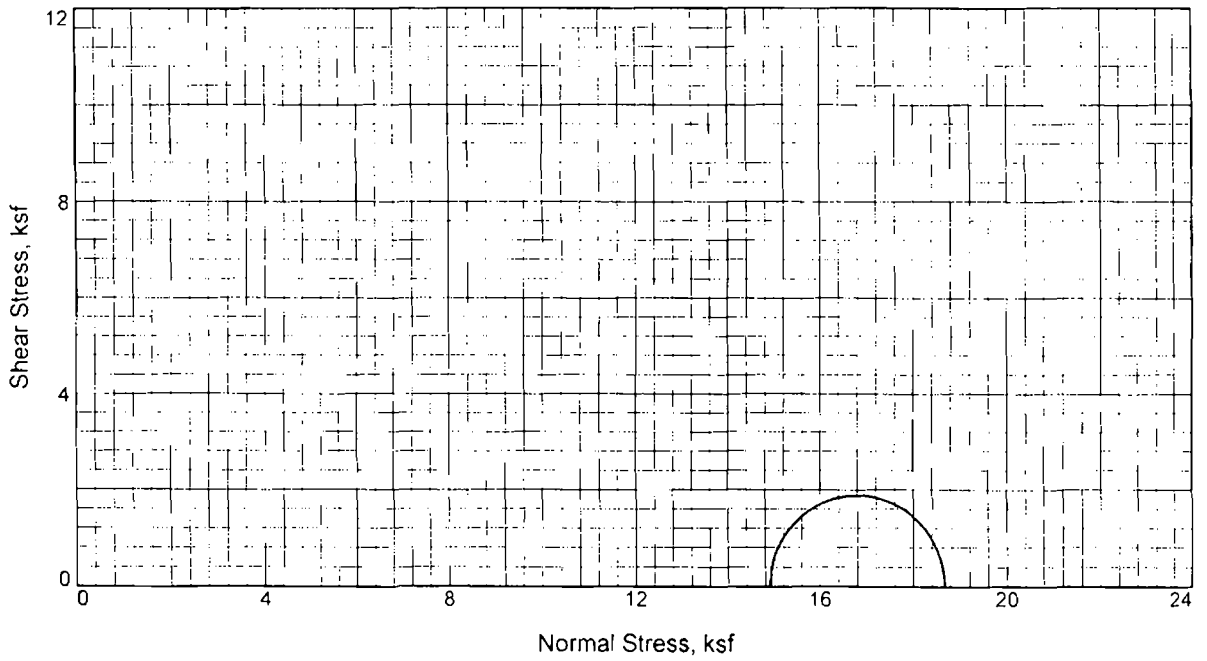
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1366.100
Moisture content: Dry soil+tare, gms.			1131.100
Moisture content: Tare, gms.			83.670
Moisture, %	22.4	23.6	22.4
Moist specimen weight, gms.	1282.4		
Diameter, in.	2.88	2.88	
Area, in.^{2}	6.53	6.53	
Height, in.	6.00	6.00	
Net decrease in height, in.		0.00	
Wet Density, pcf	124.7	125.8	
Dry density, pcf	101.8	101.8	
Void ratio	0.6244	0.6244	
Saturation, %	95.2	100.0	

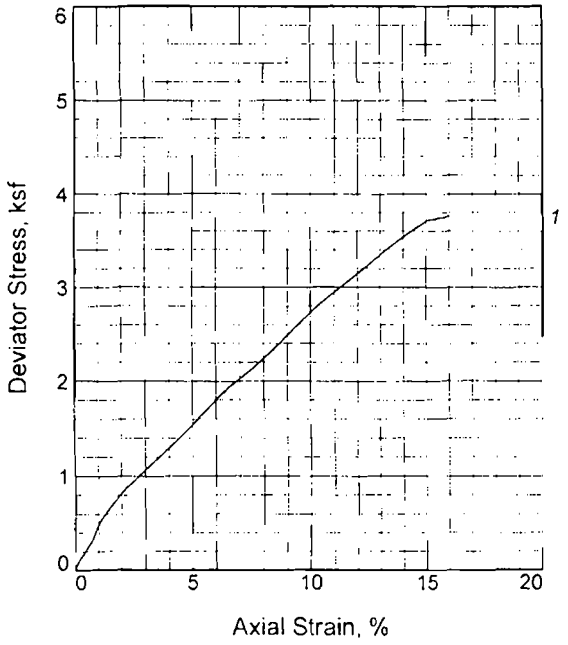
Test Readings for Specimen No. 1

Cell pressure = 103.50 psi (14.90 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.18
Fail. Stress = 1.63 ksf **at reading no.** 27

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	14.90	14.90	1.00		14.90
1	0.0100	0.00	0.0	0.2	0.00	14.90	14.90	1.00		14.90
2	0.0200	0.30	0.3	0.3	0.01	14.90	14.91	1.00		14.91
3	0.0300	0.30	0.3	0.5	0.01	14.90	14.91	1.00		14.91
4	0.0400	0.30	0.3	0.7	0.01	14.90	14.91	1.00		14.91
5	0.0500	0.30	0.3	0.8	0.01	14.90	14.91	1.00		14.91
6	0.0600	4.00	4.0	1.0	0.09	14.90	14.99	1.01		14.95
7	0.0800	7.20	7.2	1.3	0.16	14.90	15.06	1.01		14.98
8	0.1000	9.30	9.3	1.7	0.20	14.90	15.11	1.01		15.00
9	0.1200	11.20	11.2	2.0	0.24	14.90	15.15	1.02		15.03
10	0.1400	13.30	13.3	2.3	0.29	14.90	15.19	1.02		15.05
11	0.1600	15.40	15.4	2.7	0.33	14.90	15.23	1.02		15.07
12	0.1800	17.50	17.5	3.0	0.37	14.90	15.28	1.03		15.09
13	0.2000	19.60	19.6	3.3	0.42	14.90	15.32	1.03		15.11
14	0.2500	23.60	23.6	4.2	0.50	14.90	15.40	1.03		15.15
15	0.3000	27.40	27.4	5.0	0.57	14.90	15.48	1.04		15.19
16	0.3500	32.50	32.5	5.8	0.68	14.90	15.58	1.05		15.24
17	0.4000	35.80	35.8	6.7	0.74	14.90	15.64	1.05		15.27
18	0.4500	40.20	40.2	7.5	0.82	14.90	15.72	1.06		15.31
19	0.5000	45.40	45.4	8.3	0.92	14.90	15.82	1.06		15.36
20	0.5500	49.00	49.0	9.2	0.98	14.90	15.89	1.07		15.39
21	0.6000	54.90	54.9	10.0	1.09	14.90	15.99	1.07		15.45
22	0.6500	59.20	59.2	10.8	1.16	14.90	16.07	1.08		15.49
23	0.7000	63.80	63.8	11.7	1.24	14.90	16.15	1.08		15.53
24	0.7500	71.00	71.0	12.5	1.37	14.90	16.27	1.09		15.59
25	0.8000	75.60	75.6	13.3	1.45	14.90	16.35	1.10		15.63
26	0.8500	82.60	82.6	14.2	1.56	14.90	16.47	1.10		15.69
27	0.9000	86.90	86.9	15.0	1.63	14.90	16.53	1.11		15.72





Sample No.		1
Initial	Water Content,	39.2
	Dry Density, pcf	94.7
	Saturation,	139.2
	Void Ratio	0.7473
	Diameter, in.	2.89
	Height, in.	5.32
At Test	Water Content,	28.2
	Dry Density, pcf	94.7
	Saturation,	100.0
	Void Ratio	0.7473
	Diameter, in.	2.89
	Height, in.	5.32
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		14.9
Fail. Stress, ksf		3.8
Strain, %		16.0
Ult. Stress, ksf		
Strain, %		
σ_1 Failure, ksf		18.7
σ_3 Failure, ksf		14.9

Type of Test:
Unconsolidated Undrained

Sample Type: UD

Description: Silty Sand with Gravel

Specific Gravity= 2.65

Remarks: Tested by: JM/JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

Project: ALWR ESP

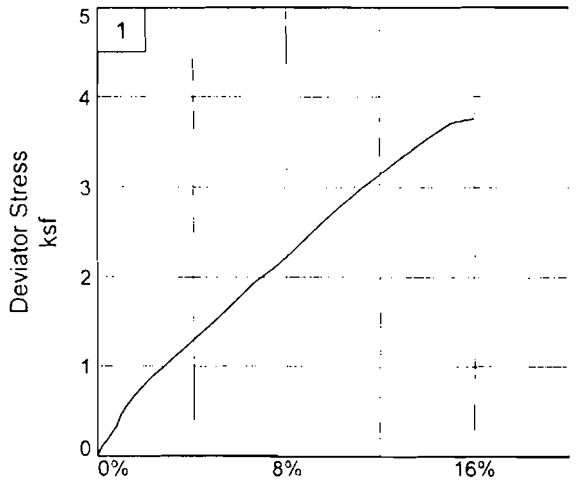
Source of Sample: B1004 **Depth:** 177.0'

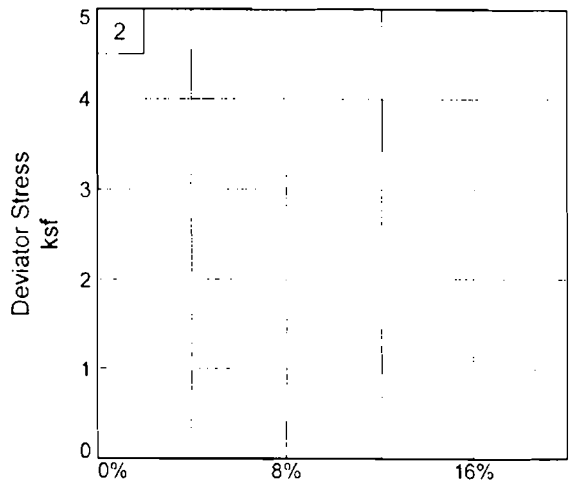
Sample Number: UD-4 Middle

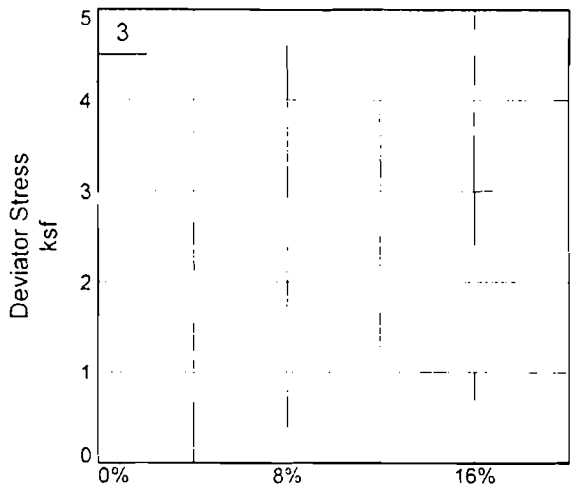
Proj. No.: 6141-05-0227 .5 **Date:**

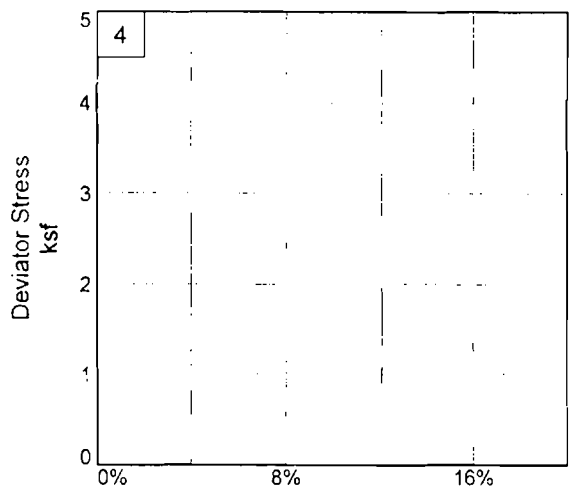
TRIAXIAL SHEAR TEST REPORT

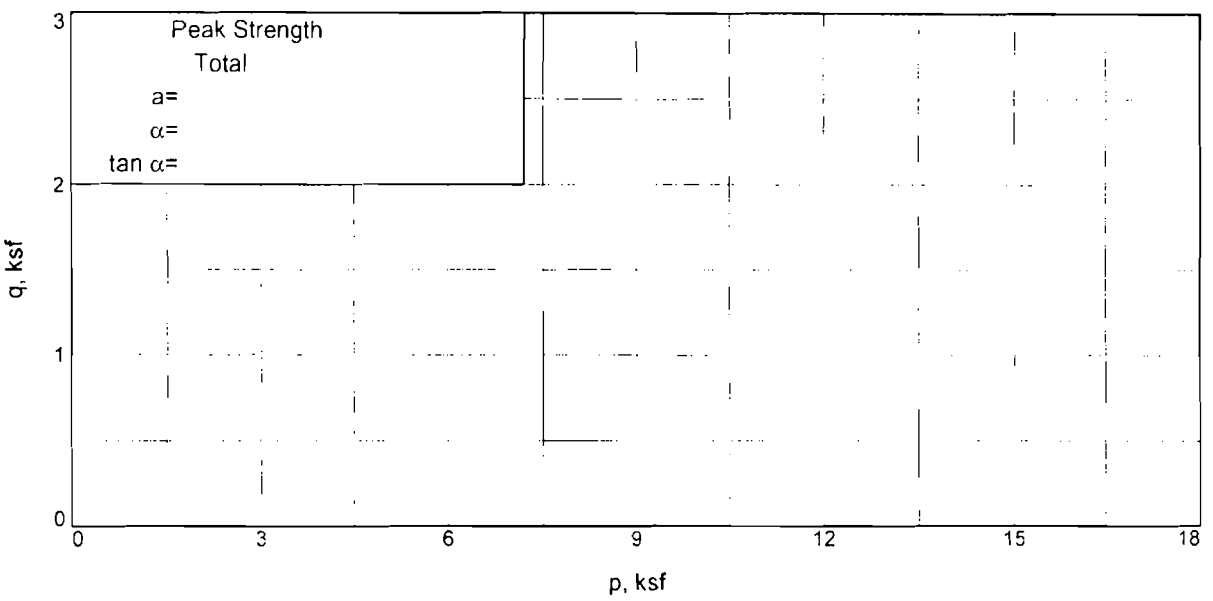
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1004 **Depth:** 177.0' **Sample Number:** UD-4 Middle

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:36 AM

Date:			
Client:	Southern Nuclear Co.		
Project:	ALWR ESP		
Project No.:	6141-05-0227.16		
Location:	B1004		
Depth:	177.0'	**Sample Number:**	UD-4 Middle
Description:	Silty Sand with Gravel		
Remarks:	Tested by: JM/JL		
	Reviewed by: PDP		
	Specific Gravity (2.65) Assumed		
Type of Sample:	UD		
Specific Gravity=2.65	**LL=**	**PL=**	**PI=**
Test Method:	COE uniform strain		

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1289.500
Moisture content: Dry soil+tare, gms.			950.000
Moisture content: Tare, gms.			85.080
Moisture, %	39.2	28.2	39.3
Moist specimen weight, gms.	1204.4		
Diameter, in.	2.89	2.89	
Area, in.²	6.54	6.54	
Height, in.	5.32	5.32	
Net decrease in height, in.		0.00	
Wet Density, pcf	131.8	121.4	
Dry density, pcf	94.7	94.7	
Void ratio	0.7473	0.7473	
Saturation, %	139.2	100.0	

Test Readings for Specimen No. 1

Cell pressure = 103.50 psi (14.90 ksf)

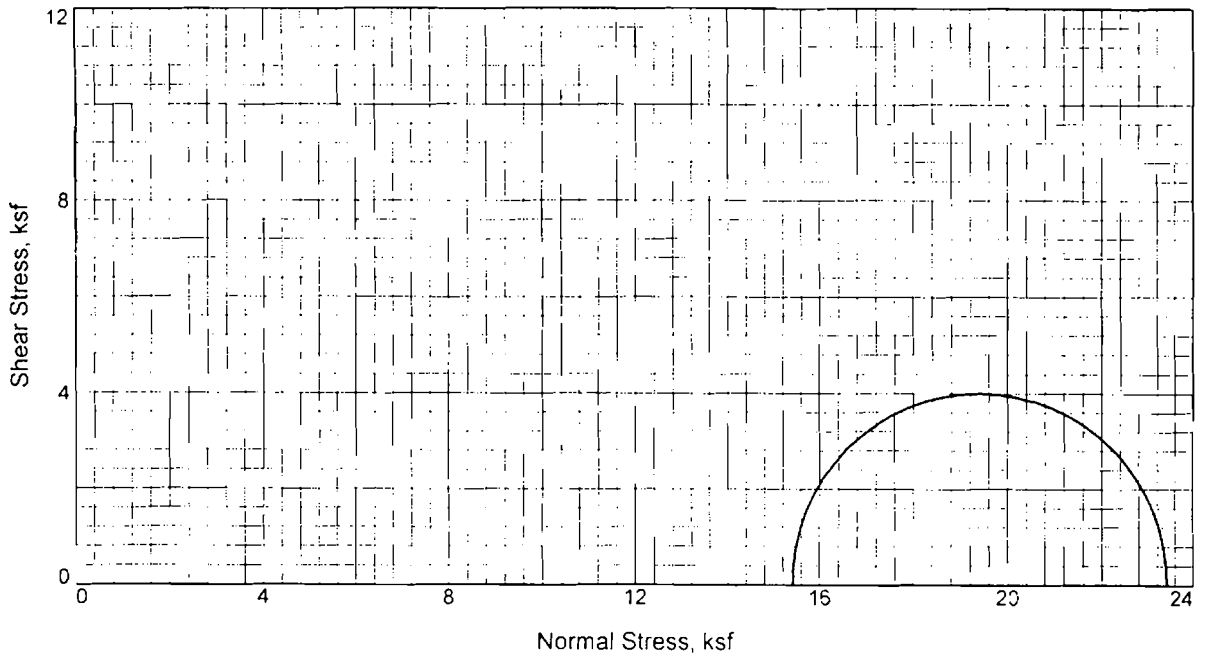
Back pressure = 0.00 psi (0.00 ksf)

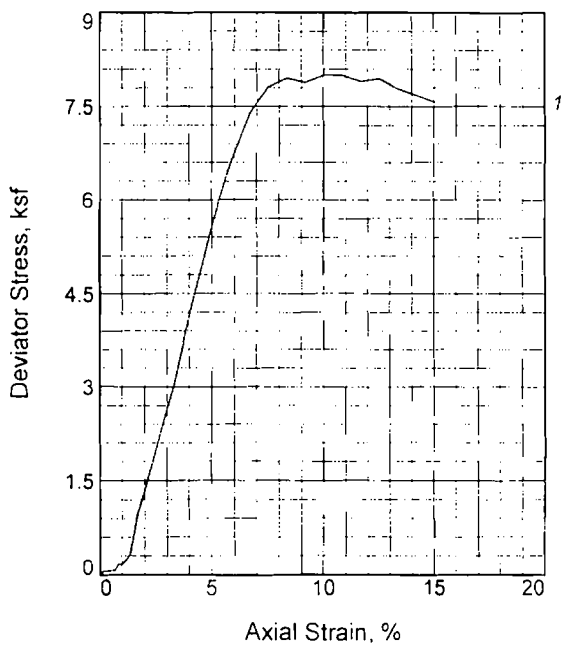
Strain rate, in./min. = 0.02

Fail. Stress = 3.76 ksf **at reading no.** 26

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	14.90	14.90	1.00		14.90
1	0.0100	5.20	5.2	0.2	0.11	14.90	15.02	1.01		14.96
2	0.0200	7.90	7.9	0.4	0.17	14.90	15.08	1.01		14.99
3	0.0300	11.40	11.4	0.6	0.25	14.90	15.15	1.02		15.03
4	0.0400	15.10	15.1	0.8	0.33	14.90	15.23	1.02		15.07
5	0.0500	20.60	20.6	0.9	0.45	14.90	15.35	1.03		15.13
6	0.0600	24.50	24.5	1.1	0.53	14.90	15.44	1.04		15.17
7	0.0800	31.00	31.0	1.5	0.67	14.90	15.58	1.05		15.24
8	0.1000	36.30	36.3	1.9	0.78	14.90	15.69	1.05		15.30
9	0.1200	41.10	41.1	2.3	0.88	14.90	15.79	1.06		15.35
10	0.1400	45.40	45.4	2.6	0.97	14.90	15.88	1.07		15.39
11	0.1600	49.90	49.9	3.0	1.07	14.90	15.97	1.07		15.44
12	0.1800	54.20	54.2	3.4	1.15	14.90	16.06	1.08		15.48
13	0.2000	58.50	58.5	3.8	1.24	14.90	16.14	1.08		15.52
14	0.2500	69.90	69.9	4.7	1.47	14.90	16.37	1.10		15.64
15	0.3000	82.00	82.0	5.6	1.70	14.90	16.61	1.11		15.76
16	0.3500	94.50	94.5	6.6	1.94	14.90	[illegible]	1.13		15.88
17	0.4000	104.50	104.5	7.5	2.13	14.90	17.03	1.14		15.97
18	0.4500	116.50	116.5	8.5	2.35	14.90	17.25	1.16		16.08
19	0.5000	129.70	129.7	9.4	2.59	14.90	17.49	1.17		16.20
20	0.5500	142.40	142.4	10.3	2.81	14.90	17.71	1.19		16.31
21	0.6000	153.80	153.8	11.3	3.00	14.90	17.91	1.20		16.41
22	0.6500	165.00	165.0	12.2	3.19	14.90	18.09	1.21		16.50
23	0.7000	176.80	176.8	13.2	3.38	14.90	[illegible]	1.23		16.59
24	0.7500	188.10	188.1	14.1	3.56	14.90	18.46	1.24		16.68
25	0.8000	198.70	198.7	15.0	3.72	14.90	18.62	1.25		16.76
26	0.8500	203.50	203.5	16.0	3.76	14.90	18.67	1.25		16.79





Sample No.		1
Initial	Water Content,	28.4
	Dry Density, pcf	93.9
	Saturation,	98.7
	Void Ratio	0.7626
	Diameter, in.	2.83
	Height, in.	5.99
At Test	Water Content,	28.8
	Dry Density, pcf	93.9
	Saturation,	100.0
	Void Ratio	0.7626
	Diameter, in.	2.83
	Height, in.	5.99
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		15.4
Fail. Stress, ksf		8.0
Ult. Stress, ksf		
σ_1 Failure, ksf		23.4
σ_3 Failure, ksf		15.4

Type of Test:
Unconsolidated Undrained
Sample Type: UD
Description: Silty Sand with Gravel

LL= 34 **PL=** 27 **PI=** 7
Specific Gravity= 2.65
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

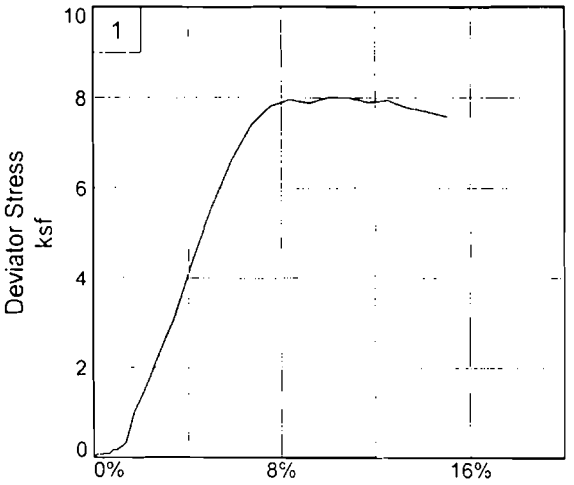
Client: Southern Nuclear Co.

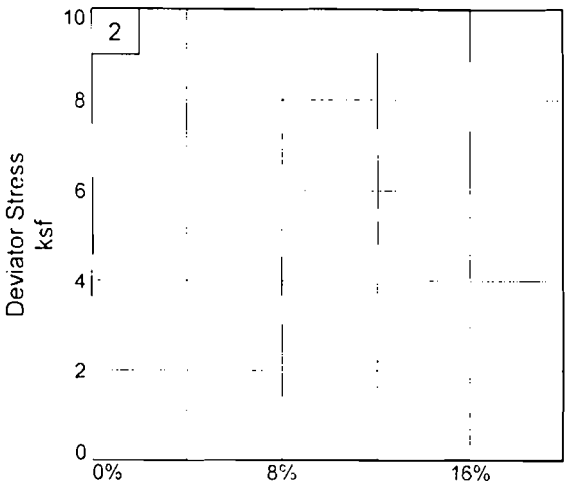
Project: AP1000 ESP

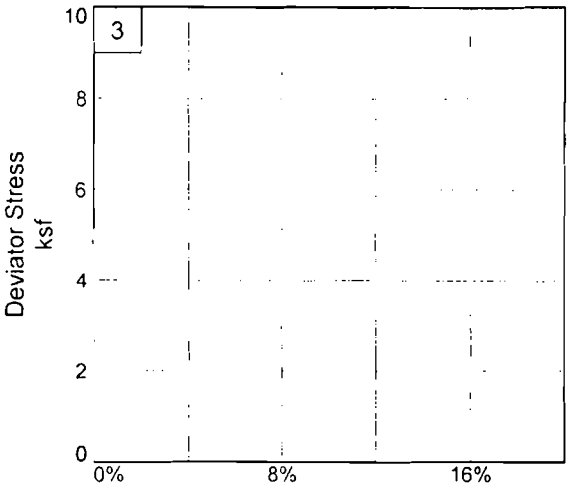
Source of Sample: B1004 **Depth:** 188.5'
Sample Number: UD-5
Proj. No.: 5147-05-0227-16 **Date:**

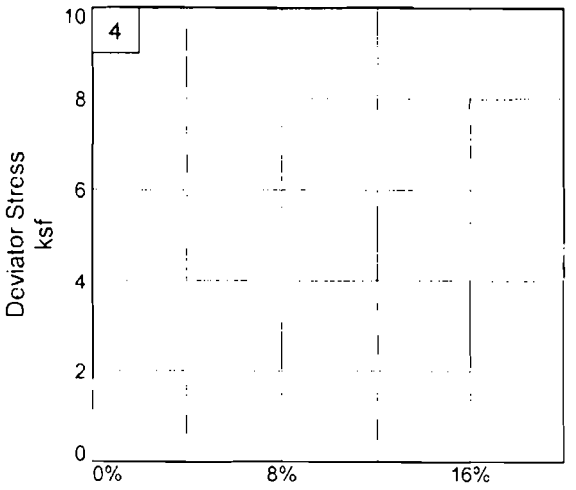
TRIAXIAL SHEAR TEST REPORT

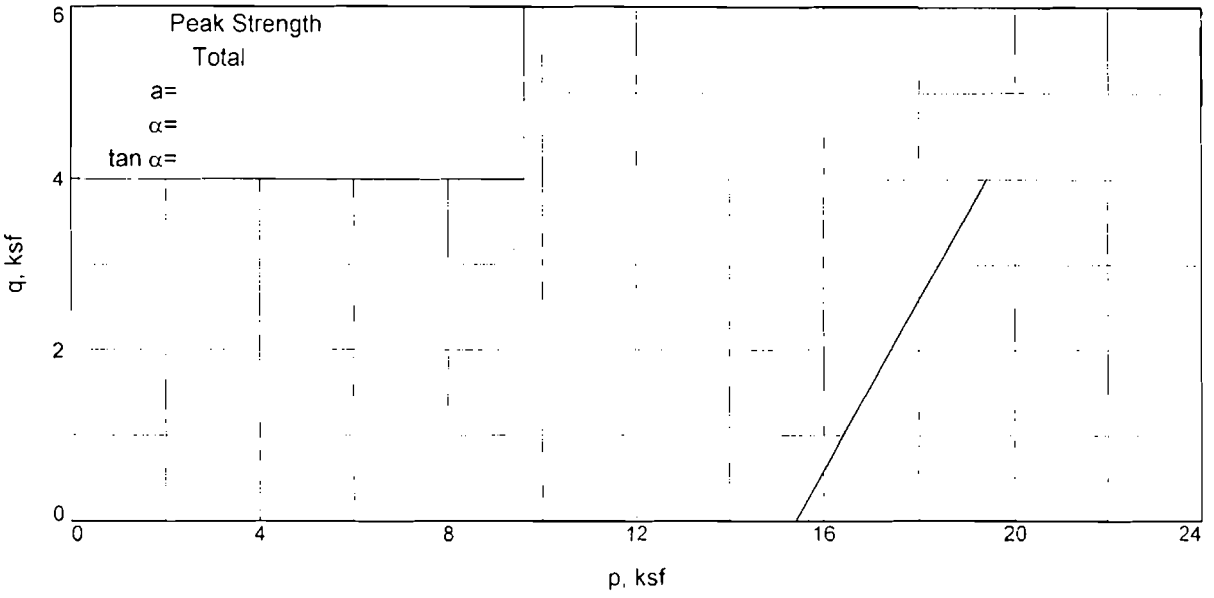
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1004 **Depth:** 188.5' **Sample Number:** UD-5

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

1/5/2006
10:39 AM

Date:
Client: Southern Nuclear Co.
Project: ALWR ESP
Project No.: 6141-05-0227.16
Location: B1004
Depth: 188.5' **Sample Number:** UD-5
Description: Silty Sand with Gravel
Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed
Type of Sample: UD
Specific Gravity=2.65 **LL=**34 **PL=**27 **PI=**7
Test Method: COE uniform strain

Parameters for Specimen No. 1

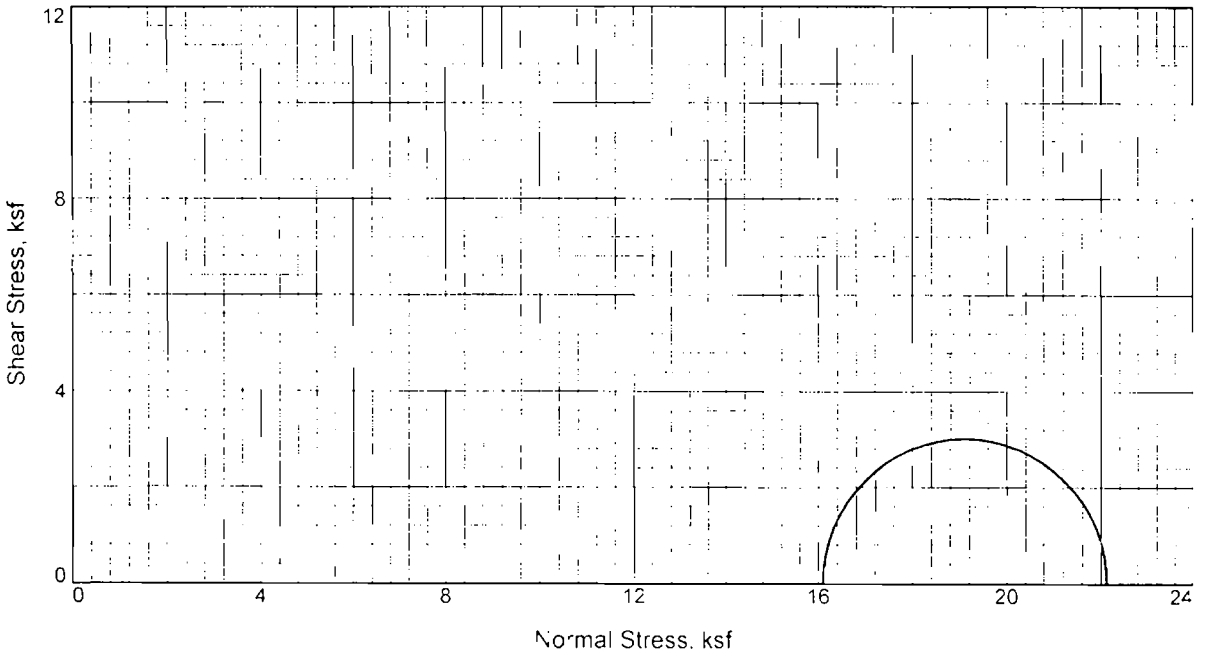
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1288.500
Moisture content: Dry soil+tare, gms.			1024.000
Moisture content: Tare, gms.			93.200
Moisture, %	28.4	28.8	28.4
Moist specimen weight, gms.	1195.3		
Diameter, in.	2.83	2.83	
Area, in.^{2}	6.31	6.31	
Height, in.	5.99	5.99	
Net decrease in height, in.		0.00	
Wet Density, pcf	120.5	120.9	
Dry density, pcf	93.9	93.9	
Void ratio	0.7626	0.7626	
Saturation, %	98.7	100.0	

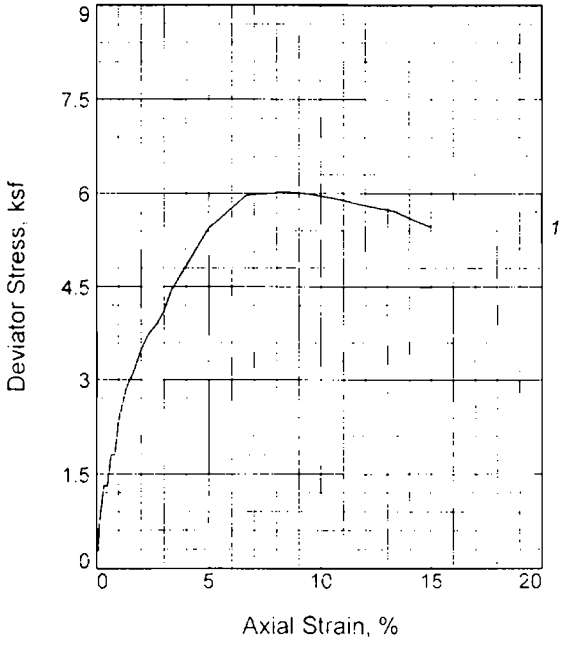
Test Readings for Specimen No. 1

Cell pressure = 107.00 psi (15.41 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.02
Fail. Stress = 8.00 ksf **at reading no.** 21

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	15.41	15.41	1.00		15.41
1	0.0100	3.00	3.0	0.2	0.07	15.41	15.48	1.00		15.44
2	0.0200	3.00	3.0	0.3	0.07	15.41	15.48	1.00		15.44
3	0.0300	3.50	3.5	0.5	0.08	15.41	15.49	1.01		15.45
4	0.0400	3.50	3.5	0.7	0.08	15.41	15.49	1.01		15.45
5	0.0500	7.60	7.6	0.8	0.17	15.41	15.58	1.01		15.49
6	0.0600	7.60	7.6	1.0	0.17	15.41	15.58	1.01		15.49
7	0.0800	13.80	13.8	1.3	0.31	15.41	15.72	1.02		15.56
8	0.1000	42.70	42.7	1.7	0.96	15.41	16.37	1.06		15.89
9	0.1200	59.60	59.6	2.0	1.33	15.41	16.74	1.09		16.07
10	0.1400	78.50	78.5	2.3	1.75	15.41	17.16	1.11		16.28
11	0.1600	99.50	99.5	2.7	2.21	15.41	17.62	1.14		16.51
12	0.1800	119.80	119.8	3.0	2.65	15.41	18.06	1.17		16.73
13	0.2000	138.80	138.8	3.3	3.06	15.41	18.47	1.20		16.94
14	0.2500	201.60	201.6	4.2	4.41	15.41	19.81	1.29		17.61
15	0.3000	258.70	258.7	5.0	5.61	15.41	21.01	1.36		18.21
16	0.3500	308.10	308.1	5.8	6.62	15.41	22.03	1.43		18.72
17	0.4000	347.40	347.4	6.7	7.40	15.41	22.80	1.48		19.11
18	0.4500	370.30	370.3	7.5	7.81	15.41	23.22	1.51		19.31
19	0.5000	380.70	380.7	8.4	7.96	15.41	23.37	1.52		19.39
20	0.5500	380.80	380.8	9.2	7.89	15.41	23.30	1.51		19.35
21	0.6000	390.00	390.0	10.0	8.00	15.41	23.41	1.52		19.41
22	0.6500	393.40	393.4	10.9	8.00	15.41	23.41	1.52		19.41
23	0.7000	392.30	392.3	11.7	7.90	15.41	23.31	1.51		19.36
24	0.7500	398.20	398.2	12.5	7.95	15.41	23.35	1.52		19.38
25	0.8000	393.90	393.9	13.4	7.78	15.41	23.19	1.51		19.30
26	0.8500	392.70	392.7	14.2	7.69	15.41	23.09	1.50		19.25
27	0.9000	391.00	391.0	15.0	7.58	15.41	22.99	1.49		19.20





Sample No.		1
Initial	Water Content,	21.7
	Dry Density, pcf	105.3
	Saturation,	100.8
	Void Ratio	0.5708
	Diameter, in.	2.88
	Height, in.	6.01
At Test	Water Content,	21.5
	Dry Density, pcf	105.3
	Saturation,	100.0
	Void Ratio	0.5708
	Diameter, in.	2.88
	Height, in	6.01
Strain rate, in./min.		0.02
Back Pressure, ksf		0.0
Cell Pressure, ksf		16.1
Fail. Stress, ksf		6.0
Ult. Stress, ksf		
σ_1 Failure, ksf		22.1
σ_3 Failure, ksf		16.1

Type of Test:
Unconsolidated Undrained

Sample Type: UD

Description: Clayey Sand

LL= 31 **PL=** 21 **PI=** 10

Specific Gravity= 2.65

Remarks: Tested by: JL
Reviewed by: PDP
Specific Gravity (2.65) Assumed

Client: Southern Nuclear Co.

Project: ALWR ESP

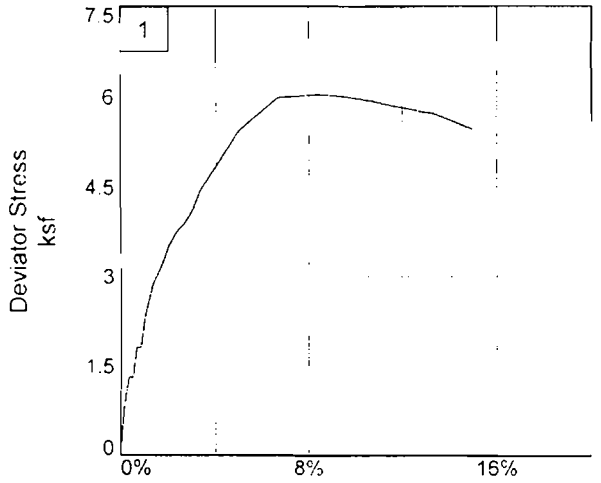
Source of Sample: B1004 **Depth:** 198.5'

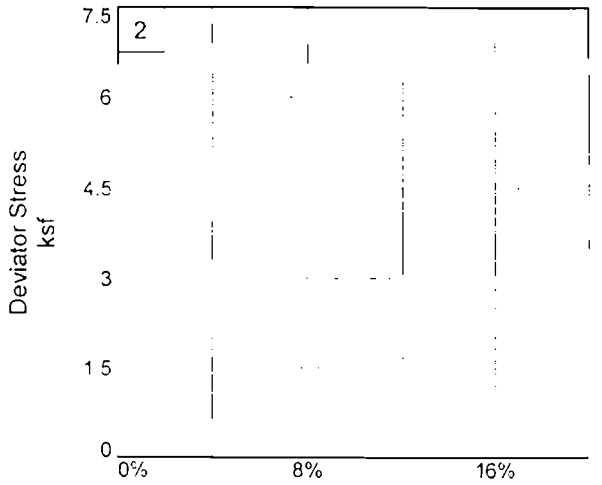
Sample Number: UD-6

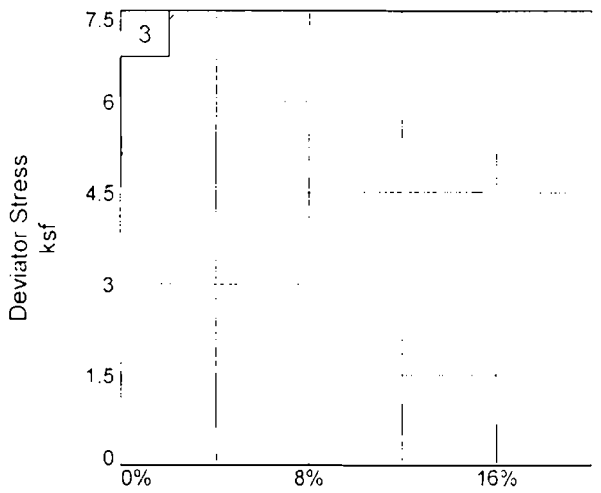
Proj. No.: 6141-05-0227 16 **Date:**

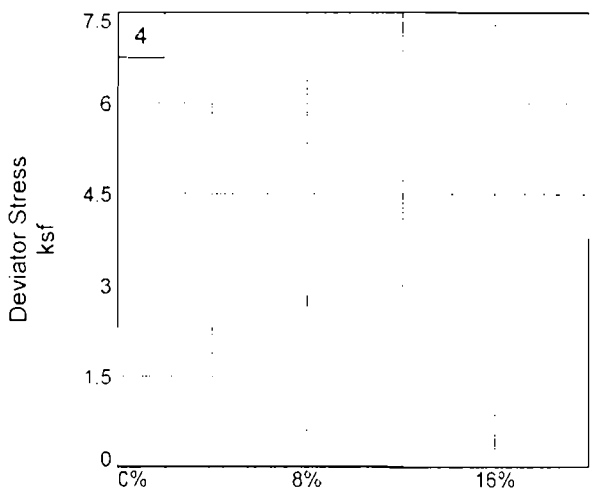
TRIAXIAL SHEAR TEST REPORT

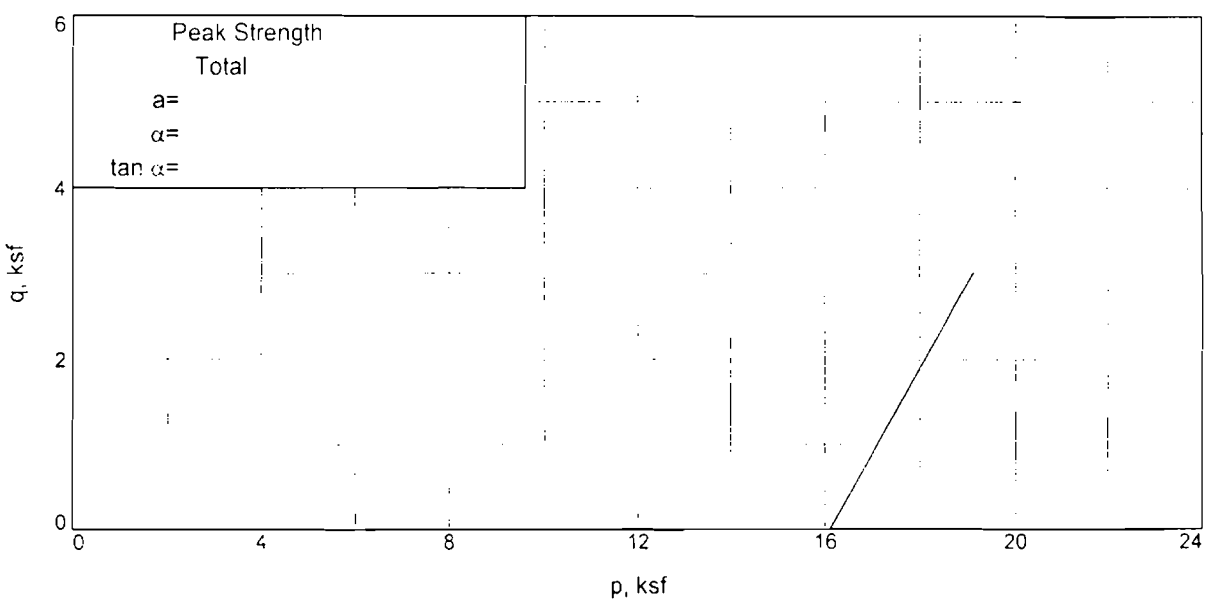
MACTEC ENGINEERING AND CONSULTING, INC.











Client: Southern Nuclear Co.

Project: ALWR ESP

Source of Sample: B1004 **Depth:** 198.5' **Sample Number:** UD-6

Project No.: 6141-05-0227.16

MACTEC Engineering and Consulting, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

2/10/2006
10:26 AM

Date:			
Client:	Southern Nuclear Co.		
Project:	ALWR ESP		
Project No.:	6141-05-0227.16		
Location:	B1004		
Depth:	198.5'	**Sample Number:**	UD-6
Description:	Clayey Sand		
Remarks:	Tested by: JL		
	Reviewed by: PDP		
	Specific Gravity (2.65) Assumed		
Type of Sample:	UD		
Specific Gravity=2.65	**LL=**31	**PL=**21	**PI=**10
Test Method:	COE uniform strain		

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.			1398.600
Moisture content: Dry soil+tare, gms.			1164.300
Moisture content: Tare, gms.			85.330
Moisture, %	21.7	21.5	21.7
Moist specimen weight, gms.	1313.3		
Diameter, in.	2.88	2.88	
Area, in.^{2}	6.49	6.49	
Height, in.	6.01	6.01	
Net decrease in height, in.		0.00	
Wet Density, pcf	128.2	128.0	
Dry density, pcf	105.3	105.3	
Void ratio	0.5708	0.5708	
Saturation, %	100.8	100.0	

Test Readings for Specimen No. 1

Cell pressure = 111.80 psi (16.10 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.02

Fail. Stress = 6.02 ksf **at reading no.** 19

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.50	0.0	0.0	0.00	16.10	16.10	1.00		16.10
1	0.0100	37.40	36.9	0.2	0.82	16.10	16.92	1.05		16.51
2	0.0200	59.60	59.1	0.3	1.31	16.10	17.41	1.08		16.75
3	0.0300	59.60	59.1	0.5	1.30	16.10	17.40	1.08		16.75
4	0.0400	82.50	82.0	0.7	1.81	16.10	17.91	1.11		17.00
5	0.0500	82.50	82.0	0.8	1.80	16.10	17.90	1.11		17.00
6	0.0600	106.60	106.1	1.0	2.33	16.10	18.43	1.14		17.26
7	0.0800	131.00	130.5	1.3	2.86	16.10	18.96	1.18		17.53
8	0.1000	144.80	144.3	1.7	3.15	16.10	19.25	1.20		17.67
9	0.1200	161.40	160.9	2.0	3.50	16.10	19.60	1.22		17.85
10	0.1400	173.30	172.8	2.3	3.74	16.10	19.84	1.23		17.97
11	0.1600	180.70	180.2	2.7	3.89	16.10	19.99	1.24		18.04
12	0.1800	191.40	190.9	3.0	4.11	16.10	20.21	1.26		18.15
13	0.2000	207.30	206.8	3.3	4.43	16.10	20.53	1.28		18.32
14	0.2500	232.60	232.1	4.2	4.93	16.10	21.03	1.31		18.57
15	0.3000	258.80	258.3	5.0	5.44	16.10	21.54	1.34		18.82
16	0.3500	273.70	273.2	5.8	5.71	16.10	21.81	1.35		18.95
17	0.4000	288.90	288.4	6.7	5.97	16.10	22.07	1.37		19.09
18	0.4500	292.60	292.1	7.5	5.99	16.10	22.09	1.37		19.10
19	0.5000	296.60	296.1	8.3	6.02	16.10	22.12	1.37		19.11
20	0.5500	298.30	297.8	9.1	6.00	16.10	22.10	1.37		19.10
21	0.6000	298.90	298.4	10.0	5.96	16.10	22.06	1.37		19.08
22	0.6500	298.90	298.4	10.8	5.90	16.10	22.00	1.37		19.05
23	0.7000	298.00	297.5	11.6	5.83	16.10	21.93	1.36		19.01
24	0.7500	297.70	297.2	12.5	5.77	16.10	21.87	1.36		18.98
25	0.8000	297.70	297.2	13.3	5.72	16.10	21.81	1.35		18.96
26	0.8500	293.90	293.4	14.1	5.59	16.10	21.69	1.35		18.89
27	0.9000	290.10	289.6	15.0	5.46	16.10	21.56	1.34		18.83

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1002 UD-1
Project Name:	Southern ALWR ESP Vogtle	Depth:	92.0'
Tested By:	JM	Reviewed By:	JL
Date:	10/07/05	Date:	10/17/05
Job Record #:	00357	Lab ID#:	004390

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	6.014			Tare No.	WB-2	
2	6.014	Top	2.880	Tare Weight	110.60	*grams*
3	6.014	Bottom	2.880	Wet Weight + Tare	326.14	*grams*
Average	6.014	Average	2.880	Dry Weight + Tare	252.35	*grams*
				Moisture Content	52.06	*%*

Total Weight of Soil + Tube Section	1066.08	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.35	*lbs*
Volume of Sample	0.023	ft^3

RESULT SUMMARY

Moisture Content	**52.06**	*%*
Wet Density	**103.6**	*pcf*
Dry Density	**68.1**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.59**	

MACTEC

TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1002 UD-2
Project Name:	Southern ALWR ESP Vogtle	Depth:	103.5'
Tested By:	JM	Reviewed By:	JL
Date:	10/06/05	Date:	10/17/05
Job Record #:	00357	Lab ID#:	004391

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	6.095			Tare No.	WB-21	
2	6.095	Top	2.871	Tare Weight	113.02	*grams*
3	6.096	Bottom	2.872	Wet Weight + Tare	188.93	*grams*
Average	6.095	Average	2.872	Dry Weight + Tare	161.51	*grams*
				Moisture Content	56.55	*%*

Total Weight of Soil + Tube Section	1185.58	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.61	*lbs*
Volume of Sample	0.023	ft^3

RESULT SUMMARY

Moisture Content	**56.55**	*%*
Wet Density	**114.3**	***pcf***
Dry Density	**73.0**	***pcf***
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.56**	

MACTEC

TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1002 UD-3
Project Name:	Southern ALWR ESP Vogtle	Depth:	113.5'
Tested By:	JM	Reviewed By:	JL
Date:	10/06/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004392

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	6.014			Tare No.	WB-10	
2	6.015	Top	2.870	Tare Weight	109.01	*grams*
3	6.014	Bottom	2.870	Wet Weight + Tare	227.16	*grams*
Average	6.014	Average	2.870	Dry Weight + Tare	203.18	*grams*
				Moisture Content	25.46	*%*

Total Weight of Soil + Tube Section	1357.68	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.99	*lbs*
Volume of Sample	0.023	ft^3

RESULT SUMMARY

Moisture Content	**25.46**	*%*
Wet Density	**132.8**	*pcf*
Dry Density	**105.9**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.36**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1002 UD-4
Project Name:	Southern ALWR ESP	Depth:	123.50'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004393

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	3.879			Tare No.	WB-22	
2	3.879	Top	2.848	Tare Weight	109.62	*grams*
3	3.880	Bottom	2.848	Wet Weight + Tare	431.99	*grams*
Average	3.879	Average	2.848	Dry Weight + Tare	393.57	*grams*
				Moisture Content	13.53	*%*

Total Weight of Soil + Tube Section	910.27	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.01	*lbs*
Volume of Sample	0.014	ft^3

RESULT SUMMARY

Moisture Content	**13.53**	*%*
Wet Density	**140.2**	***pcf***
Dry Density	**123.5**	***pcf***
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.25**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1002 UD-5
Project Name:	Southern ALWR ESP	Depth:	133.50'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004394

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	5.999			Tare No.	SS-56	
2	6.000	Top	2.874	Tare Weight	142.55	*grams*
3	5.999	Bottom	2.874	Wet Weight + Tare	243.42	*grams*
Average	5.999	Average	2.874	Dry Weight + Tare	220.96	*grams*
				Moisture Content	28.64	*%*

Total Weight of Soil + Tube Section	1206.37	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.66	*lbs*
Volume of Sample	0.023	ft^3

RESULT SUMMARY

Moisture Content	**28.64**	*%*
Wet Density	**118.0**	*pcf*
Dry Density	**91.7**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.45**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 17-jar sample
Project Name:	Southern ALWR ESP	Depth:	88.0'
Tested By:	JM	Reviewed By:	JFL
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004436

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1				Tare No.		
2		Top		Tare Weight		*grams*
3		Bottom		Wet Weight + Tare		*grams*
Average	0.000	Average	0.000	Dry Weight + Tare		*grams*
				Moisture Content	#DIV/0!	*%*

*No Unit Weight Obtained from Jar Sample-not enough material in a jar sample

Total Weight of Soil + Tube Section		*grams*
Weight of Clean, Dry Tube Section		*grams*
Wet Weight of Soil	2.66	*lbs*
Volume of Sample	0.000	ft^3

RESULT SUMMARY

Moisture Content	**#DIV/0!**	*%*
Wet Density	**#DIV/0!**	*pcf*
Dry Density	**#DIV/0!**	*pcf*
Specific Gravity		*(assumed)*
Porosity	**#DIV/0!**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 UD-1
Project Name:	Southern ALWR ESP	Depth:	93.0'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004408

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	5.998			Tare No.	LS-54	
2	5.999	Top	2.853	Tare Weight	88.24	*grams*
3	5.999	Bottom	2.851	Wet Weight + Tare	203.44	*grams*
Average	5.998	Average	2.852	Dry Weight + Tare	176.45	*grams*
				Moisture Content	30.60	*%*

Total Weight of Soil + Tube Section	1164.70	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.57	*lbs*
Volume of Sample	0.022	ft^3

RESULT SUMMARY

Moisture Content	**30.60**	*%*
Wet Density	**115.7**	*pcf*
Dry Density	**88.6**	*pcf*
Specific Gravity	**2.65**	*(assumed)*
Porosity	**0.46**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 22-Core
Project Name:	Southern ALWR ESP	Depth:	104.70'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004437

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	3.750			Tare No.	WB-12	
2	3.750	Top	2.237	Tare Weight	113.14	*grams*
3	3.749	Bottom	2.238	Wet Weight + Tare	215.72	*grams*
Average	3.749	Average	2.237	Dry Weight + Tare	186.10	*grams*
				Moisture Content	40.60	%

Total Weight of Soil + Tube Section	431.70	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	0.95	*lbs*
Volume of Sample	0.009	ft^3

RESULT SUMMARY

Moisture Content	**40.60**	*%*
Wet Density	**111.5**	*pcf*
Dry Density	**79.3**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.52**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 27-Core
Project Name:	Southern ALWR ESP	Depth:	121.70'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004438

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	4.887			Tare No.	WB-8	
2	4.886	Top	2.538	Tare Weight	111.80	*grams*
3	4.887	Bottom	2.537	Wet Weight + Tare	208.88	*grams*
Average	4.887	Average	2.537	Dry Weight + Tare	187.67	*grams*
				Moisture Content	27.96	*%*

Total Weight of Soil + Tube Section	795.39	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	1.75	*lbs*
Volume of Sample	0.014	ft^3

RESULT SUMMARY

Moisture Content	**27.96**	*%*
Wet Density	**122.5**	***pcf***
Dry Density	**95.8**	***pcf***
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.42**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 31-Core
Project Name:	Southern ALWR ESP	Depth:	141.70'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004439

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	4.797			Tare No.	WB-5	
2	4.799	Top	2.189	Tare Weight	112.67	*grams*
3	4.798	Bottom	2.189	Wet Weight + Tare	249.80	*grams*
Average	4.798	Average	2.189	Dry Weight + Tare	221.63	*grams*
				Moisture Content	25.85	%

Total Weight of Soil + Tube Section	597.90	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	1.32	*lbs*
Volume of Sample	0.010	ft^3

RESULT SUMMARY

Moisture Content	**25.85**	*%*
Wet Density	**126.1**	*pcf*
Dry Density	**100.2**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.39**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 36-Core
Project Name:	Southern ALWR ESP	Depth:	165.70'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004440

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	3.740			Tare No.	WB-20	
2	3.740	Top	2.292	Tare Weight	109.05	*grams*
3	3.741	Bottom	2.307	Wet Weight + Tare	296.60	*grams*
Average	3.740	Average	2.300	Dry Weight + Tare	260.81	*grams*
				Moisture Content	23.58	*%*

Total Weight of Soil + Tube Section	496.70	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	1.09	*lbs*
Volume of Sample	0.009	ft^3

RESULT SUMMARY

Moisture Content	**23.58**	*%*
Wet Density	**121.7**	*pcf*
Dry Density	**98.5**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.40**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 66-Core
Project Name:	Southern ALWR ESP	Depth:	315.70'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004445

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	4.271			Tare No.	M-10	
2	4.270	Top	2.269	Tare Weight	53.05	*grams*
3	4.271	Bottom	2.186	Wet Weight + Tare	292.59	*grams*
Average	4.270	Average	2.227	Dry Weight + Tare	235.91	*grams*
				Moisture Content	31.00	*%*

Total Weight of Soil + Tube Section	522.01	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	1.15	*lbs*
Volume of Sample	0.010	ft^3

RESULT SUMMARY

Moisture Content	**31.00**	*%*
Wet Density	**119.4**	*pcf*
Dry Density	**91.2**	*pcf*
Specific Gravity	**2.65**	*(assumed)*
Porosity	**0.45**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1003 73-Core
Project Name:	Southern ALWR ESP	Depth:	350.70'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004446

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	4.148			Tare No.	SS-42	
2	4.155	Top	2.285	Tare Weight	141.69	*grams*
3	4.158	Bottom	2.285	Wet Weight + Tare	326.97	*grams*
Average	4.154	Average	2.285	Dry Weight + Tare	294.47	*grams*
				Moisture Content	21.27	*%*

Total Weight of Soil + Tube Section	573.85	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	1.26	*lbs*
Volume of Sample	0.010	ft^3

RESULT SUMMARY

Moisture Content	**21.27**	*%*
Wet Density	**128.3**	*pcf*
Dry Density	**105.8**	*pcf*
Specific Gravity	**2.65**	*(assumed)*
Porosity	**0.36**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1004 UD-1
Project Name:	Southern ALWR ESP Vogtle	Depth:	144.0'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004406

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	5.998			Tare No.	SS-54	
2	6.000	Top	2.859	Tare Weight	143.36	*grams*
3	5.998	Bottom	2.859	Wet Weight + Tare	214.20	*grams*
Average	5.998	Average	2.859	Dry Weight + Tare	192.35	*grams*
				Moisture Content	44.60	*%*

Total Weight of Soil + Tube Section	1063.02	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.34	*lbs*
Volume of Sample	0.022	ft^3

RESULT SUMMARY

Moisture Content	**44.60**	*%*
Wet Density	**105.1**	*pcf*
Dry Density	**72.7**	*pcf*
Specific Gravity	**2.65**	*(assumed)*
Porosity	**0.56**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1004 UD-2
Project Name:	Southern ALWR ESP Vogtle	Depth:	153.5'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004407

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	6.008			Tare No.	LS-59	
2	6.008	Top	2.857	Tare Weight	87.95	*grams*
3	6.008	Bottom	2.856	Wet Weight + Tare	221.10	*grams*
Average	6.008	Average	2.856	Dry Weight + Tare	190.31	*grams*
				Moisture Content	30.08	%

Total Weight of Soil + Tube Section	1205.47	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.66	*lbs*
Volume of Sample	0.022	ft^3

RESULT SUMMARY

Moisture Content	**30.08**	*%*
Wet Density	**119.2**	*pcf*
Dry Density	**91.6**	*pcf*
Specific Gravity	**2.65**	*(assumed)*
Porosity	**0.45**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1004 UD-3
Project Name:	Southern ALWR ESP	Depth:	163.50'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004450

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	5.972			Tare No.	CS-68	
2	5.980	Top	2.879	Tare Weight	88.77	*grams*
3	5.983	Bottom	2.880	Wet Weight + Tare	238.67	*grams*
Average	5.978	Average	2.879	Dry Weight + Tare	208.55	*grams*
				Moisture Content	25.15	*%*

Total Weight of Soil + Tube Section	1200.19	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.64	*lbs*
Volume of Sample	0.023	ft^3

RESULT SUMMARY

Moisture Content	**25.15**	*%*
Wet Density	**117.4**	***pcf***
Dry Density	**93.8**	***pcf***
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.43**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1004 UD-4
Project Name:	Southern ALWR ESP	Depth:	177.0'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004451

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	6.002			Tare No.	CS-42	
2	6.002	Top	2.880	Tare Weight	86.90	*grams*
3	6.002	Bottom	2.883	Wet Weight + Tare	192.69	*grams*
Average	6.002	Average	2.882	Dry Weight + Tare	174.50	*grams*
				Moisture Content	20.76	*%*

Total Weight of Soil + Tube Section	1282.41	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.82	*lbs*
Volume of Sample	0.023	ft^3

RESULT SUMMARY

Moisture Content	**20.76**	*%*
Wet Density	**124.7**	***pcf***
Dry Density	**103.3**	***pcf***
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.38**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1004 UD-5
Project Name:	Southern ALWR ESP	Depth:	188.5'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004452

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	5.985			Tare No.	CS-49	
2	5.986	Top	2.836	Tare Weight	87.84	*grams*
3	5.985	Bottom	2.836	Wet Weight + Tare	203.39	*grams*
Average	5.985	Average	2.836	Dry Weight + Tare	177.43	*grams*
				Moisture Content	28.98	*%*

Total Weight of Soil + Tube Section	1195.30	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.63	*lbs*
Volume of Sample	0.022	ft^3

RESULT SUMMARY

Moisture Content	**28.98**	*%*
Wet Density	**120.4**	*pcf*
Dry Density	**93.3**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.44**	

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TP-4: UNIT WEIGHT OF SAMPLE

Project No.:	6141-05-0227.16	Sample:	B-1004 UD-6
Project Name:	Southern ALWR ESP	Depth:	198.5'
Tested By:	JM	Reviewed By:	SP
Date:	10/17/05	Date:	10/21/05
Job Record #:	00357	Lab ID#:	004453

Total Sample Height, *inches*		Inside Diameter of Cut Tube, *inches*		Moisture Content per ASTM D 2216		
1	6.012			Tare No.	CS-55	
2	6.012	Top	2.875	Tare Weight	90.91	*grams*
3	6.012	Bottom	2.875	Wet Weight + Tare	196.38	*grams*
Average	6.012	Average	2.875	Dry Weight + Tare	174.47	*grams*
				Moisture Content	26.22	*%*

Total Weight of Soil + Tube Section	1313.26	*grams*
Weight of Clean, Dry Tube Section	0.00	*grams*
Wet Weight of Soil	2.89	*lbs*
Volume of Sample	0.023	ft^3

RESULT SUMMARY

Moisture Content	**26.22**	*%*
Wet Density	**128.1**	*pcf*
Dry Density	**101.5**	*pcf*
Specific Gravity	**2.65**	***(assumed)***
Porosity	**0.39**	

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