SSCL-SR-1107

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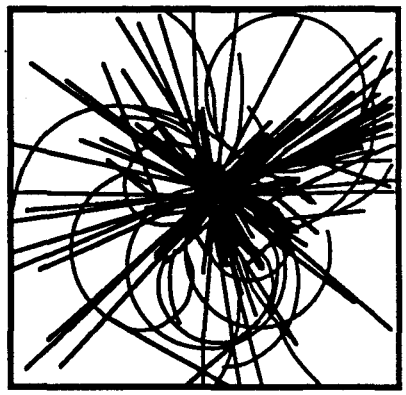
Project No. 87-888-0017

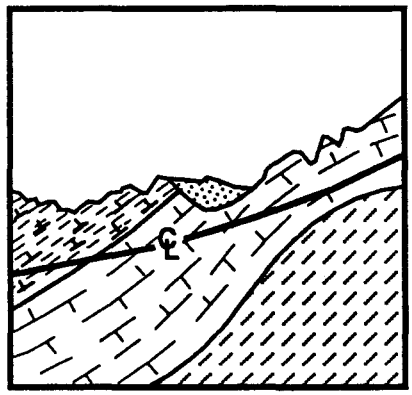
Report No. SSC-GR-48

July 1990

GR-48

Data Report for Corehole BE 6





Prepared by: The Earth Technology Corporation
Long Beach, California

Prepared for: RTK a joint venture
Oakland, California

FOREWORD

The goal of the geotechnical studies at the Texas Superconducting Super Collider (SSC) site is to allow the geologist and engineer to build their level of knowledge and confidence about the geologic structures and geotechnical properties of the site materials to the point at which there remains only a realistically small risk of encountering geotechnical conditions during construction that would significantly increase construction costs or delay construction schedules. To do this, a characterization program has been designed to meet the following objectives:

- To confirm the site's suitability and optimize the ring location (the "footprint") and hall positions on the ring
- To provide data for a preliminary structural design
- To provide a rational framework within which construction contracts and schedules can be formulated
- To maximize the use of the site-specific data already gathered by the proposer.

The geotechnical program to meet these objectives has been divided into the following three phases of study:

- Footprint location data
- Structure-specific data
- Global data.

This is one in a series of data reports prepared for the global data phase of geotechnical characterization at the SSC site. Data collection for this study phase focused on drillhole-based geological, geohydrological, geophysical, and geotechnical tests in the near vicinity of the E and F access shaft sites. The global data set has three key attributes: (1) uniform geographic distribution over the site footprint, (2) complete coverage of all of the strata through which the SSC tunnels and shafts will pass, and (3) consistency of the data from sampling site to sampling site throughout the SSC site. In combination with data from the other phases, these data will allow conceptual designs of construction methods. Each data report includes the results of both field and laboratory tests for specific drilling and sampling site(s).

DATA REPORT

Site Designator: BE 6

Objective: Drill a corehole at the proposed shaft location and determine geotechnical conditions through in-situ hydrological testing and laboratory geomechanical testing. The corehole extended at least 35 feet below tunnel depth.

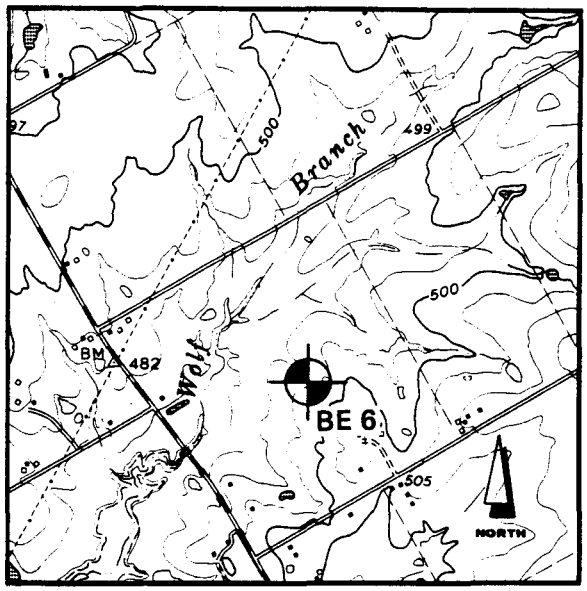
Location:

North 251,280 feet

East 2,255,023 feet

Surface Elevation 484.2 feet

BE 6 is located on the eastern side of the ring, about 300 yards north of Highway 1722.



SCALE 1:24,000

0 1000 2000 3000 4000 Feet

CONTOUR INTERVAL 10 FEET

Scope and Schedule:

Coring (full depth)	February 7 to 17, 1990
Wire-line Logging	February 17, 1990
Hydrologic Testing	February 19, 1990
Laboratory Testing	February 16 to March 15, 1990
Well Construction	February 20 to 27, 1990

Conditions Encountered: (see lithologic log, Appendix A)

Total Hole Depth:	419.0 feet
Soil:	0.0 to 4.0 feet
Weathered Taylor Marl	4.0 to 16.0 feet
Fresh Taylor Marl:	16.0 to 308.5 feet
Austin Chalk:	308.5 to 419.0 feet (bottom of hole)
Static Water Level:	Water level in the well probably has not reached static condition. It was last measured at 406.4 feet above MSL (77.8 feet below ground surface) on April 2, 1990, 7 days after the well was bailed to 340.7 feet above MSL.

Geophysical Logging: (see wire-line logs, Appendix B)

Spontaneous Potential (SP)
Normal Resistivity (short and long)
Guard Resistivity
Point Resistance
Natural Gamma
Short and Long Gamma
Compensated Density (caliper)
Sonic Velocity (full wave)

Hydrologic Test Results Summary: (see also Appendix C).

Vertical Depth (ft)	Packer Pressure (psi)	Gauge Pressure (psi)	Formation/ Lithology	Hydraulic Conductivity (cm/sec)
290.7-311.8	245	40	Taylor Marl/Austin Chalk	1.8×10^{-6}
354.9-376.0	275	40	Austin Chalk (fractured)	2.2×10^{-6}

Bulk and Clay Mineralogy Test Results Summary: (see also Appendix D)

Formation: Taylor Marl

Whole Rock Composition:		Relative Clay Abundance:	
Mineral	Percent	Mineral	Percent
quartz	68	montmorillonite	16-17
calcite	2-13	illite	7-58
total clay	19-98	kaolinite	16-26

Laboratory Geomechanical Test Results Summary: (see also Appendix D)

Vertical Depth (ft)	Formation/ Lithology	Moisture Content (%)	Dry Density (pcf)	*Compressive Strength (psi)	Tangent Young's Modulus E_{50} (psi x 10^5)	Brazil Tensile Strength (psi)
31	Taylor Marl	19-20	109	194	0.10	
50-52	Taylor Marl	18	110-114	287-337 (100)	0.21-0.45 (100)	
82-83	Taylor Marl	15-31	107-120			
106-107	Taylor Marl	15	119-120	538-723 (200)	0.48-0.90 (200)	
160-161	Taylor Marl	15-16	117			
170-171	Taylor Marl	16	115-122	450-597 (200)	0.61-0.97 (200)	
207-208	Taylor Marl	16-17	114-117	500-762 (200)	0.87 (200)-1.18 (300)	
253-255	Taylor Marl	15-16	110-119	354-530 (200)	0.49-1.13 (300)	
312-314	Austin Chalk	9-10	133-135	1286-2888 (300)	2.63 (200)-3.29	
322-333	Austin Chalk	10	132-133	2923	3.21	
383	Austin Chalk	9-10	132-135	3549	6.25	371
413-414	Austin Chalk	9-11	128-135	3200	3.88	

* UU triaxial test indicated by confining pressure in parentheses.

Hole Status: A monitoring well was installed in the boring on February 27, 1990 (see Appendix E).

APPENDIX A

LITHOLOGIC LOG

LOG OF BORING

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE6 PG 1 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-7-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND

S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION

Slight (~3-4 gal-min) temporary water loss observed from 0.0' to 16.0'
Wet rotary core hole below 16.0' water level not determinable
Observation well installed for cont'd monitoring of water level

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	DESCRIPTION OF STRATUM
									CLAY (Residual Soil), sli. silty, dark brown, becoming lighter with depth (CL)
									4.0g
5									SHALE (Taylor Marl), highly to completely weathered, very soft to soft, very fine grained, very thinly bedded, tan, lt. brown and gray, calcareous, w/iron staining along fracture surfaces
10									
15									
									16.0g
									SHALE (Taylor Marl), fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous, very homogeneous
20		C1	18.0	24.5	98	98			
25		C2	24.5	30.5	100	100	Stopped Drilling 2-7-90		
30		C3	30.5	40.5	100	100	Start Drilling 2-8-90		
35									
40									

DRILLING GEOLOGIST Scott E. Lesikar ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE 6 PG 2 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-8-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND

S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION

See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	DESCRIPTION OF STRATUM
			40.5							SHALE(Taylor Marl), fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous sli. fossiliferous, w/very thin (up to 2mm) $CaCO_3$ laminations (approx. 2-3 per ft.)
45		C4			100	100				
50				50.5						
			50.5							
55		C5			99	99				
60				60.5						
			60.5							
65		C6			100	100				
70				70.5						
			70.5							
75		C7			98	98				
80				80.5						

DRILLING GEOLOGIST Scott E. Lesikar ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE6 PG 3 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-8-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND

S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION

See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	DESCRIPTION OF STRATUM
85		C8	80.5	90.5	100	100				SHALE(Taylor Marl),fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous, sli. fossiliferous, w/ very thin (up to 2mm) $CaCO_3$ laminations (approx. 2-3 per ft.)
90										
95		C9	90.5	100.5	100	100				
100										
105		C10	100.5	110.0	100	100				
110										
115		C11	110.0	118.7	100	100				
120			118.7							

DRILLING GEOLOGIST Scott E. Lesikar ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE 6 PG 4 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-8-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND

S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION

See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	DESCRIPTION OF STRATUM
125		C12		129.0	100	100	Stopped Drilling 2-8-90		SHALE (Taylor Marl), fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous, sli. fossiliferous, w/ very thin (up to 2mm) $CaCO_3$ laminations (approx. 2-3 per ft.)
130			129.0				Started Drilling 2-9-90		
135		C13		139.0	100	100			
140			139.0						
145		C14		149.0	100	100			
150			149.0						
155		C15		159.0	100	100			
160			159.0						

DRILLING GEOLOGIST Scott E. Lesikar ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

BORING NO: BE 6 PG 5 OF 11

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-9-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND
S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION
See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	DESCRIPTION OF STRATUM
165		C16		169.0	100	100	Stopped Drilling 2-9-90		SHALE (Taylor Marl), fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous, sli. fossiliferous, w/ very thin (up to 2mm) $CaCO_3$ laminations (approx. 2-3 per ft.)
170			169.0				Started Drilling 2-12-90		
175		C17		179.0	100	100			
180			179.0						
185		C18		189.0	100	100			
190			189.0						
195		C19		199.0	100	100			
200			199.0						

DRILLING GEOLOGIST Jim Sansom ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE 6 PG 6 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-12-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND

S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION

See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	DESCRIPTION OF STRATUM
205		C20		209.0	100	100				SHALE (Taylor Marl), fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous, sli. fossiliferous, w/ very thin (up to 2mm) $CaCO_3$ laminations (approx. 2-3 per ft.)
210, 215		C21	209.0	219.0	100	100				
220, 225		C22	219.0	229.0	100	100				
230, 235		C23	229.0	239.0	100	100	Stopped Drilling 2-12-90			
240			239.0				Started Drilling 2-13-90			

DRILLING GEOLOGIST Jim Sansom ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

BORING NO: BE 6 PG 7 OF 11

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-13-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	DESCRIPTION OF STRATUM
245		C24		249.0	100	100				SHALE (Taylor Marl), fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous, sli. fossiliferous, w/ very thin (up to 2mm) $CaCO_3$ laminations (approx. 2-3 per ft.)
250, 255		C25	249.0	259.0	100	100				
260, 265		C26	259.0	269.0	100	100				
270, 275		C27	269.0	279.0	100	100				
280			279.0							

SAMPLE LEGEND
S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION
See p. 1 of 11

DRILLING GEOLOGIST Jim Sansom ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

PROJECT: SSC - Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE6 PG 8 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-13-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND

S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION

See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	DESCRIPTION OF STRATUM
285		C28		289.0	100	100				SHALE (Taylor Marl), fresh, soft to med. hard, very fine grained, very thinly bedded, dark gray, calcareous, sli. fossiliferous, w/ very thin (up to 2mm) $CaCO_3$ laminations (approx. 2-3 per ft.)
290		C29	289.0	299.0	100	100				
295										
300		C30	299.0	308.5	100	100	Stopped Drilling 2-13-90			300.0-308.0 Very thin, fine grained arenaceous beds 0.01' to 0.05' thick, spaced ~0.5' apart, light gray 302.0-303.7 ~40°-45° numerous,v. closely spaced fractures, smooth, closed, clean, fresh 304.5 ~45° fracture, sli. rough, slks., closed, clean, fresh 304.8-305.2 ~40°-45° numerous v. closely spaced fractures, smooth, closed, clean, fresh 305.6 ~40° fracture, sli. rough, slks., closed, clean, fresh 305.8-307.5 ~40°-45° numerous v.closely spaced fractures, smooth,closed,clean,fresh
305										
310		C31	308.5	318.5	100	100	Started Drilling 2-14-90			308.5s LIMESTONE (Austin Chalk),fresh,med.to moderately hard, slightly fossiliferous,light to medium gray,w/0.1 to 0.3 ft. thick slightly argillaceous interbeds spaced 0.8 to 5.9 ft. apart 308.5g-308.8g Thin,sli.argill.,dk.gray bed 310.1g-311.2g Med.thick,sli.argill.,dk.gray bed 312.4g-312.6g Thin,sli.argill.,dk.gray bed 318.5s-318.6s Very thin,sli.argill.,dk.gray bed 319.4g-319.9g Thin,sli.argill.,dk.gray bed
315										
320		C32	318.5							

DRILLING GEOLOGIST Jim Sansom ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

PROJECT: SSC- Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE 6 PG 9 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-14-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND:
S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION: See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	DESCRIPTION OF STRATUM
									LIMESTONE (Austin Chalk),fresh,med.to mod.hard,slightly fossiliferous,light to medium gray w/0.03 to 0.9 ft thick,slightly to moderately argillaceous interbeds spaced 0.07 to 8.25 ft. apart
									323.3g-324.2g Thin,sli.argill.,dk.gray bed
325		C32			100	100			325.0g-325.8g Thin,sli.argill.,dk.gray bed
				328.5					
			328.5						329.2g-329.9g Thin,sli.argill.,dk. gray bed
330									
335		C33			100	100			335.0g-335.6g Thin,sli.argill.,dk.gray bed
							Stopped Drilling 2-14-90		
				338.5					
			338.5				Started Drilling 2-16-90		
340									
345		C34			100	100			347.35g-347.78g Thin,mod.argill.,dk.gray bed
									347.78g-347.98s Thin,mod.argill.to shaly,dk.gray bed
				348.5					348.05g-348.08s Very thin,mod.argill.,dk gray bed
			348.5						
350									
									353.8g-354.3g Thin,sli.argill.,fossil.,dk gray bed
355		C35			100	92			
				358.5					
			358.5						359.6g-360.0s Thin,sli.argill,dk. gray bed
360									
		C36							

DRILLING GEOLOGIST Jim Sansom ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

PROJECT: SSC - Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: BE 6 PG 10 OF 11

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-16-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	DESCRIPTION OF STRATUM
-365		C36		368.5	100	100			LIMESTONE(Austin Chalk),fresh,med.to mod.hard,slightly fossiliferous,light to med.gray w/0.2 to 0.83ft. thick slightly to very argillaceous interbeds spaced 1.6 to 10.95ft. apart 363.3-363.6 ~55° fracture,smooth,narrow,calcite filled, fresh 367.0-367.24 ~50° fracture,smooth,narrow,calcite filled, fresh 368.25g-368.5g Thin,sli.argill.,dk. gray bed
-370		C37	368.5	378.5	100	95			371.5-371.85 ~70° fracture,smooth,narrow,calcite filled, fresh 372.5-372.7 ~60° fracture,smooth,narrow,calcite filled, fresh 373.5g-374.33g Thin,mod.argill.,soft to med.hard dk.gray bed 375.9g-376.5g Thin,sli.argill.beds 0.01' to 0.04' thick spaced 0.03' to 0.12' apart,dk.gray 376.8-377.1 ~60°-65° fracture,smooth,narrow, calcite filled,fresh 378.85-378.98 ~35° fracture,slks,narrow,clean,fresh
-375									
-380		C38	378.5	388.7	100	100			379.2g-379.4g Thin,sli.argill.,fossil.,dk.gray bed 381.0g-381.08g Very thin,sli.argill.,dk.gray bed 387.7g-387.95g Thin,sli.argill.,med.hard,dk.gray bed
-385									
-390		C39	388.7	398.9	100	100			390.73g-391.05g Thin,v.argill.,med.hard,dk.gray bed
-395									
-400			398.9						

SAMPLE LEGEND

S= SPLIT SPOON
T= 2" THIN WALL TUBE
U= 3" THIN WALL TUBE
C= NX ROCK CORE

WATER INFORMATION

See p. 1 of 11

DRILLING GEOLOGIST Jim Sansom ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

LOG OF BORING

BORING NO: BE 6 PG 11 OF 11

PROJECT: SSC - Texas Site

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 251,280 feet
E 2,255,023 feet

GROUND EL: 484.2 feet

DATE: 2-16-90 TYPE: NX Core CASED TO: 17.0' CONTRACTOR: MJA

SAMPLE LEGEND: S= SPLIT SPOON; T= 2" THIN WALL TUBE; U= 3" THIN WALL TUBE; C= NX ROCK CORE

WATER INFORMATION: See p. 1 of 11

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT RQD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	DESCRIPTION OF STRATUM
									LIMESTONE (Austin Chalk), fresh, med. to mod. hard, slightly fossiliferous, light to medium gray w/ 0.15 to 0.8 ft thick slightly to very argillaceous interbeds spaced 0.6 to 10.95ft. apart
									402.0g-402.8g Thin, mod. argill., dk. gray bed
405		C40			99	80			
							Stopped Drilling 2-16-90		408.12s-408.9s Thin, v. argill., soft to mod. hard, dk. gray bed
				409.0					409.5g-409.8g Thin, sli. argill., dk. gray bed
410			409.0				Started Drilling 2-17-90		411.9g-412.4g Thin, sli. argil., dk. gray bed
									413.35g-413.5g Very thin, sli. argill., dk. gray bed
									415.45g-415.85g Thin, sli. argill., dk. gray bed
415		C41			99	99			
				419.0					418.23g-418.54g Thin, sli. argill., dk. gray bed
420									Total Depth 419.0' 2-17-90
									(1) Wash bored to 18.0' w/o sampling
									(2) Wireline logged 2-17-90
									(3) Hydrotested 2-19-90
									(4) Borehole reamed to 10" (0-8.5'); 6 3/4" (8.5-395.0') 2-19-90 to 2-26-90
425									(5) Well construction completed 2-27-90
430									
435									
440									

DRILLING GEOLOGIST Jim Sansom ASSISTANT Gary Kincaid CHECKED BY W.D. Flanigan

Rev. 3/22/90

APPENDIX B

WIRE-LINE LOGS

WIRE-LINE LOGGING PARAMETERS

Hole No. BE 6 **Log Measured From:** Ground Level

Drilling Parameters

Depth 419.0 feet

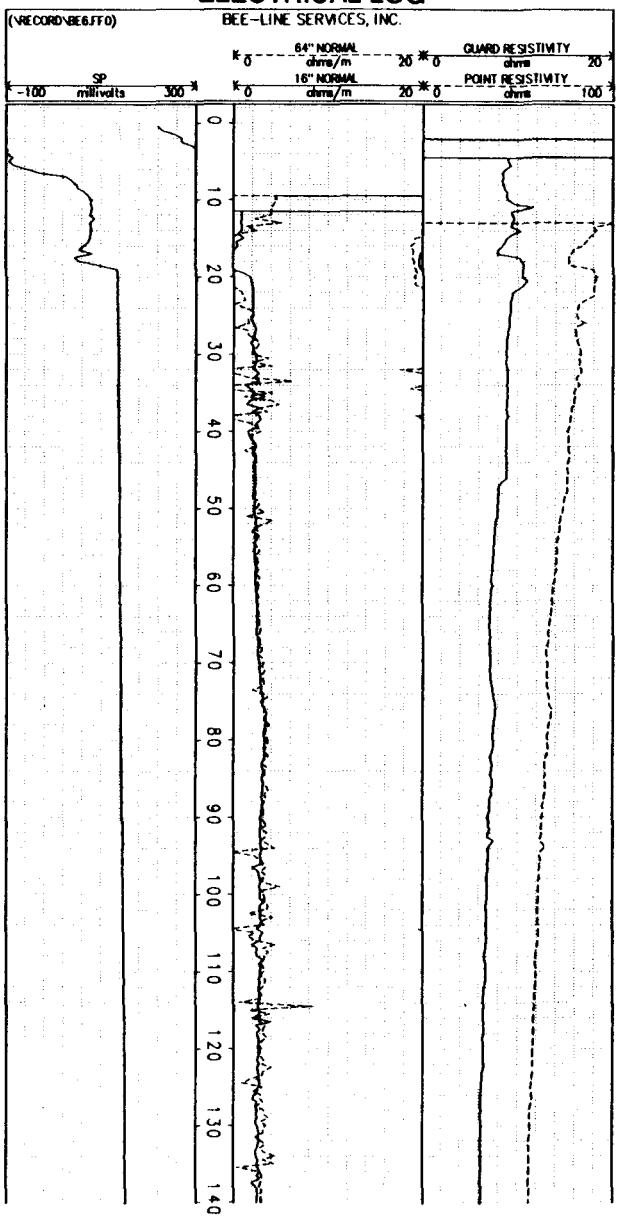
Bit Diameter 3.125 inches

Logging Parameters	Electrical Log	Gamma Log	Sonic Log
Date	February 17, 1990	February 17, 1990	February 17, 1990
Bottom Log Interval	418.5 feet	417.0 feet	413.0 feet
Top Log Interval	surface	surface	surface
Type of Fluid in Hole	drilling mud	drilling mud	drilling mud
Time Since Circulation Stop	2.5 hours	2.5 hours	2.5 hours
Probe Type/S.N.	ALP-4979	XAP-4383	CLP-4877A
Module Type/S.N.	ALM-4979	XAM-4383	CLM-4877A
Logging Speed	40 feet/min.	20 feet/min.	20 feet/min.
Sample Interval	0.5 foot	0.5 foot	0.5 foot

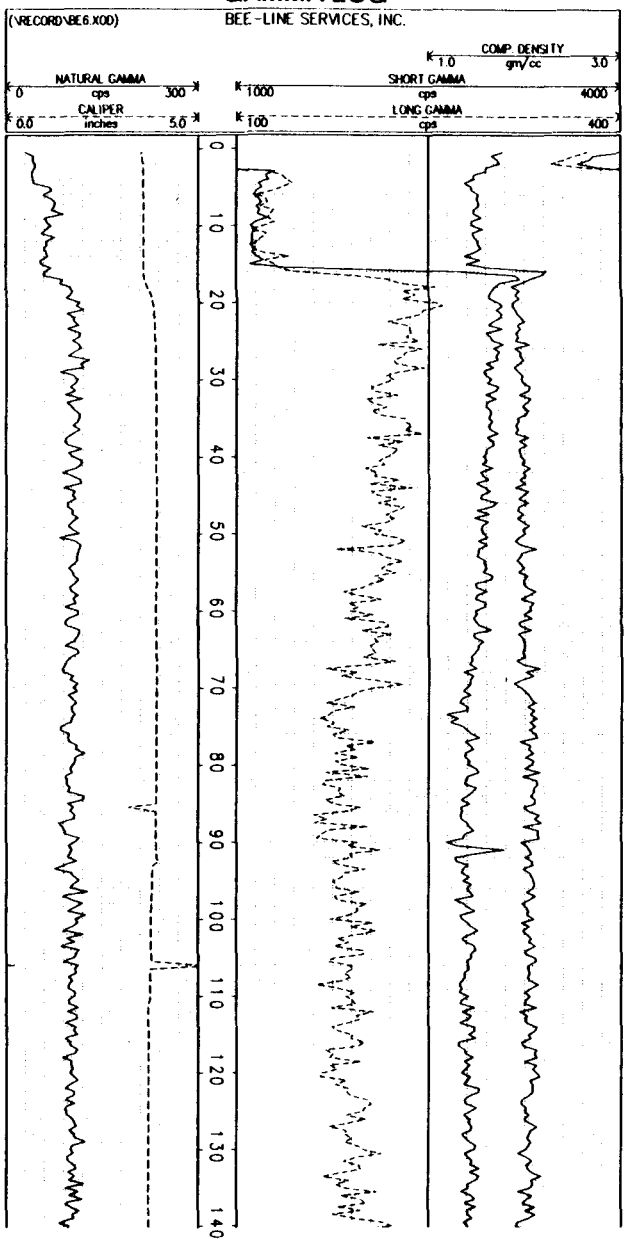
Logged by: BEE-LINE SERVICES, INC.
P. O. Box 2096
Corsicana, TX 75151

BE 6 Wire-line logs run February 17, 1990. Surface elevation 484.2 feet.

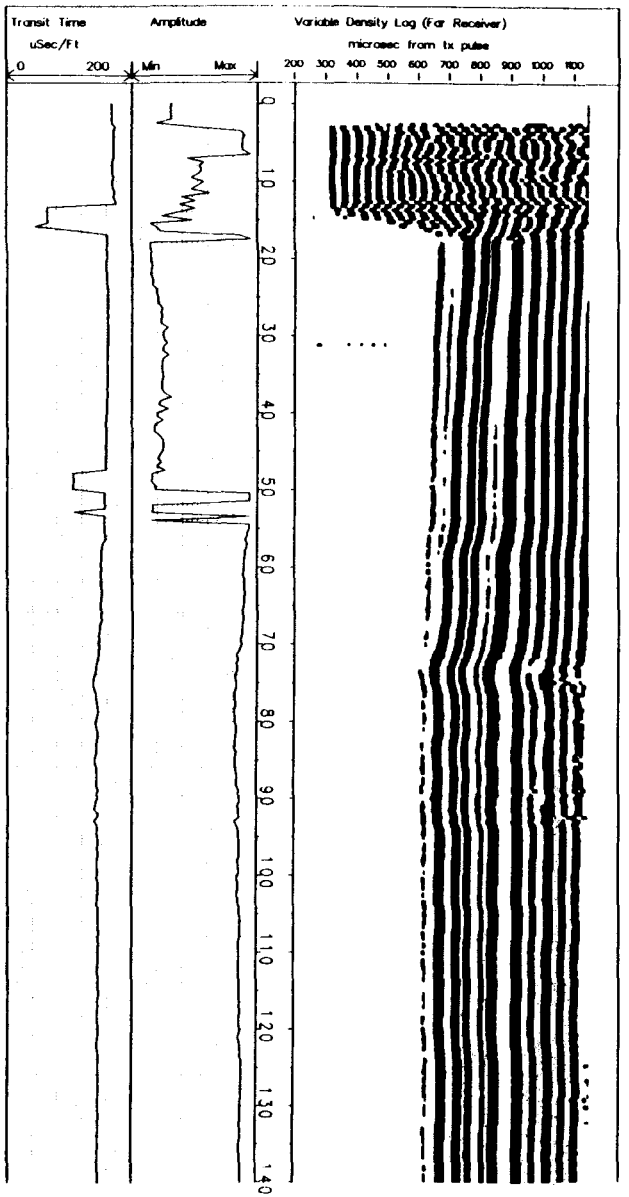
ELECTRICAL LOG



GAMMA LOG

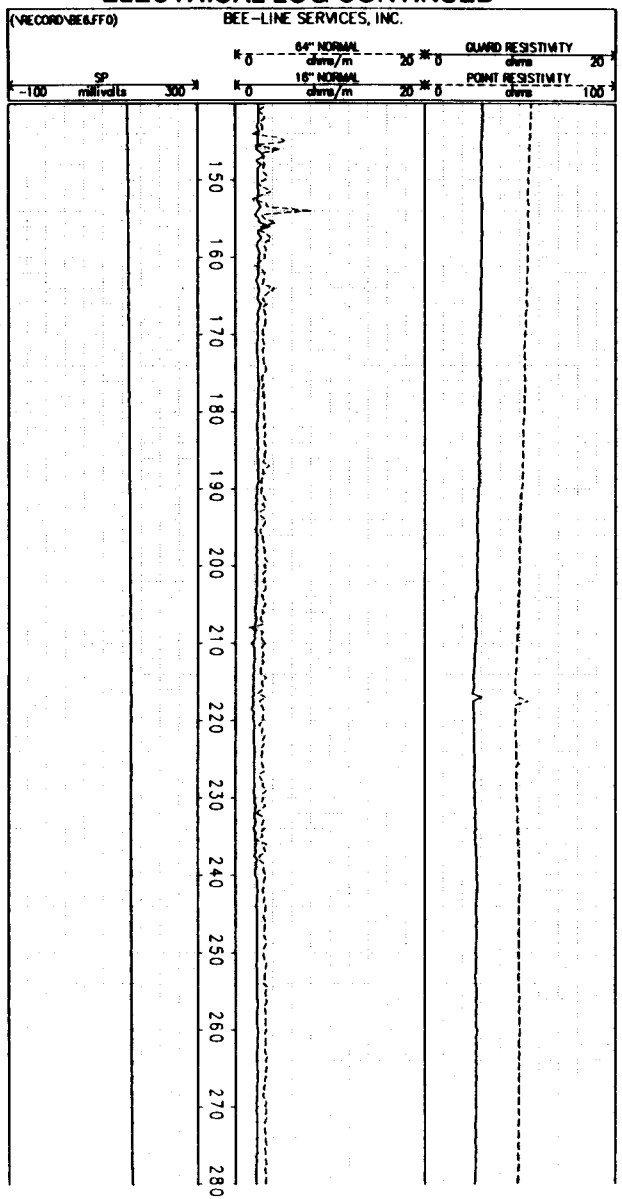


SONIC LOG

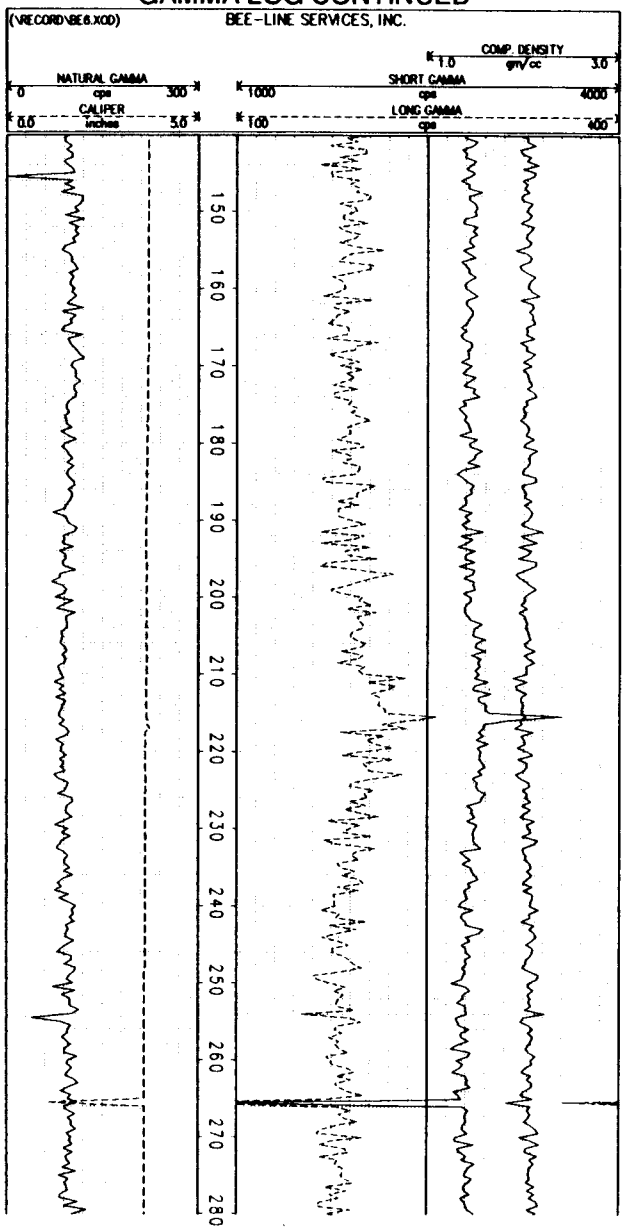


BE 6 Wire-line logs run February 17, 1990 (Continued). Surface elevation 484.2 feet.

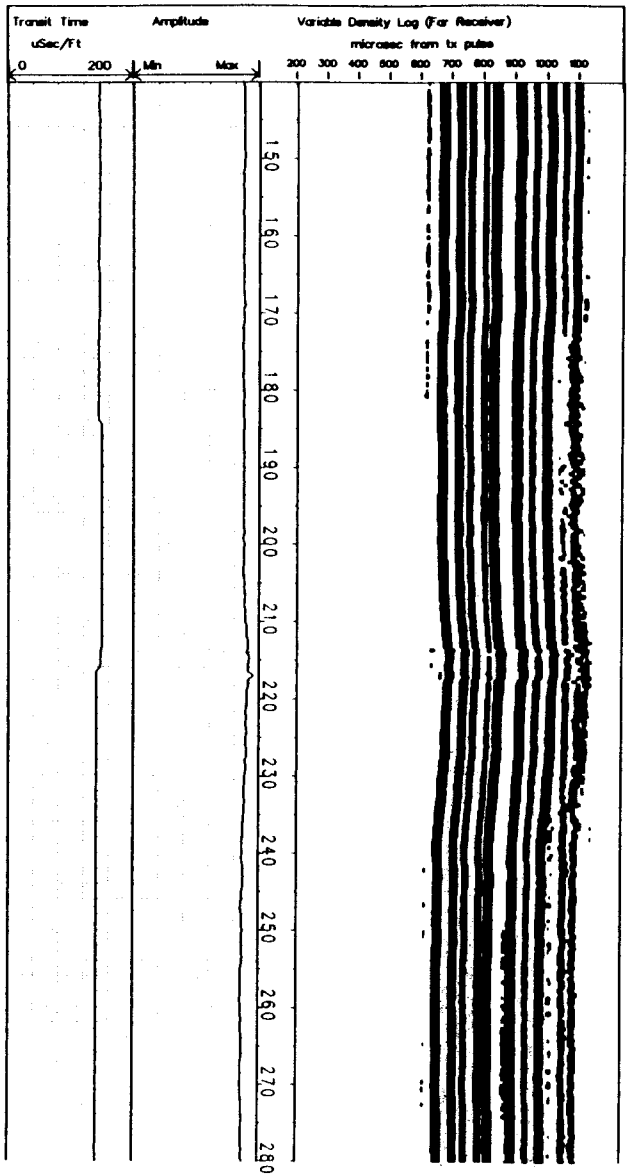
ELECTRICAL LOG CONTINUED



GAMMA LOG CONTINUED

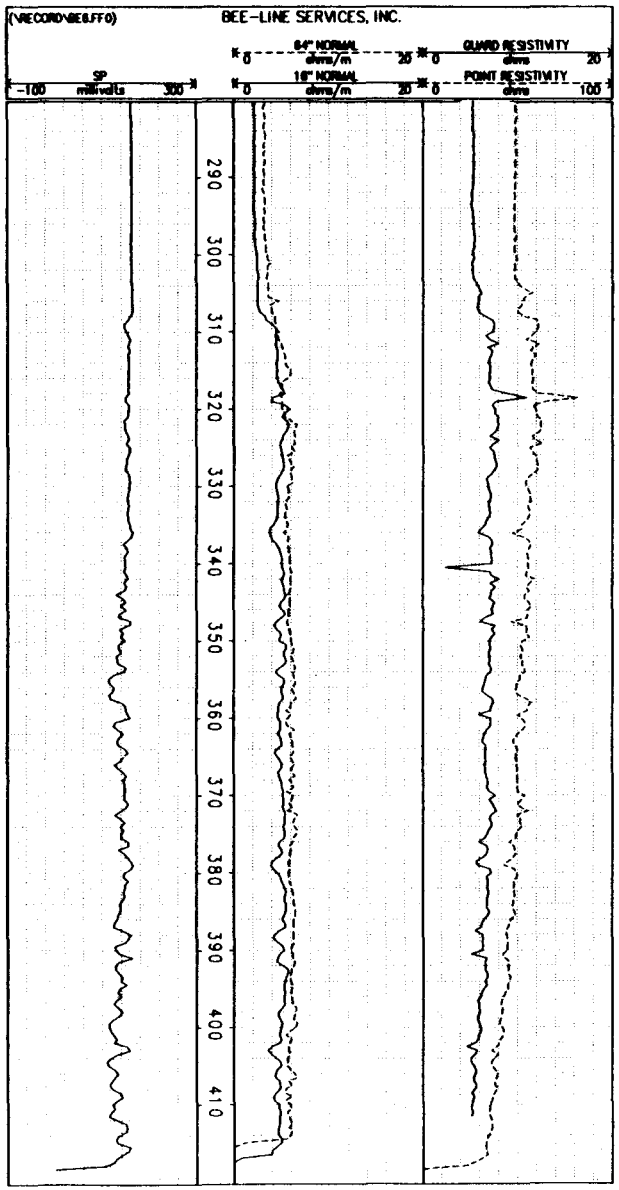


SONIC LOG CONTINUED

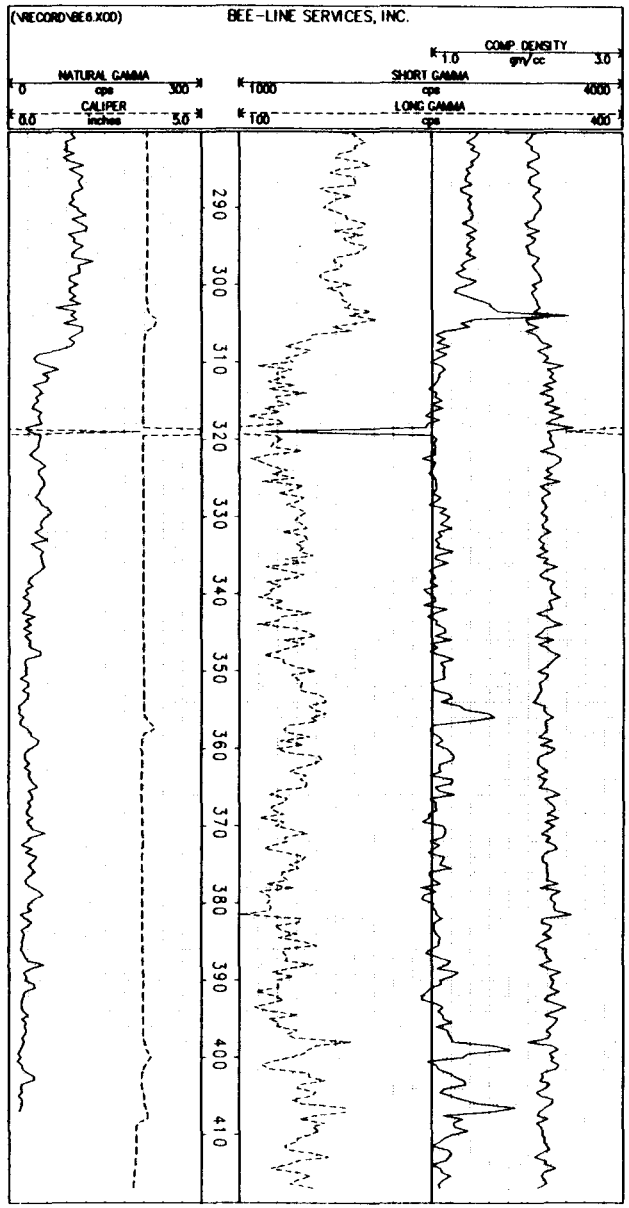


BE 6 Wire-line logs run February 17, 1990 (Continued). Surface elevation 484.2 feet.

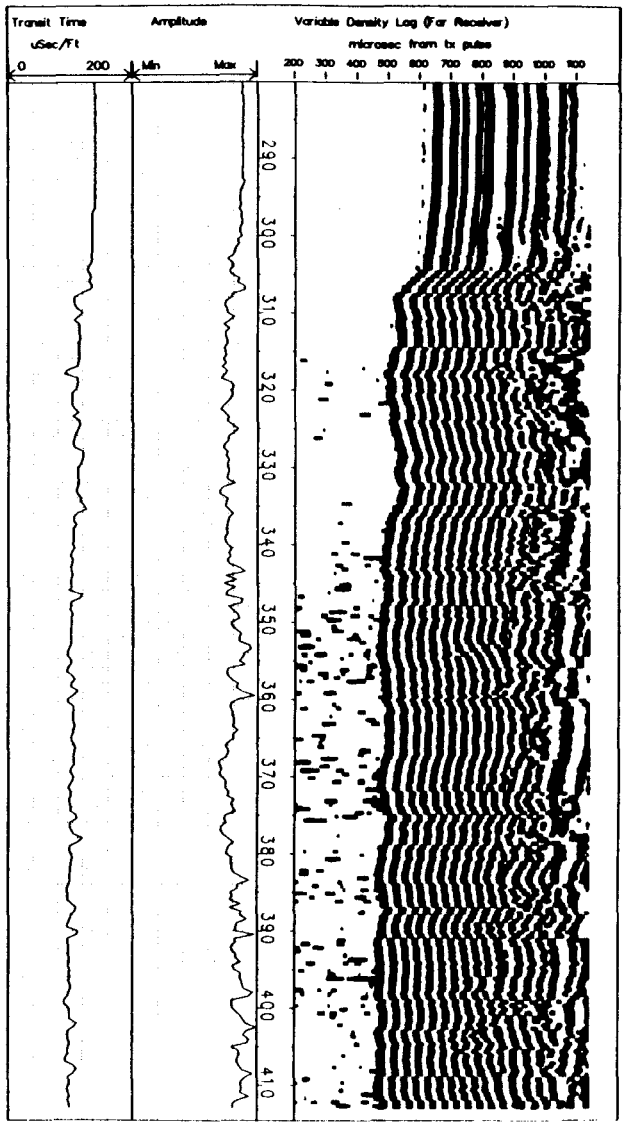
ELECTRICAL LOG CONTINUED



GAMMA LOG CONTINUED



SONIC LOG CONTINUED



APPENDIX C

HYDROLOGIC TEST RESULTS

APPENDIX C

The objectives of the hydrologic (packer) tests were to provide estimates of the hydraulic conductivity within the Taylor Marl, Austin Chalk, and Eagle Ford Shale formations in unfractured zones, fractured or other suspected water-bearing zones, at the formation contacts, and at the tunnel elevation. Intervals within boreholes were selected for packer testing based on visual inspections of rock cores and the results of borehole geophysical testing. Sections of a borehole that exhibited increased frequency of fractures or bedding plane parting were commonly packer tested.

Standard procedures used to conduct these tests included lowering a pair of pneumatically operated rubber packers (in straddle-packer configuration) separated by a known length of perforated pipe into the drill hole to a predetermined depth. The packer interval was approximately 20 feet. The packers were then inflated to a precalculated pressure to seal against the rock side walls and water was pumped into the test interval at a selected pressure while the flow rate was measured with a cumulative flow meter. To improve the accuracy of measurements at low flow rates, water was pumped from a large container (e.g., a drum or section of casing) and the volume removed was recorded. In addition to monitoring the water pressure and flow rate at appropriate intervals, the height of the water pressure gauge above ground surface, as well as the diameter and length of water pipe used, were recorded. The tests were continued until five consecutive readings indicated a stabilization of the flow rate but for a minimum of at least 10 minutes. Standard forms were used for data records and the hydraulic conductivity was calculated using standard Bureau of Reclamation procedures.

STRADDLE PACKER TEST RESULTS

Test Depth (feet)	Packer Pressure (psi)	Gauge Pressure (psi)	Formation/ Lithology	Hydraulic Conductivity (cm/sec)	Estimated Depth to Static Water Level* (feet)
290.7-311.8	245	40	Taylor Marl/ Austin Chalk	1.8×10^{-6}	5.4
354.9-376.0	275	40	Austin Chalk (fractured)	2.2×10^{-6}	5.4

At boring BE 6 two test intervals were selected based on a review of the lithologic and wire-line logs. The upper test interval was selected to provide hydrologic data for the base of Taylor Marl and the contact between Taylor Marl and Austin Chalk. The lower interval straddled an area of fractured Austin Chalk at the potential tunnel elevation. Hydrologic (packer) testing followed the general procedures outlined above. Packer and gauge pressures used during the testing along with the calculated hydraulic conductivities are listed in the table above. Flow volumes were measured using a flow meter; no calibrated container was used for the tests.

* The hydraulic conductivity values presented are based on an estimated static water level 5.4 feet below ground surface. When last measured, the water level was 77.8 feet below ground surface. Hydraulic conductivity values would be lower for a static water level below the estimated value.

APPENDIX D

LABORATORY RESULTS

TABLE D-1. BULK AND CLAY MINERALOGY TEST RESULTS - BE 6

Formation: Taylor Marl **Depth:** 82.1-82.3 ft

Whole Rock Composition:

Mineral	Percent
quartz	68
calcite	13
total clay	19
Total	100

Relative Clay Abundance:

Mineral	Percent
montmorillonite	16
illite	58
kaolinite	26
Total	100

Formation: Taylor Marl **Depth:** 82.3-82.7 ft

Whole Rock Composition:

Mineral	Percent
quartz	<1
calcite	2
total clay	98
Total	100

Relative Clay Abundance:

Mineral	Percent
montmorillonite	77
illite	7
kaolinite	16
Total	100

TABLE D-2. GEOMECHANICAL TEST RESULTS – BORING BE 6

GENERAL LITHOLOGY	BORING DEPTH feet	MOISTURE CONTENT percent	DRY DENSITY pcf	SPECIFIC GRAVITY	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	FRACTION FINER THAN # 200 SIEVE percent	CARBONATE CONTENT	SAMPLE DIMENSION RATIO L/D	SAMPLE FAILURE MODE/ DEGREES*	UNCONFINED COMPRESSIVE STRENGTH psi	TRIAXIAL COMPRESSION CONFINING PRESSURE σ_3 psi	TRIAXIAL COMPRESSION DEVIATOR STRESS $\sigma_1-\sigma_3$ psi	FAILURE STRAIN percent	TANGENT YOUNG'S MODULUS E50 (psi)x10E5	TANGENT YOUNG'S MODULUS UNLOAD/ RELOAD (psi)x10E5	TANGENT YOUNG'S MODULUS σ_3 psi	POISSON'S RATIO	BRAZIL TENSILE STRENGTH psi	2ND CYCLE SLAKE DURABILITY INDEX percent	MODIFIED TABER ABRASION INDEX	SWELL PRESSURE INDEX psi	COMMENTS
TAYLOR MARL	30.8	20.0	109.2	2.73	63	32	98.3	14.0															
TAYLOR MARL	31.2	19.3	108.9						2.4	D	194			1.68	0.10		0						Note 1
TAYLOR MARL	50.5	17.7	114.5						2.2	D	287			1.47	0.21		0						
TAYLOR MARL	50.9	16.5	112.4																				
TAYLOR MARL	51.2	18.1	109.9	2.68	73	48	96.1	17.9	2.4	E		50	337	1.60	0.38		50						
TAYLOR MARL	51.2														0.30			0.20					Notes 2,3 and 4
TAYLOR MARL	51.6	18.2	110.9		69	44	96.5	18.1	2.4	C		100	337	1.59	0.44		100						
TAYLOR MARL	51.6														0.45			0.28					Note 2
TAYLOR MARL	81.7	30.6	107.3																				
TAYLOR MARL	82.7	16.0	115.5		68	45	97.6	21.2														31.9	
TAYLOR MARL	82.9	15.5	120.0																			25.9	
TAYLOR MARL	106.1	15.1	120.5		70	41	98.0	24.4															
TAYLOR MARL	106.4	14.7	120.3						2.4	D	538			1.07	0.48		0						
TAYLOR MARL	106.8	15.0	119.7	2.69	68	44	95.5	26.4	2.1	B-1/25		100	659	1.04	0.72		100						Note 5
TAYLOR MARL	106.8														0.89			0.26					Note 2
TAYLOR MARL	107.2	15.1	119.4		72	49		25.9	2.1	B-1/30		200	723	1.10	0.90		200						
TAYLOR MARL	107.2														0.84			0.23					Note 2
TAYLOR MARL	160.5	15.7	117.5					25.3															
TAYLOR MARL	160.8	15.3			99	62	99.1																
TAYLOR MARL	161.0																			30.6			
TAYLOR MARL	169.7	16.2	115.0		83	52	98.9	20.8															
TAYLOR MARL	170.1	16.1	117.1	2.69	84	58	97.8	19.7	2.1	B-1/50		100	497	1.18	0.89		100						Note 5
TAYLOR MARL	170.1														0.85			0.23					Note 2
TAYLOR MARL	170.5	16.0	117.3		90	64	98.6	21.6	2.1	B-1/20		200	597	1.03	0.91		200						Note 5
TAYLOR MARL	170.5														0.97			0.47(1)					Note 2
TAYLOR MARL	170.9	15.7	122.0						2.1	D	450			0.96	0.61		0						Note 5
TAYLOR MARL	206.8	16.4	116.8		89	57	98.5	25.7	2.1	D	500			0.83	0.89		0						Note 5
TAYLOR MARL	207.2	16.8	115.3																				
TAYLOR MARL	207.6	16.7	114.5	2.70	101	74	95.3	27.1	2.0	B-1/35		200	762	1.08	0.87		200						Note 5
TAYLOR MARL	207.6														1.03			0.41(2)					Note 2
TAYLOR MARL	208.0	17.2	115.2		104	77	97.5	26.3	2.4	B-1/35		300	646	0.94	1.18	2.42	300						Note 5
TAYLOR MARL	208.0														1.16	1.63		0.38					Note 2
TAYLOR MARL	253.2	15.0	118.7		75	45	98.5	22.8	2.0	D	354			0.93	0.49		0						Note 5
TAYLOR MARL	253.6	15.4	115.0		72	43	98.3															18.6	
TAYLOR MARL	253.9	15.7	109.9																			21.1	
TAYLOR MARL	254.1	15.4	117.9	2.70	88	63	97.2	23.4	2.2	D		200	530	0.64	1.12	1.91	200						Note 5
TAYLOR MARL	254.1														1.01	1.67		0.15					Note 2
TAYLOR MARL	254.6	15.2	119.1		79	53	97.4	25.1	2.4	D		300	452	0.49	1.13	1.20	300						Note 5
TAYLOR MARL	254.6														1.12(2)	1.45		0.23					Note 2
TAYLOR MARL	255.0	15.3	116.4																				
AUSTIN CHALK	311.9	8.9	134.7																				
AUSTIN CHALK	312.1	9.8	133.3						2.3	D	1286			0.53	3.29		0						Note 5
AUSTIN CHALK	313.2	10.1	132.9	2.65					2.3	B-1/30		200	2860	1.24	2.63		200						
AUSTIN CHALK	313.2														2.96			0.12					Note 2
AUSTIN CHALK	313.6	10.0	132.9						2.3	B-1/25		300	2888	1.11	2.75		300						
AUSTIN CHALK	313.6														3.22			0.19					Note 2
AUSTIN CHALK	332.1	10.4	133.4						2.3	D & E	2923			1.03	3.21		0						
AUSTIN CHALK	332.7	10.3	131.7																				
AUSTIN CHALK	382.9	8.6	135.3						2.3		3549			0.66	6.25		0						Note 6
AUSTIN CHALK	383.3								0.5										371				
AUSTIN CHALK	383.4	9.7	132.1																				
AUSTIN CHALK	413.4	9.2	135.1						2.4	D & E	3290			0.92	3.88		0						
AUSTIN CHALK	413.8	11.2	126.0																				
PROCEDURE		ASTM-D2216		ASTM-D854	ASTM-D4318		ASTM-D1140				ASTM-D2938	ASTM-D2664			ASTM-D3148			ASTM-D3148	ASTM-D2936	ISRM	ISRM	ISRM	

* EXPLANATION OF SAMPLE FAILURE MODE AS FOLLOWS.

Symbol	Failure Type	Symbol	Failure Type
A	No discernible failure plane	B-4	Combination
(B)	Well defined shear plane @ "X" angle (deg) to vertical or to long axis of core	C	Barreling/Bulging
B-1	Shear plane	D	Longitudinal (axial) splitting
B-2	Bedding plane shear	E	Conical
B-3	Shear plane along pre-existing fracture, shear zone, etc.	F	No information

NOTES: 1) All moduli calculated from axial strains using a dial micrometer except where noted. Axial gage length is the sample length.

2) Modulus and Poisson's ratio calculated from axial and lateral strains measured using LVDTs. Axial gage length is 2.8 inches.

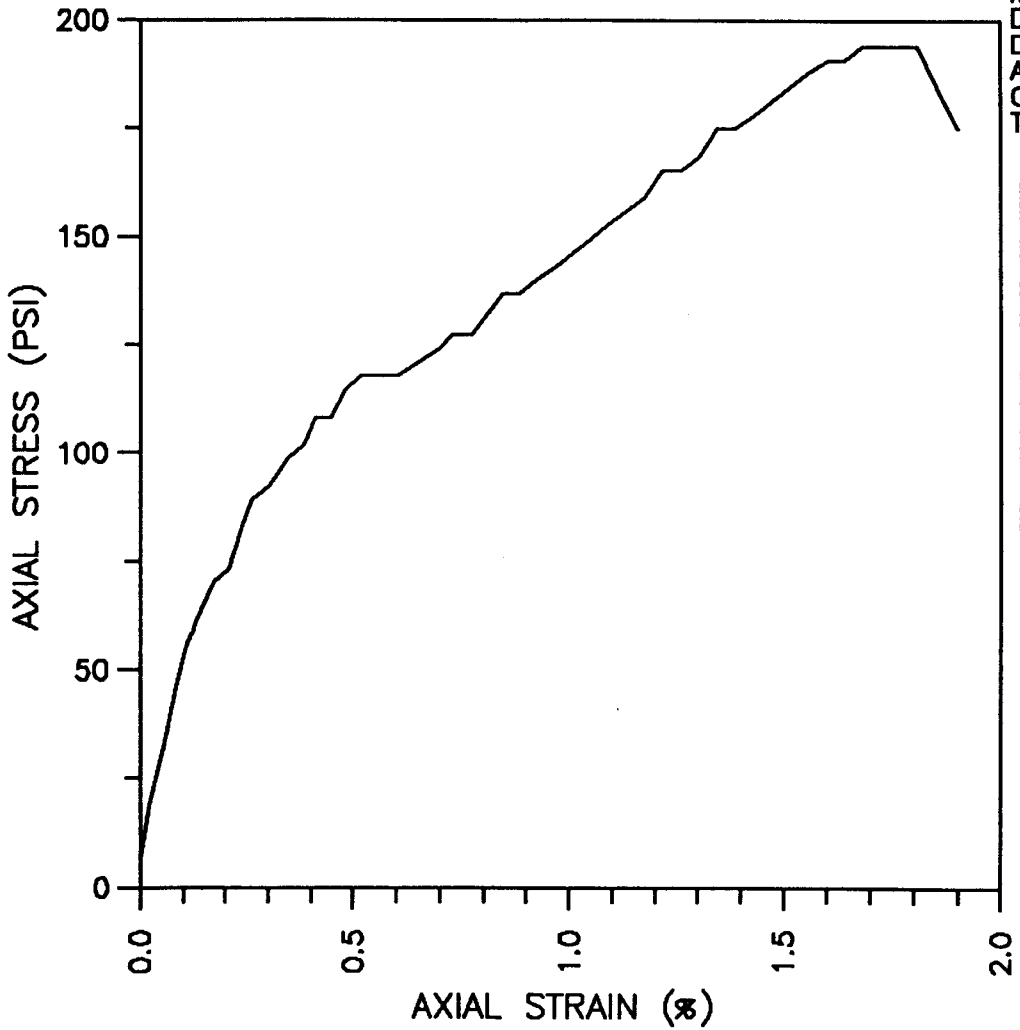
3) For Poisson's ratio values, the value within parenthesis indicates the number of LVDTs recording lateral strains. Otherwise all 3 LVDTs recorded strains.

4) For Young's modulus values, the value within parenthesis indicates the number of LVDTs recording axial strains. Otherwise all 3 LVDTs recorded strains.

5) Sample separated along bedding prior to compressive test.

SESPRT22.XLS
REVISION: 0.1
DATE: 07/07/99

BORING NO.: BE6
DEPTH (FT): 31.2
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 19.3
DRY UNIT WEIGHT (PCF): 108.9
DEG. OF SATURATION (%): 95.2
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

GFILE: BE6G312 DATE: 08-01-90 CAL: MCU2

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.098 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

STRESS-STRAIN PLOT

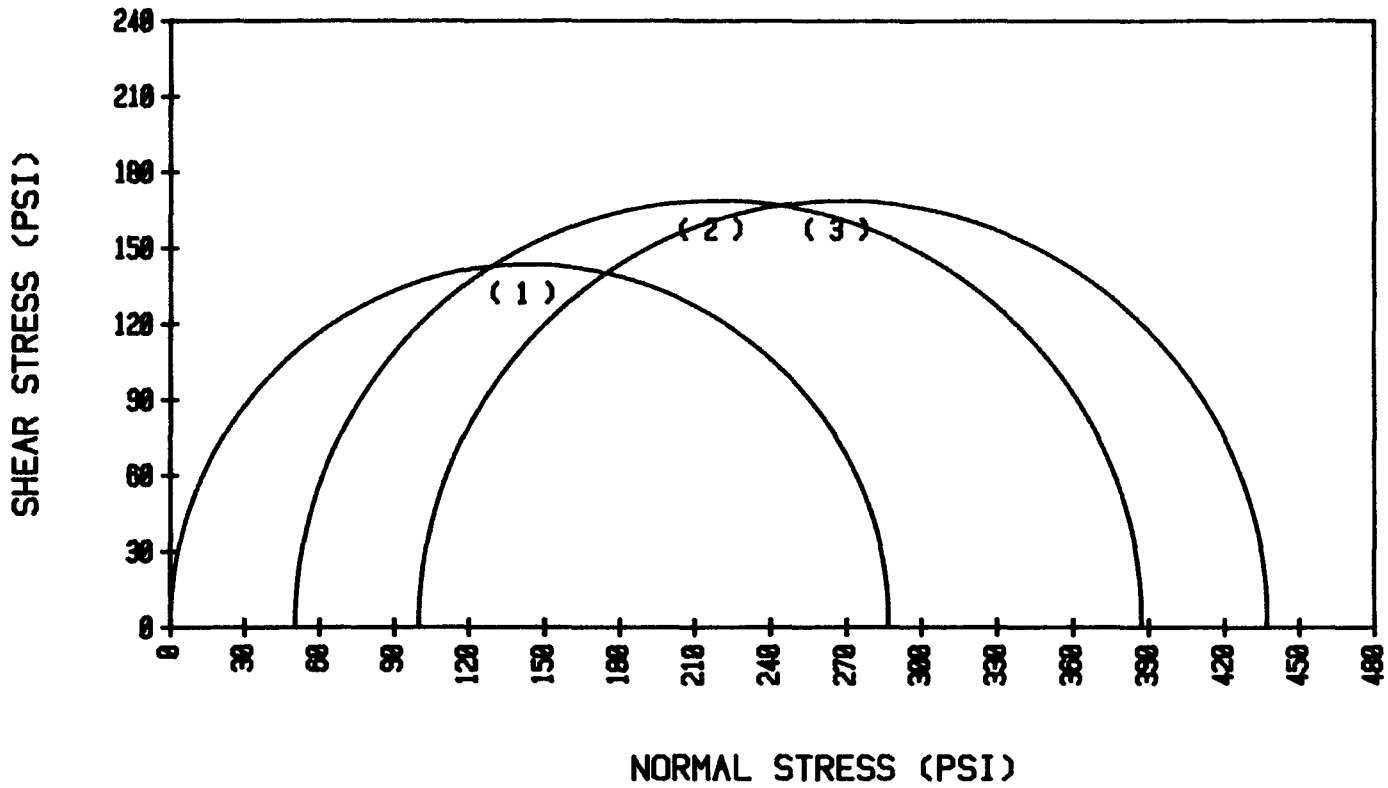
MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH RANGE (FT): 50.5-52.0
TAYLOR MARL

BORING INCLINATION (DEG): VERTICAL
TEST TYPE: UNCONFINED COMPRESSION (ASTM D2938)
TRIAXIAL COMPRESSION (ASTM D2664)



SEE STRESS - STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 50.5
(2) DEPTH (FT): 51.2
(3) DEPTH (FT): 51.6

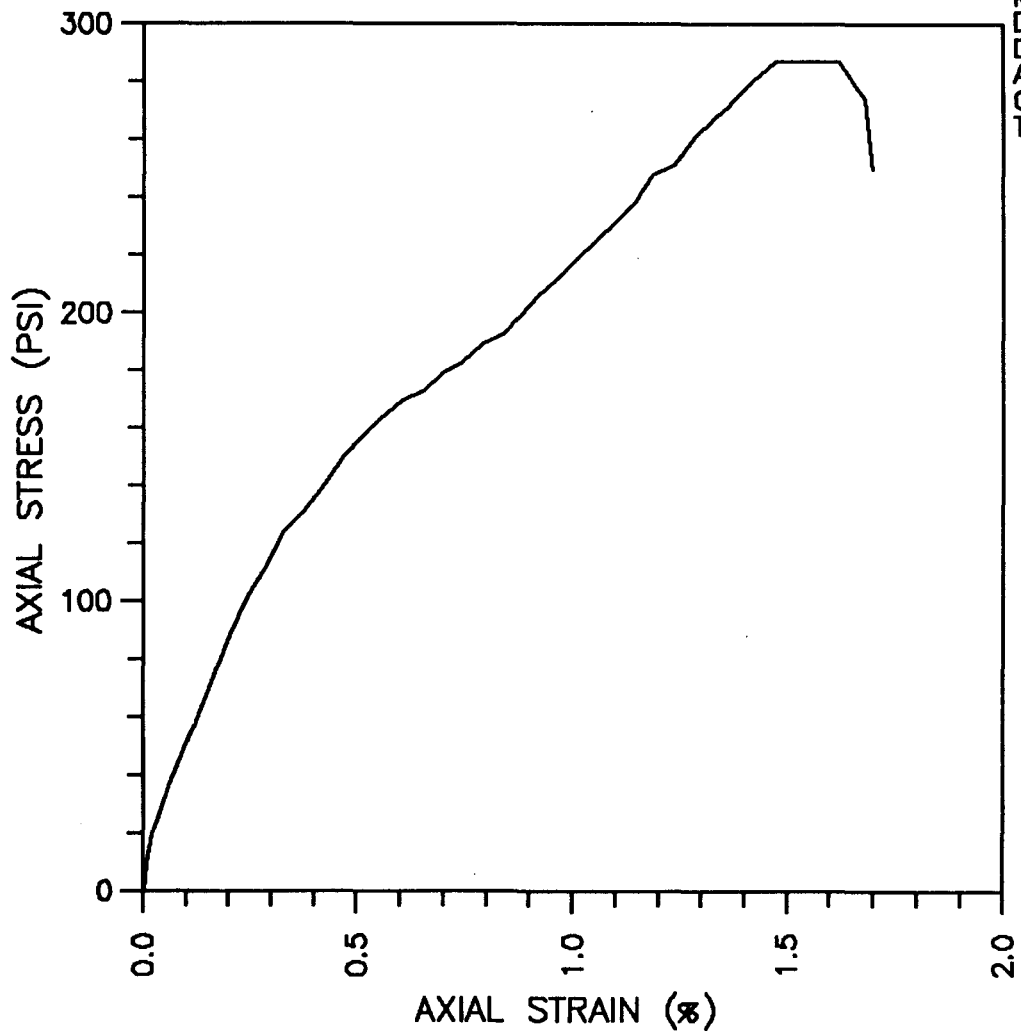
TEXAS SSC SIT

MOHR CIRCLE PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17 | FIGURE

BORING NO.: BE6
DEPTH (FT): 50.5
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.7
DRY UNIT WEIGHT (PCF): 114.5
DEG. OF SATURATION (%): 101.3
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

STILE: BE6050S DATE: 08-01-90 CAL: MCUZ

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.205 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

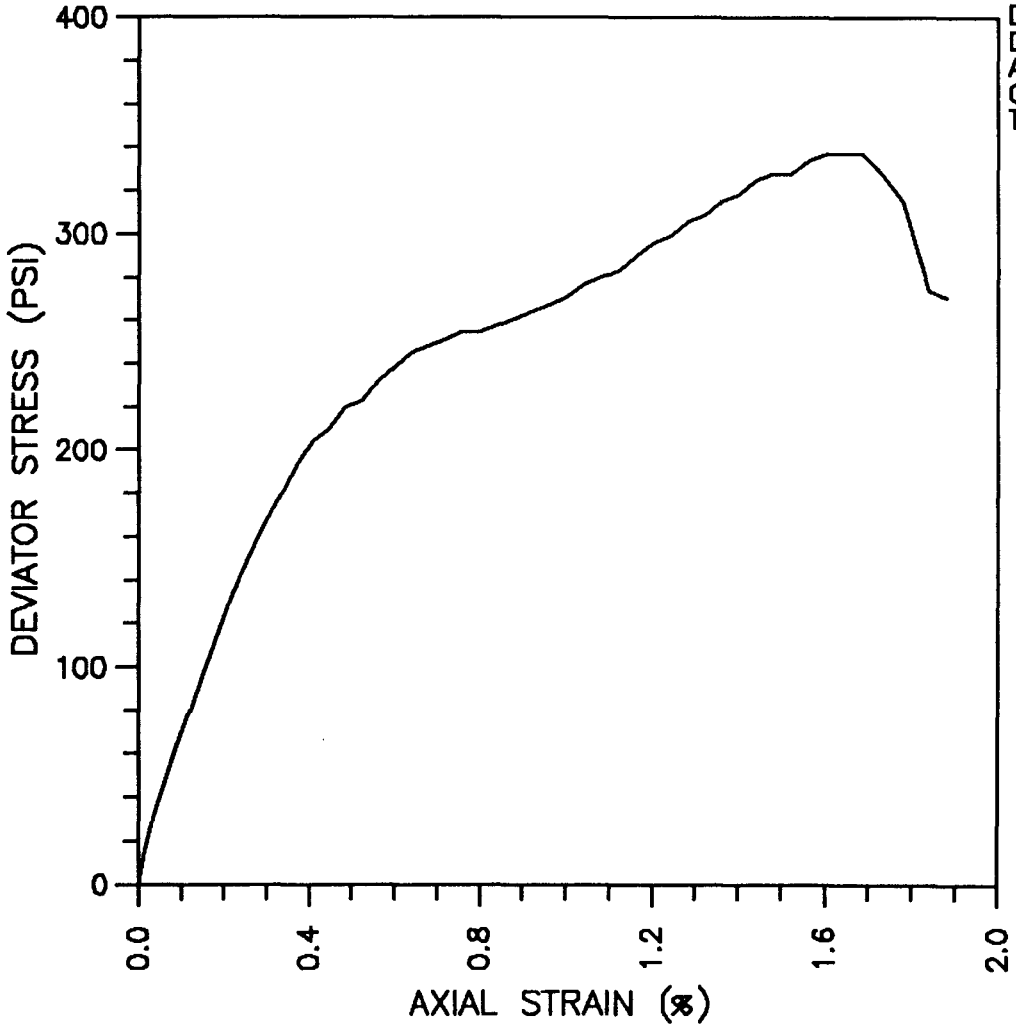
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 51.2
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 18.1
DRY UNIT WEIGHT (PCF): 109.9
DEG. OF SATURATION (%): 91.8
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 50
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: BE30612 DATE: 06-02-90 CAL: MGT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.382 x10E5 PSI

FAILURE MODE:
CONICAL FAILURE

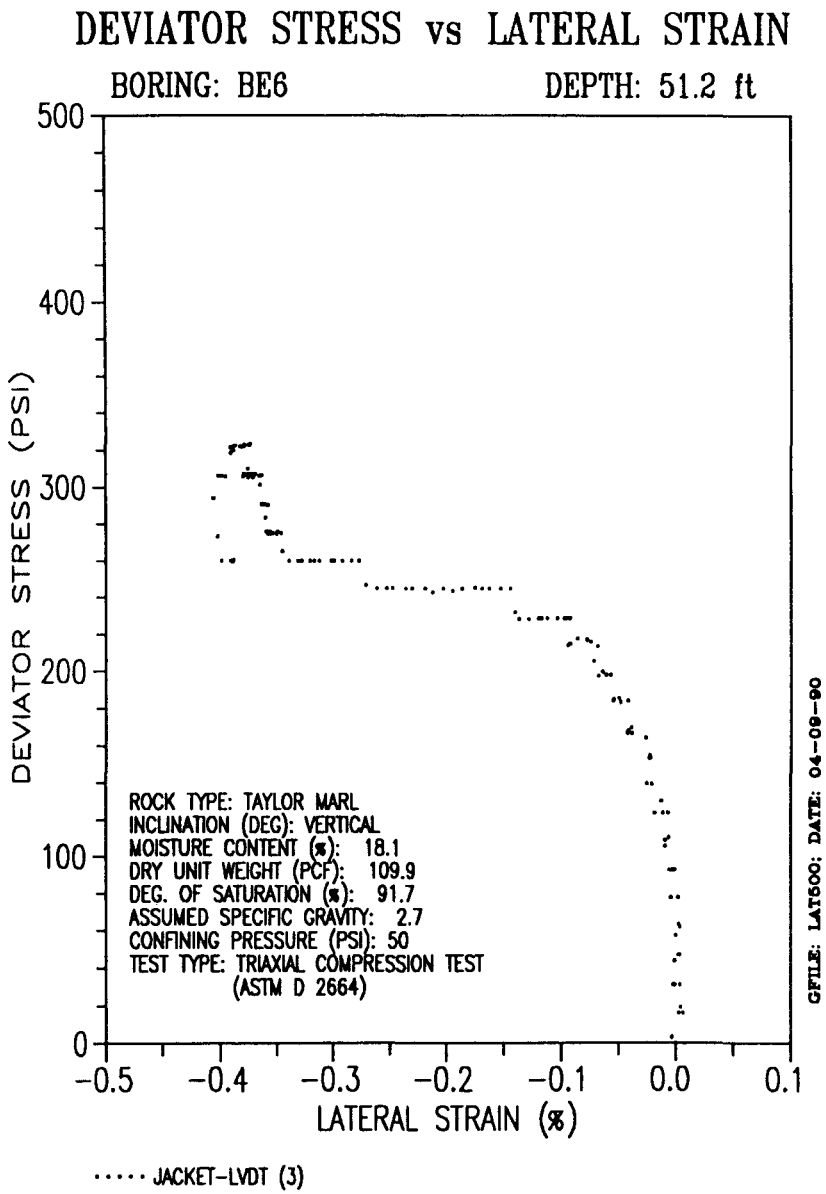
TEXAS SSC SITE

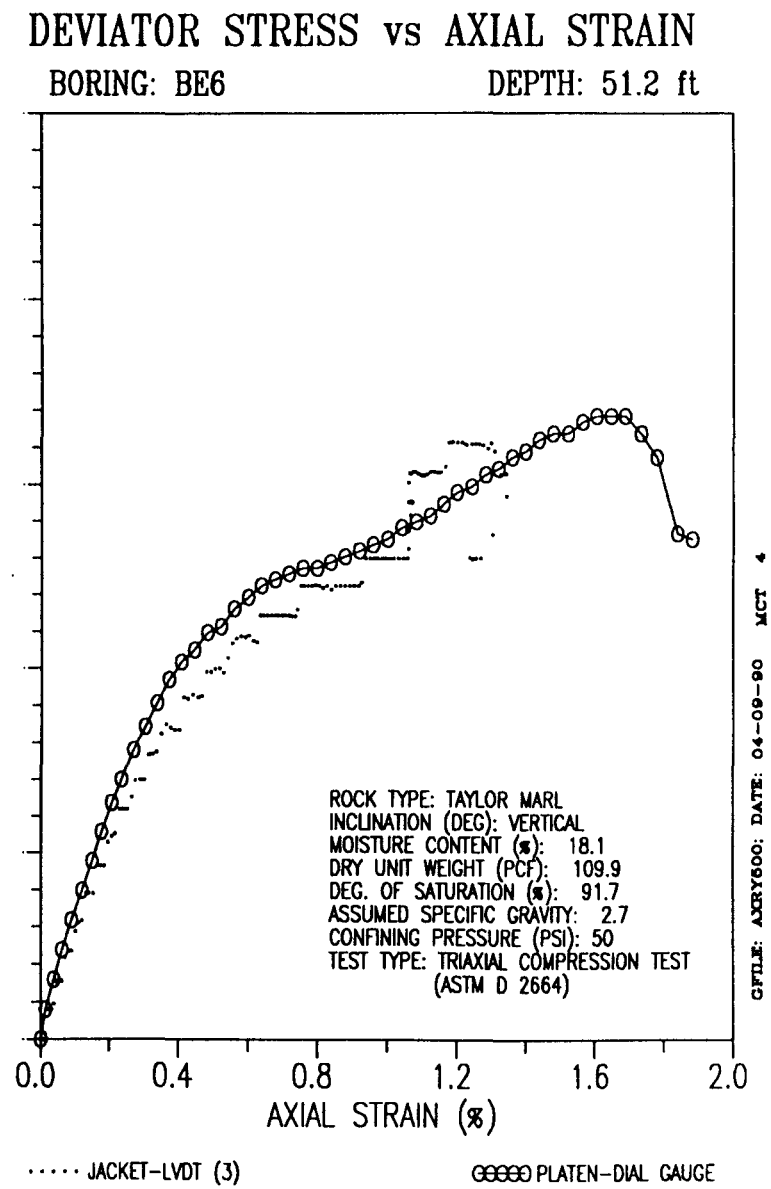
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

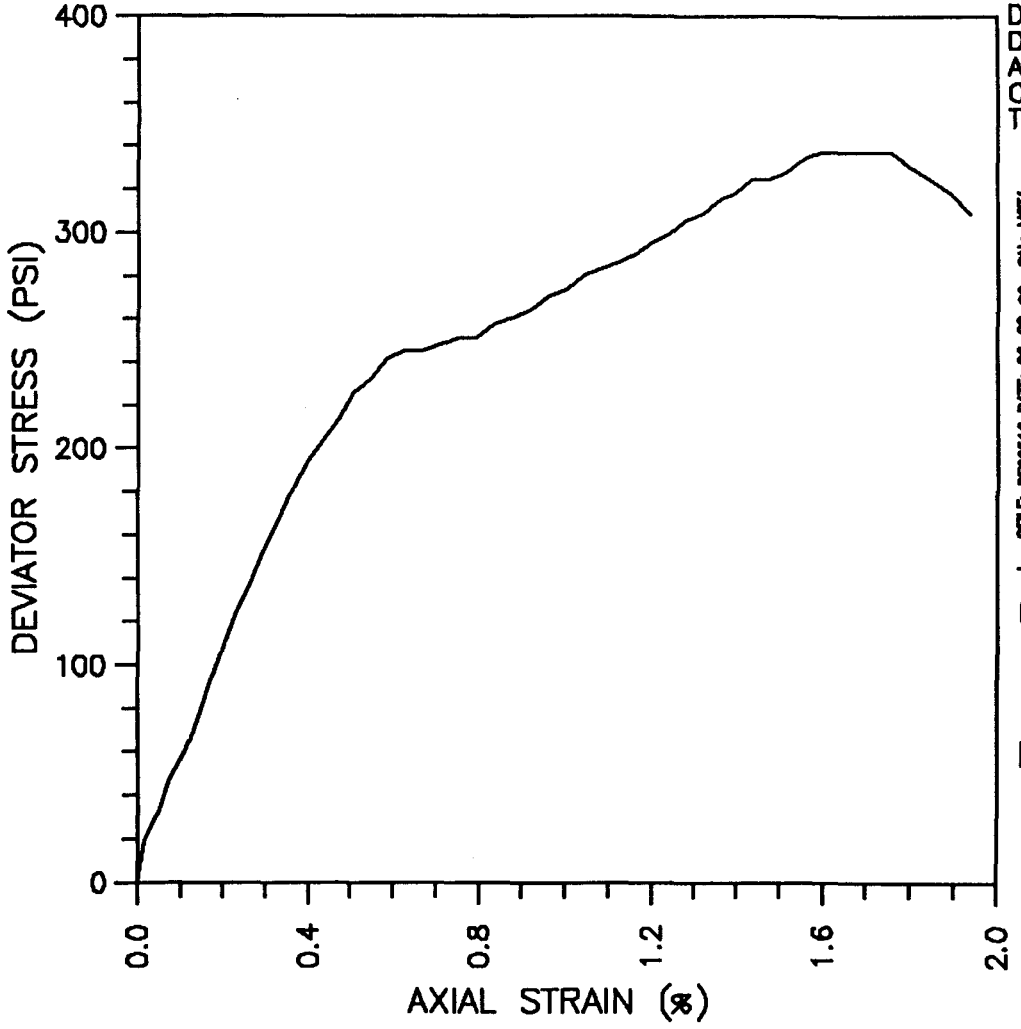
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 51.2 ft
DEVIATOR STRESS (PSI)
500
400
300
200
100
0
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 18.1
DRY UNIT WEIGHT (PCF): 109.9
DEG. OF SATURATION (%): 91.7
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 50
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT600; DATE: 04-09-90
JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 51.2 ft
0.0
0.4
0.8
1.2
1.6
2.0
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 18.1
DRY UNIT WEIGHT (PCF): 109.9
DEG. OF SATURATION (%): 91.7
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 50
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY600; DATE: 04-09-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 51.6
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 18.2
DRY UNIT WEIGHT (PCF): 110.9
DEG. OF SATURATION (%): 94.8
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

BFILE: BE30516 DATE: 06-02-90 CAL: MCT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.435 x10E5 PSI

FAILURE MODE:
BULGING

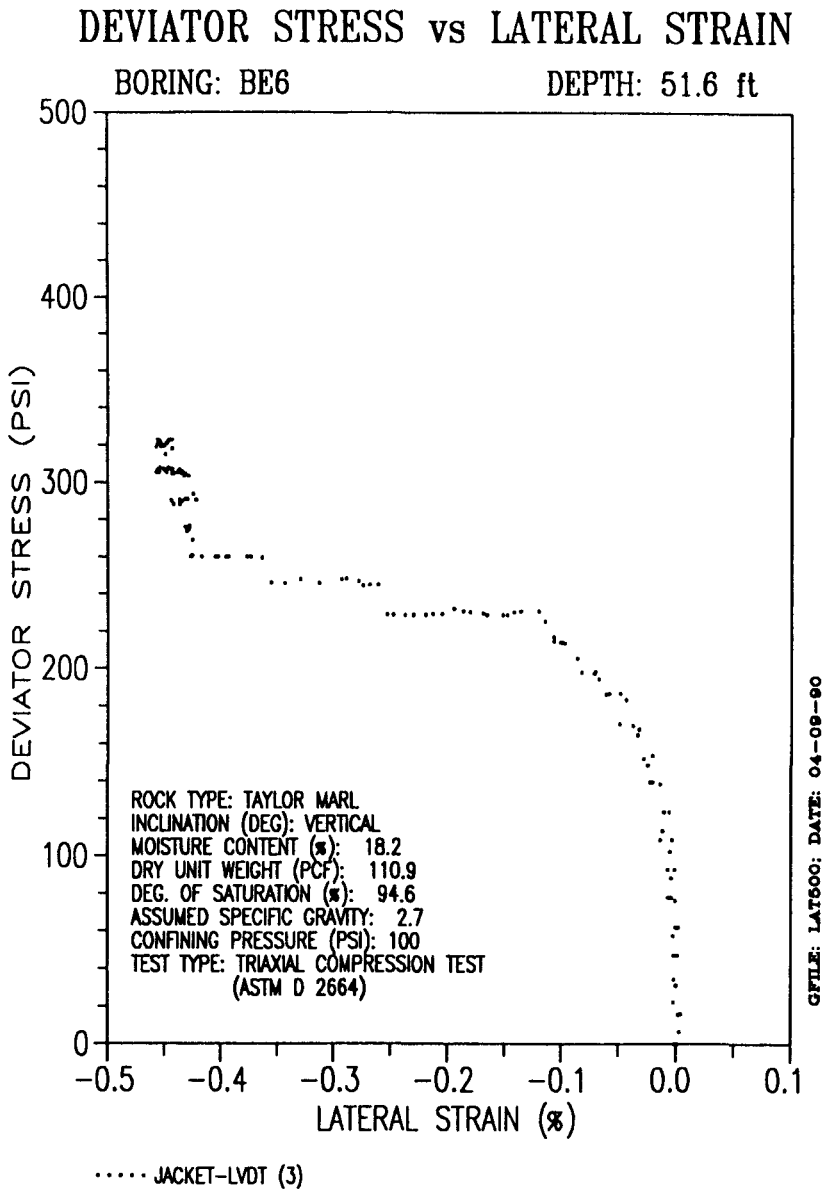
TEXAS SSC SITE

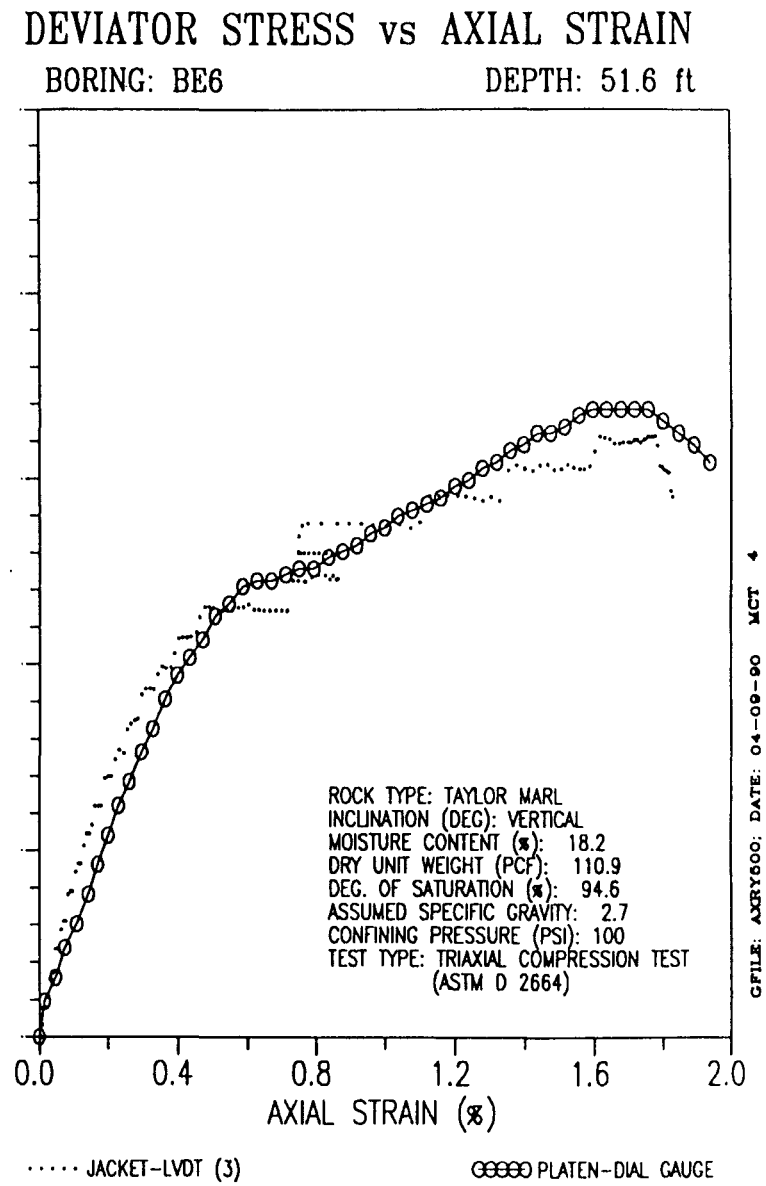
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

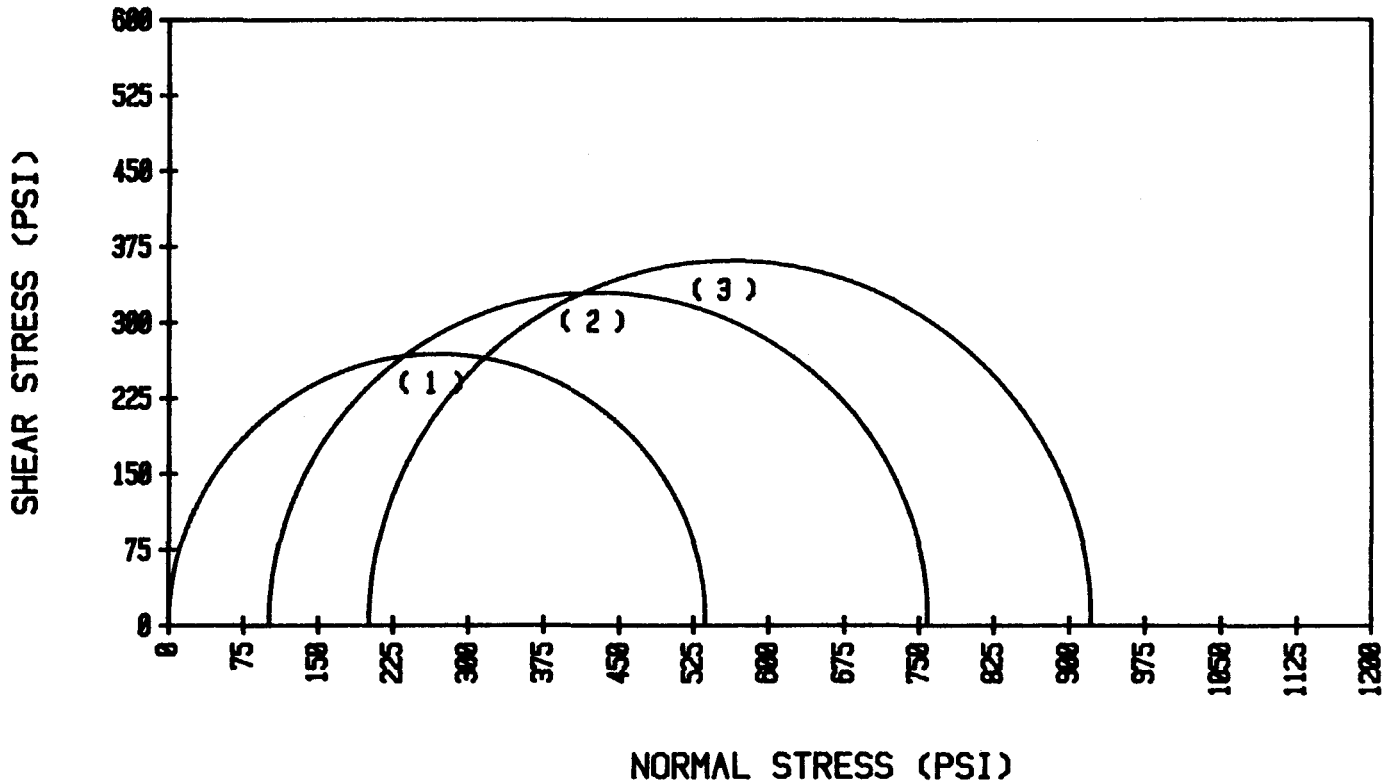
FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 51.6 ft
DEVIATOR STRESS (PSI)
500
400
300
200
100
0
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 18.2
DRY UNIT WEIGHT (PCF): 110.9
DEG. OF SATURATION (%): 94.6
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT600; DATE: 04-09-90
JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 51.6 ft
0.0
0.4
0.8
1.2
1.6
2.0
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 18.2
DRY UNIT WEIGHT (PCF): 110.9
DEG. OF SATURATION (%): 94.6
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY600; DATE: 04-09-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH RANGE (FT): 106.4-107.6
TAYLOR MARL

BORING INCLINATION (DEG): VERTICAL
TEST TYPE: UNCONFINED COMPRESSION (ASTM D2938)
TRIAXIAL COMPRESSION (ASTM D2664)



SEE STRESS - STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 106.4
(2) DEPTH (FT): 106.8
(3) DEPTH (FT): 107.2

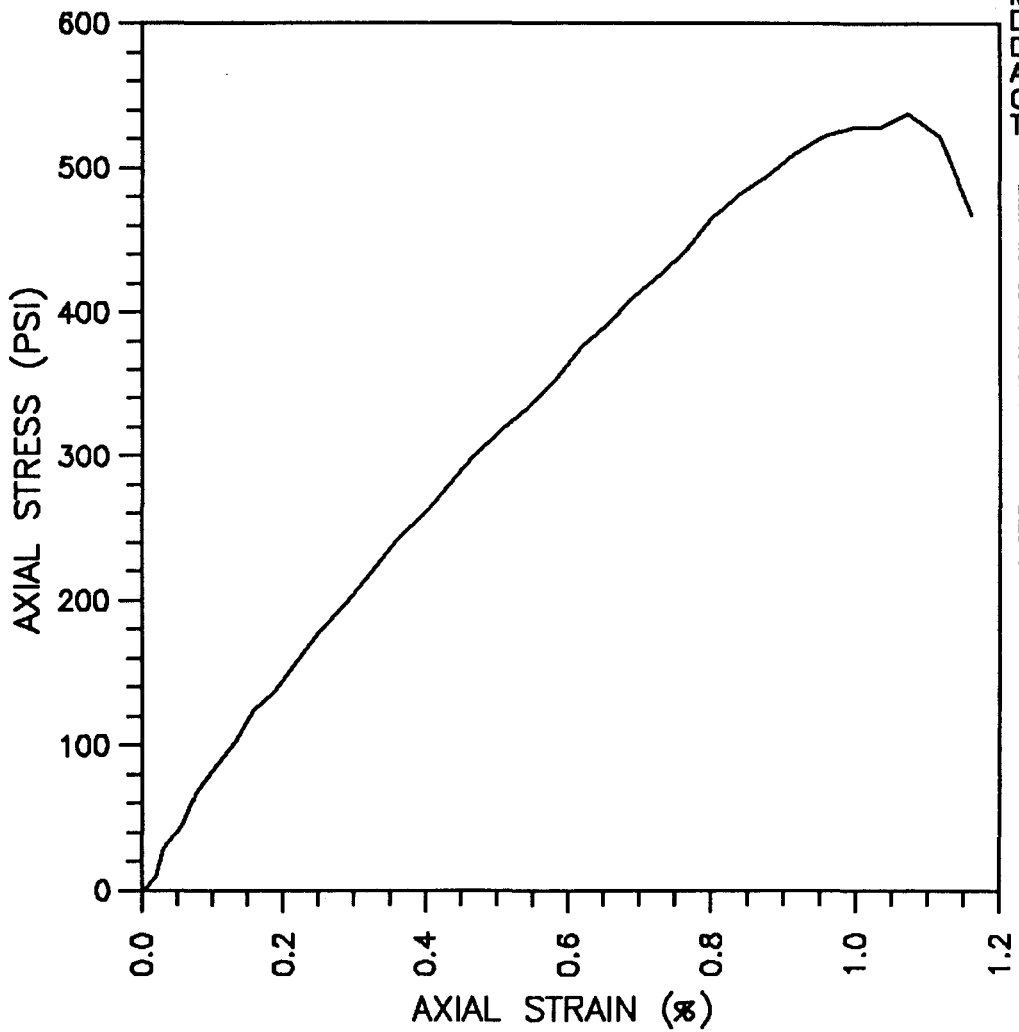
TEXAS SSC SITE

MOHR CIRCLE PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17 | FIGURE

BORING NO.: BE6
DEPTH (FT): 106.4
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 14.7
DRY UNIT WEIGHT (PCF): 120.3
DEG. OF SATURATION (%): 98.7
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

DFILE: BE61084 DATE: 08-01-90 CAL: MCUZ

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.481 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

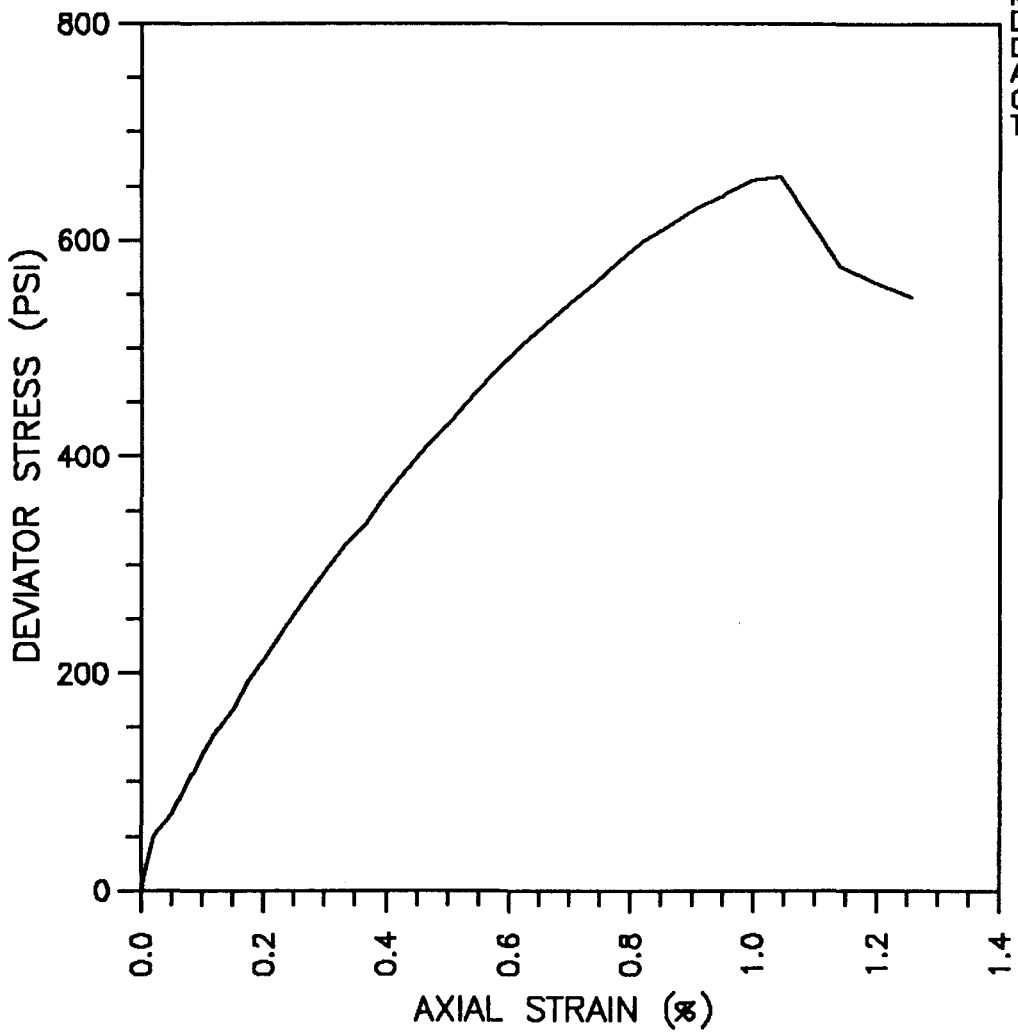
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 106.8
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.0
DRY UNIT WEIGHT (PCF): 119.7
DEG. OF SATURATION (%): 99.3
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

STYLE: BE31068 DATE: 06-02-90 CAL: MCT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.723 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 25 DEG.

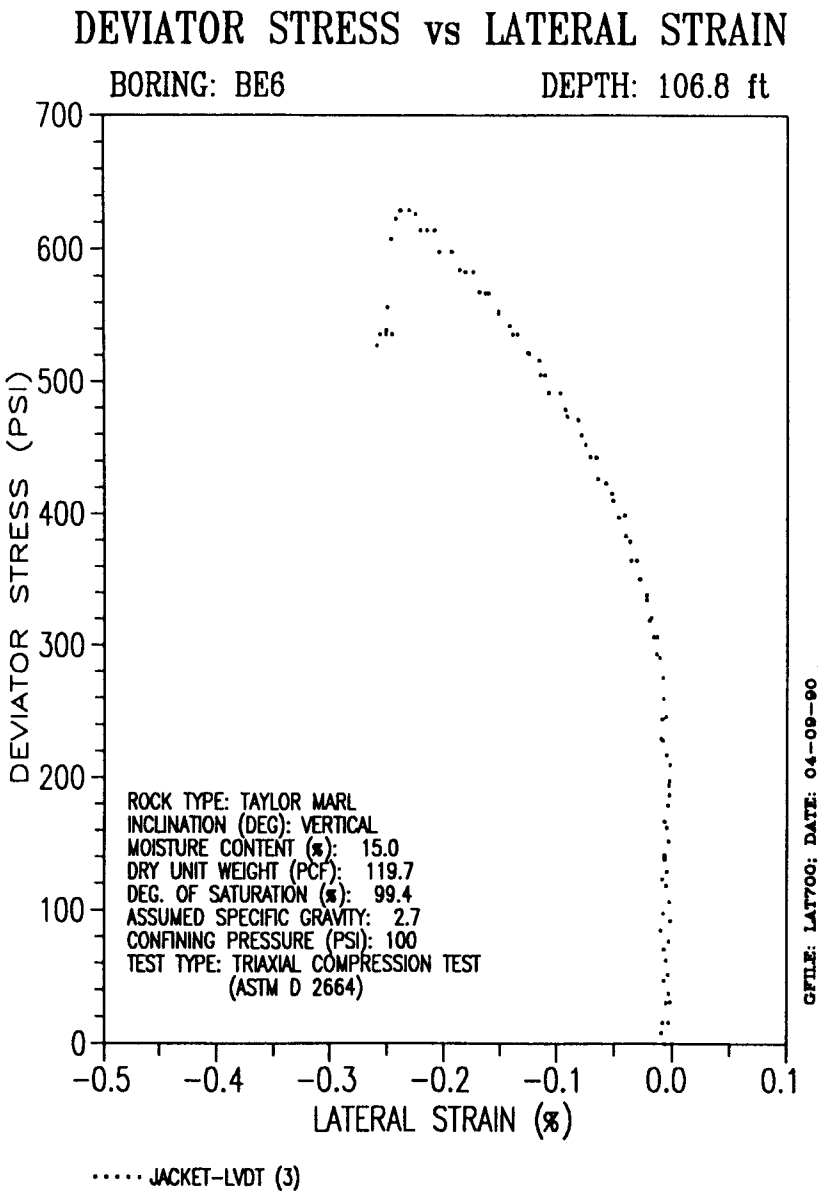
TEXAS SSC SITE

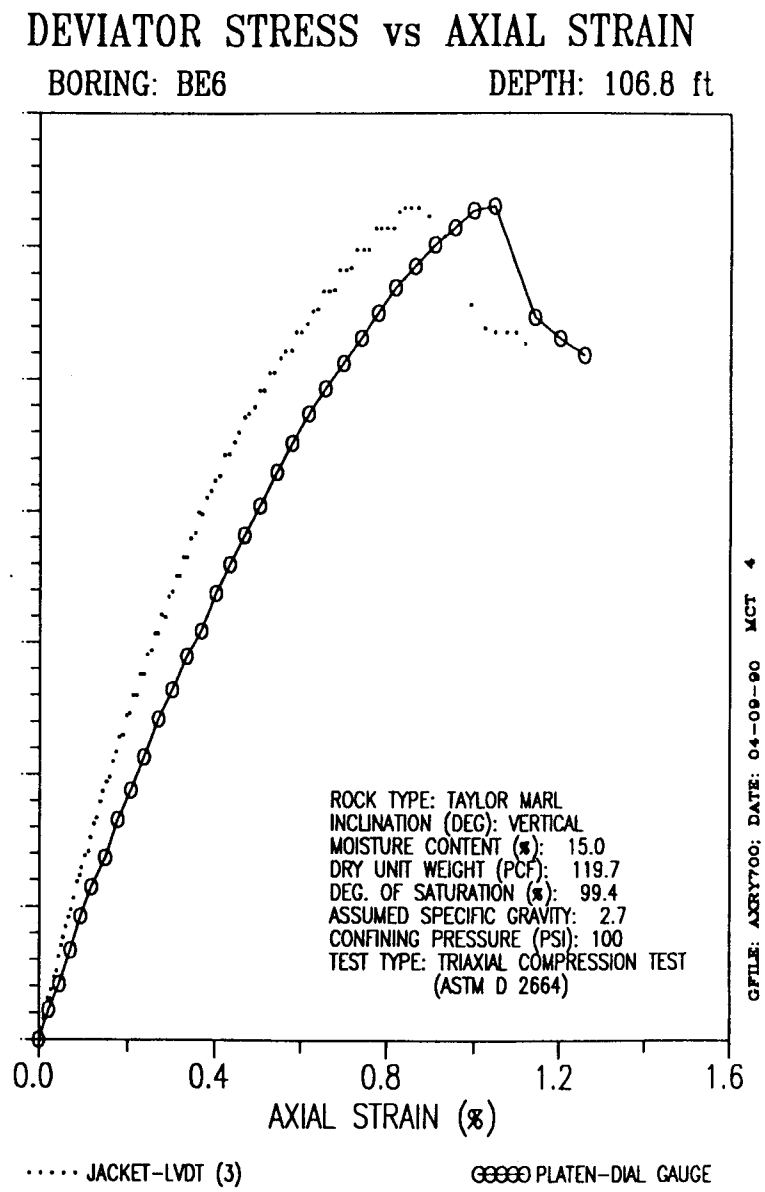
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

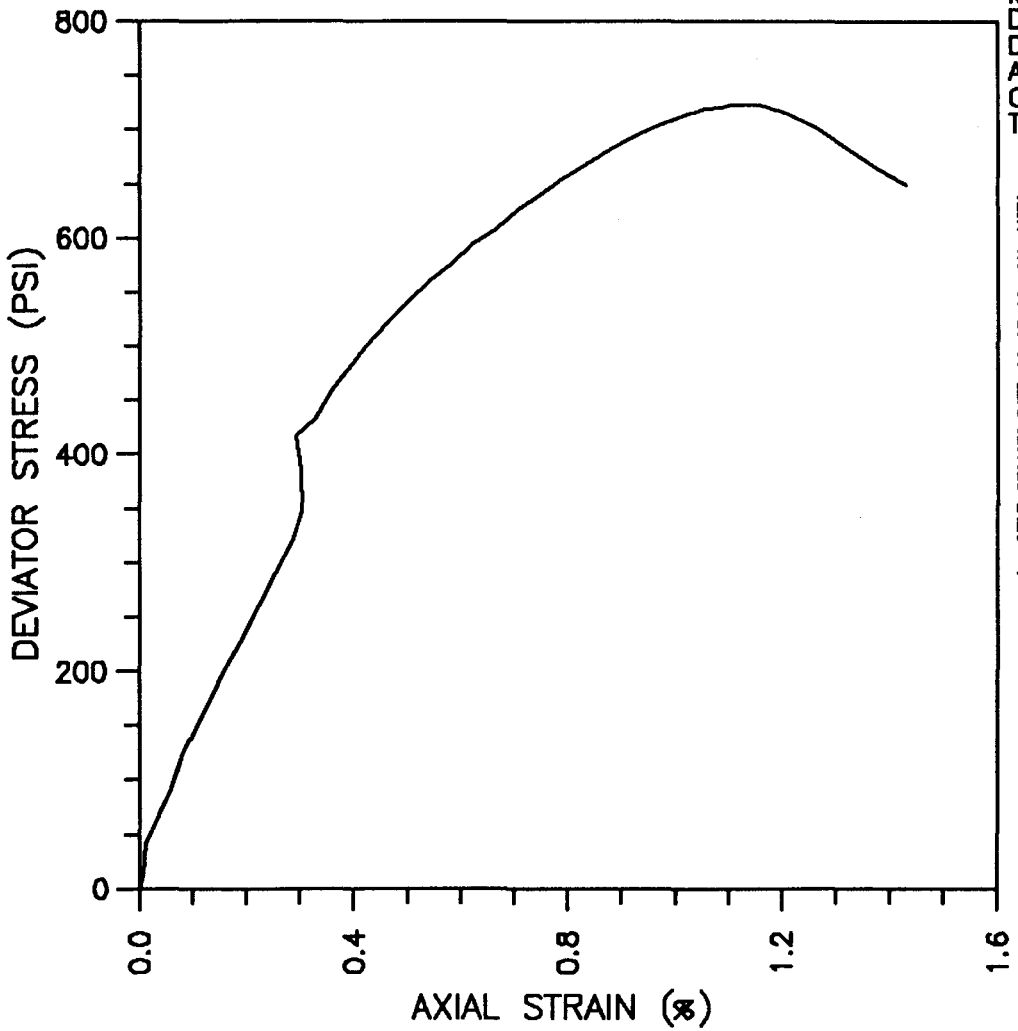
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 106.8 ft
DEVIATOR STRESS (PSI)
700
600
500
400
300
200
100
0
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.0
DRY UNIT WEIGHT (PCF): 119.7
DEG. OF SATURATION (%): 99.4
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT700; DATE: 04-09-90
····· JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 106.8 ft
0.0
0.4
0.8
1.2
1.6
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.0
DRY UNIT WEIGHT (PCF): 119.7
DEG. OF SATURATION (%): 99.4
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY700; DATE: 04-09-90 MCT 4
····· JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 107.2
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.1
DRY UNIT WEIGHT (PCF): 119.4
DEG. OF SATURATION (%): 99.1
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: BE31072 DATE: 06-03-00 CAL: MCT14

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.904 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 30 DEG.

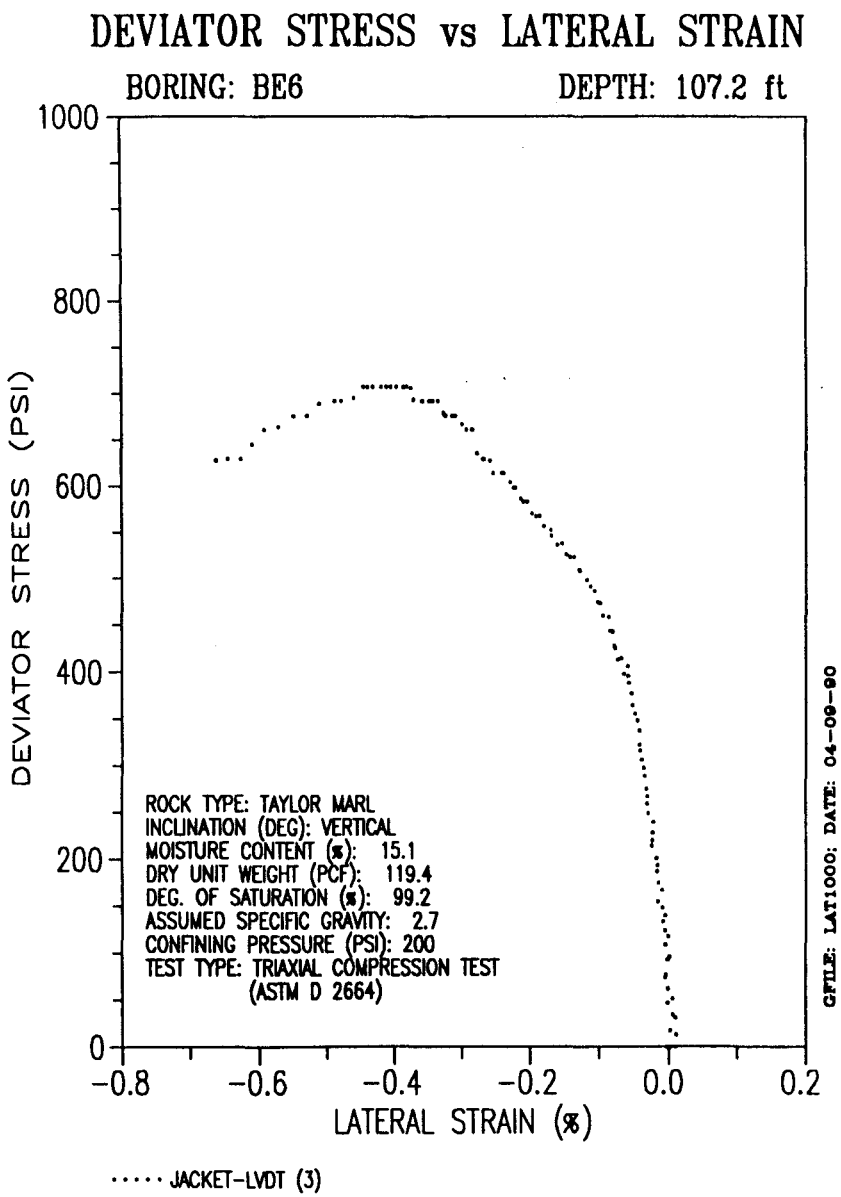
TEXAS SSC SITE

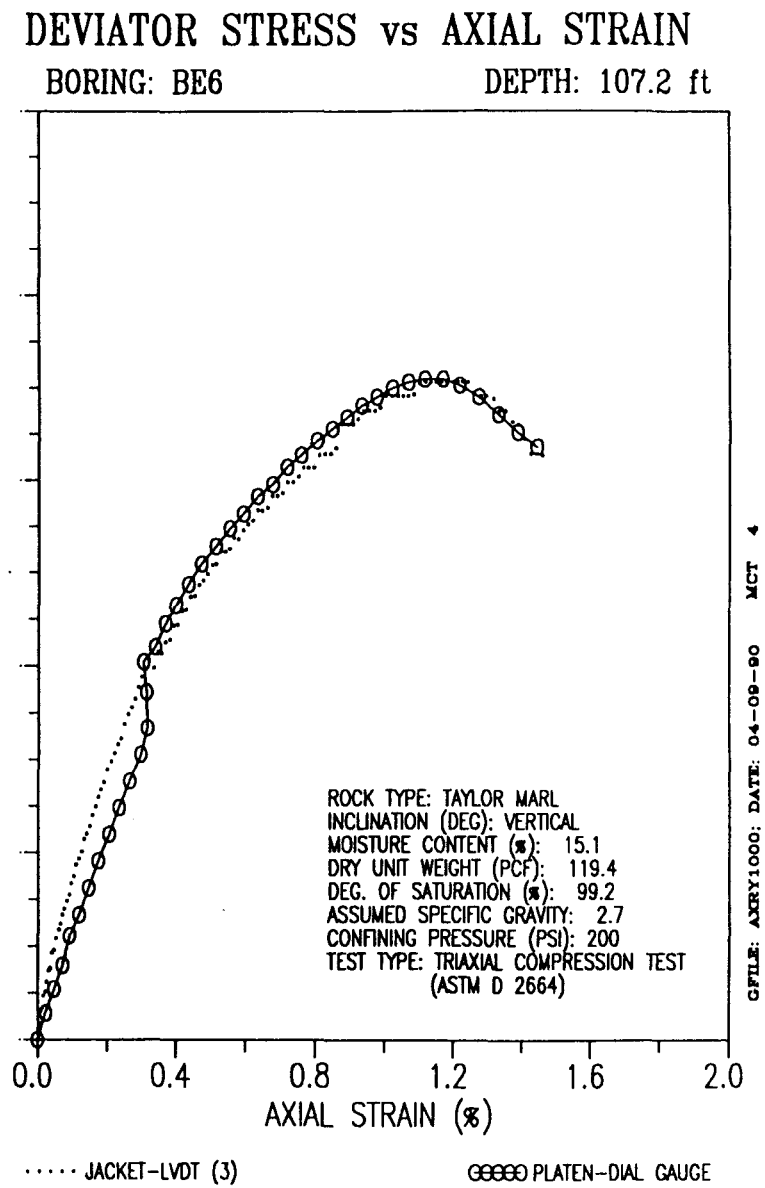
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

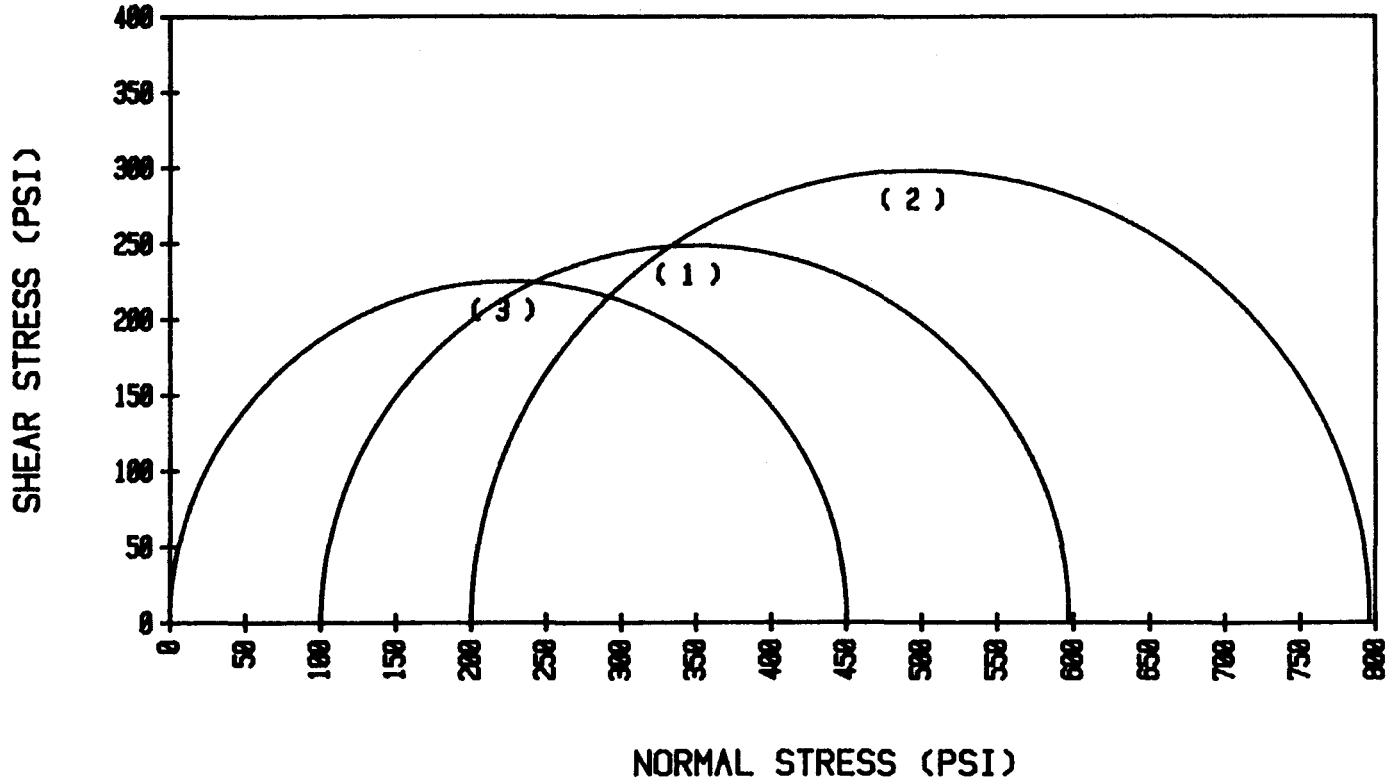
FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 107.2 ft
DEVIATOR STRESS (PSI)
1000
800
600
400
200
0
-0.8
-0.6
-0.4
-0.2
0.0
0.2
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.1
DRY UNIT WEIGHT (PCF): 119.4
DEG. OF SATURATION (%): 99.2
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT1000; DATE: 04-09-90
JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 107.2 ft
0.0
0.4
0.8
1.2
1.6
2.0
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.1
DRY UNIT WEIGHT (PCF): 119.4
DEG. OF SATURATION (%): 99.2
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY1000; DATE: 04-09-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH RANGE (FT): 170.1-171.3
TAYLOR MARL

BORING INCLINATION (DEG): VERTICAL
TEST TYPE: UNCONFINED COMPRESSION (ASTM D2938)
TRIAXIAL COMPRESSION (ASTM D2664)

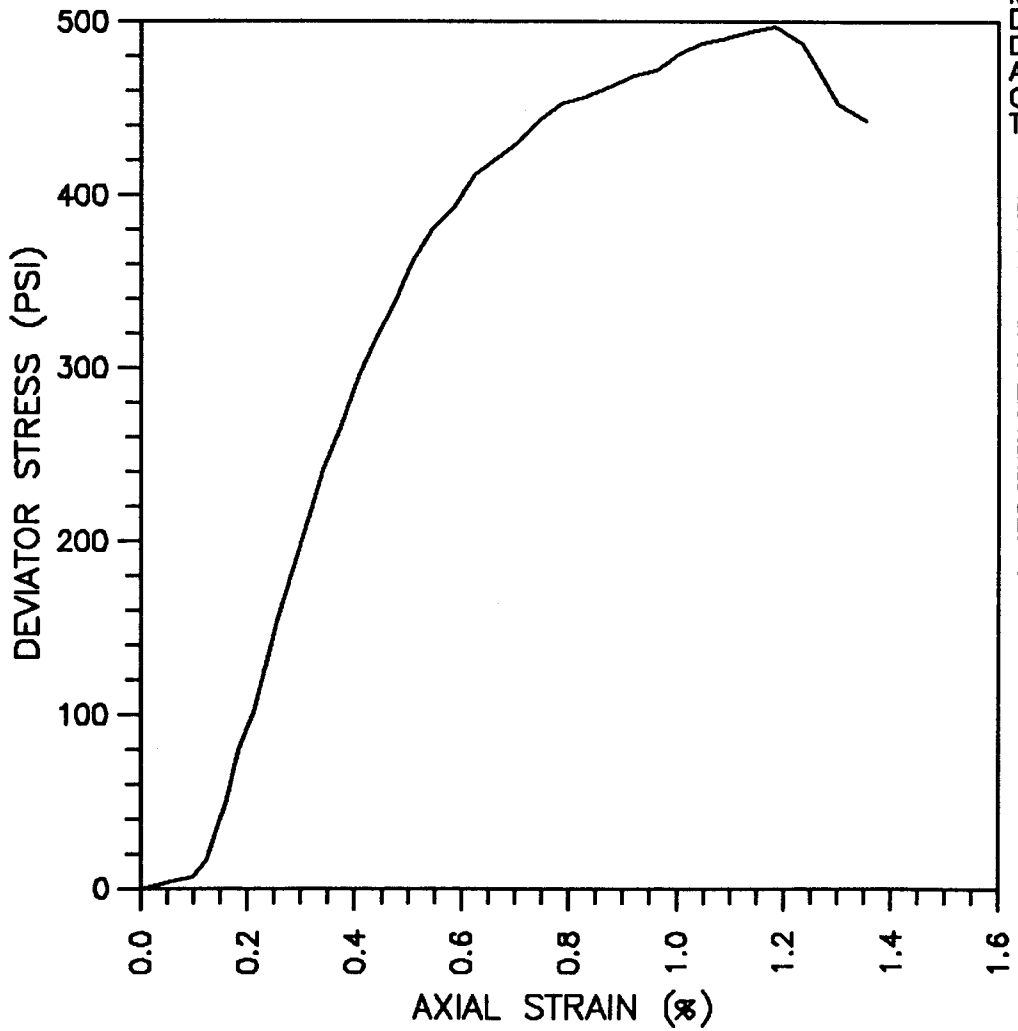


SEE STRESS - STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 170.1
(2) DEPTH (FT): 170.5
(3) DEPTH (FT): 170.9

TEXAS SSC SITE	
MOHR CIRCLE PLOT	
MASON-JOHNSTON & ASSOCIATES, INC. GEOLOGISTS-ENGINEERS	
JOB NO.: 5530.17	FIGURE

BORING NO.: BE6
DEPTH (FT): 170.1
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.1
DRY UNIT WEIGHT (PCF): 117.1
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: BE31701 DATE: 06-03-90 DWL: MCT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.889 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 50 DEG.

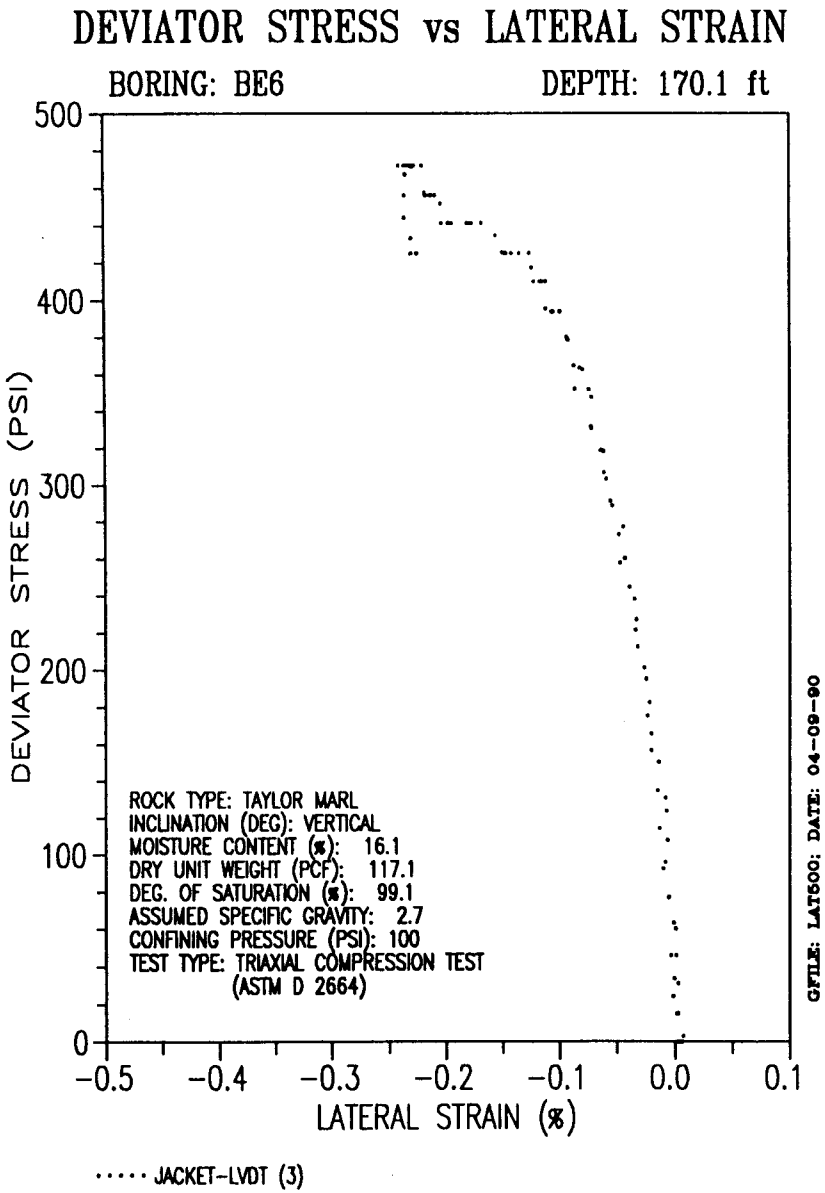
TEXAS SSC SITE

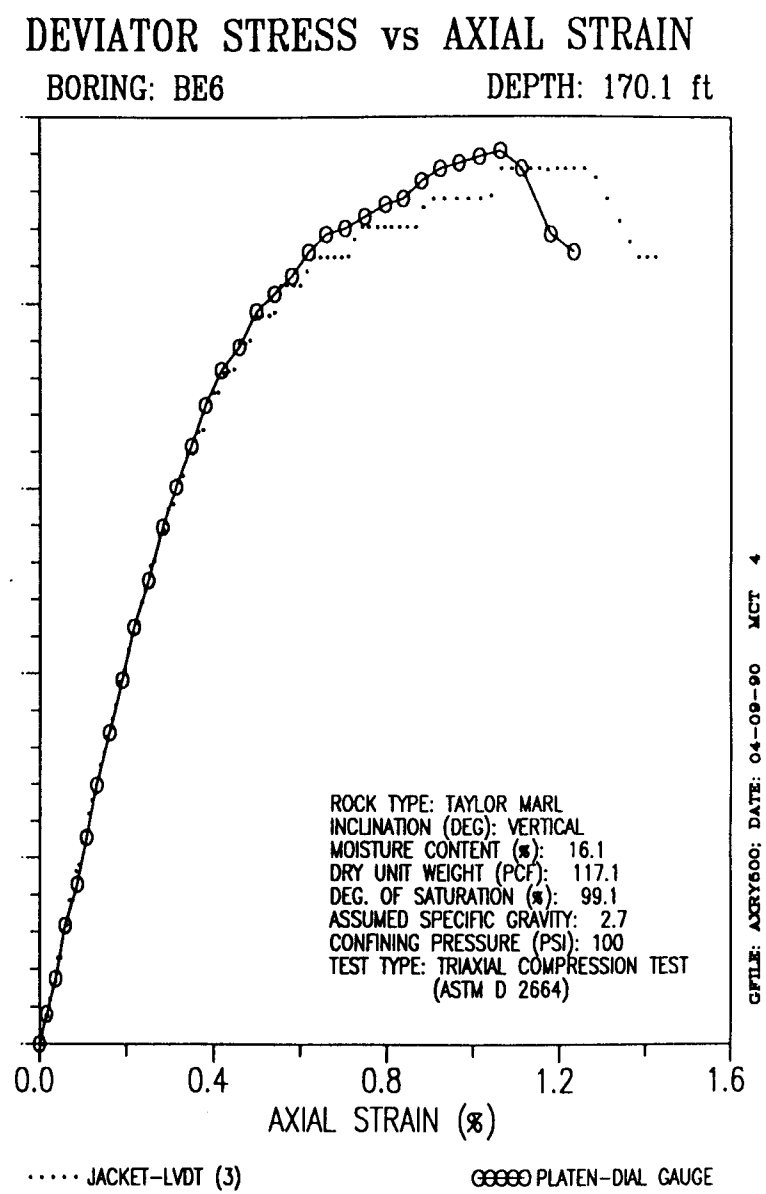
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

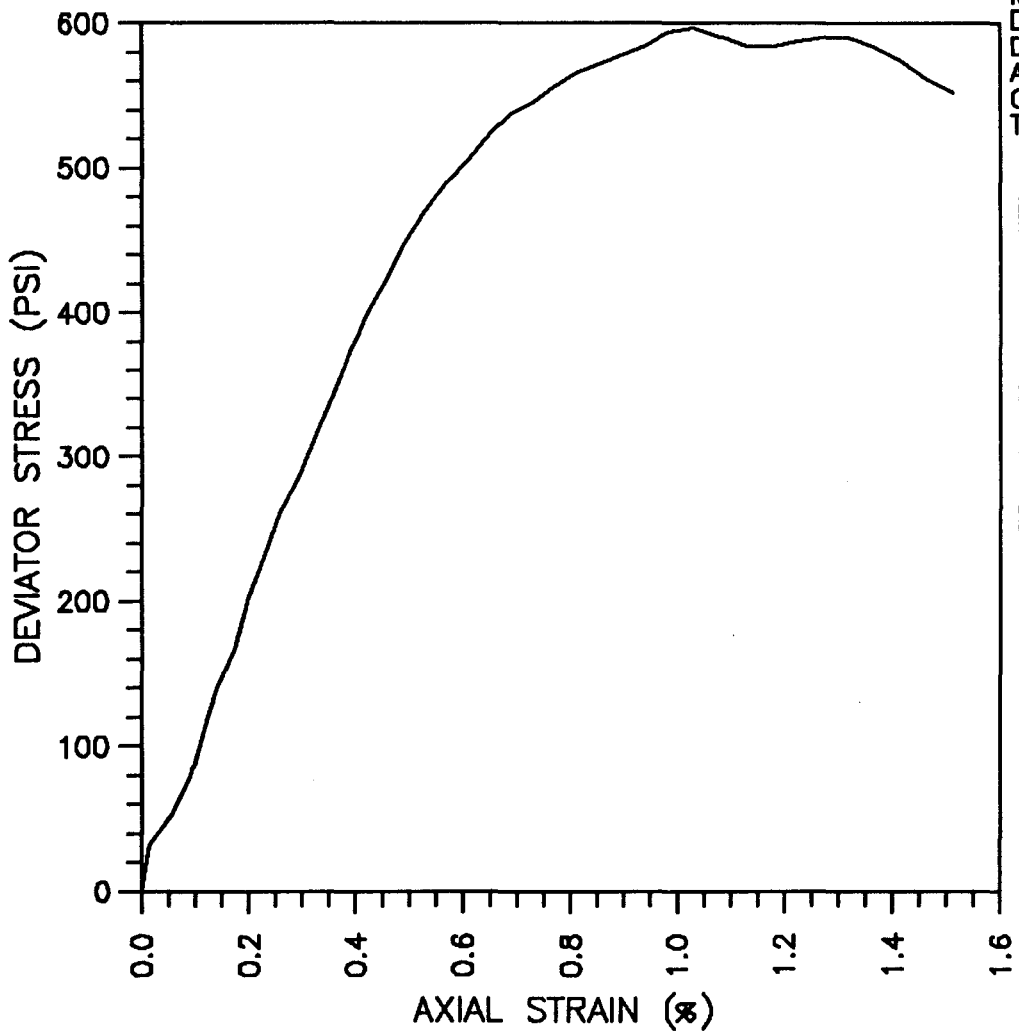
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 170.1 ft
DEVIATOR STRESS (PSI)
500
400
300
200
100
0
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.1
DRY UNIT WEIGHT (PCF): 117.1
DEG. OF SATURATION (%): 99.1
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT600; DATE: 04-09-90
JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 170.1 ft
0.0
0.4
0.8
1.2
1.6
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.1
DRY UNIT WEIGHT (PCF): 117.1
DEG. OF SATURATION (%): 99.1
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY600; DATE: 04-09-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 170.5
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.0
DRY UNIT WEIGHT (PCF): 117.3
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: BE31705 DATE: 08-02-90 CAL: MCT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.909 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 20 DEG.

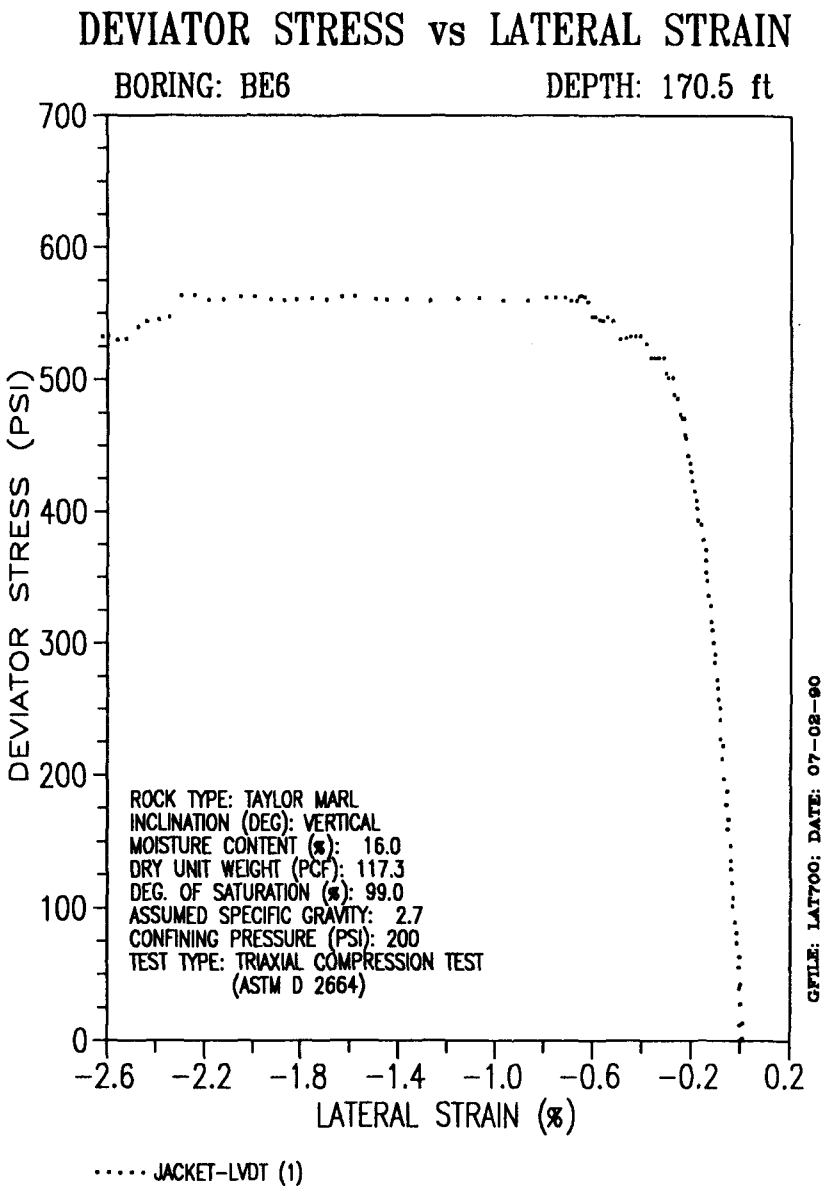
TEXAS SSC SITE

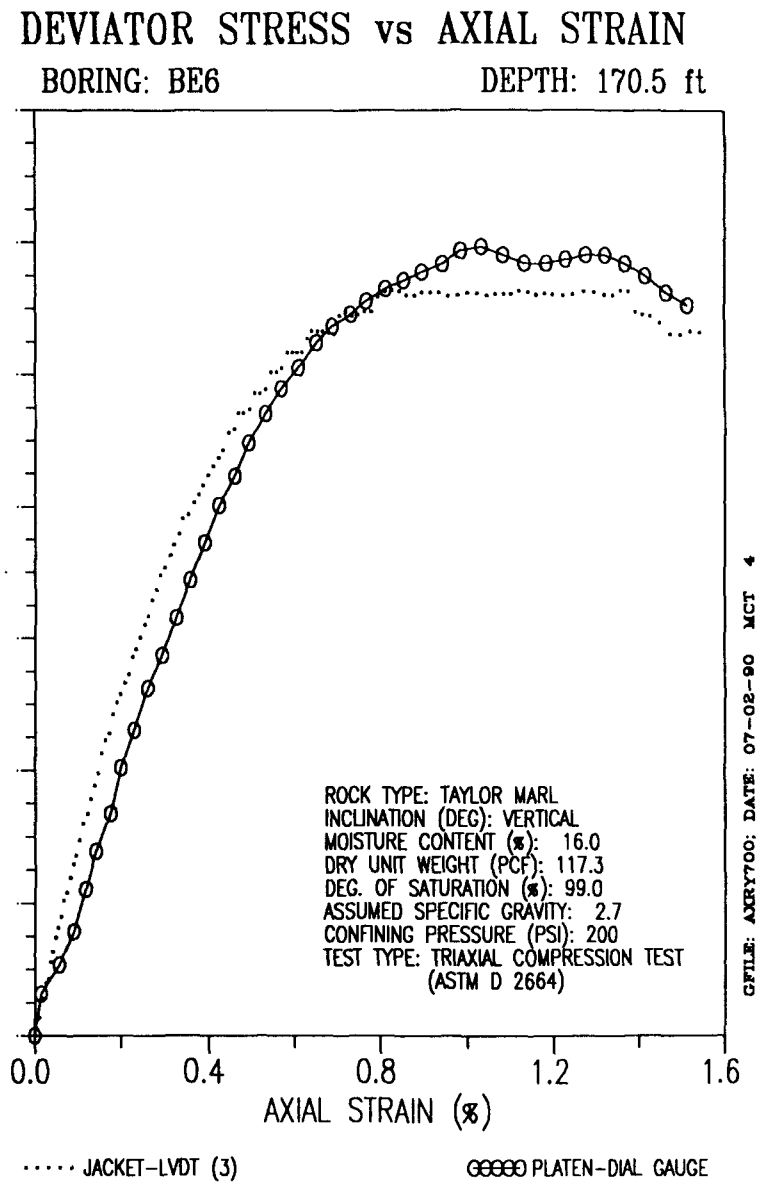
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

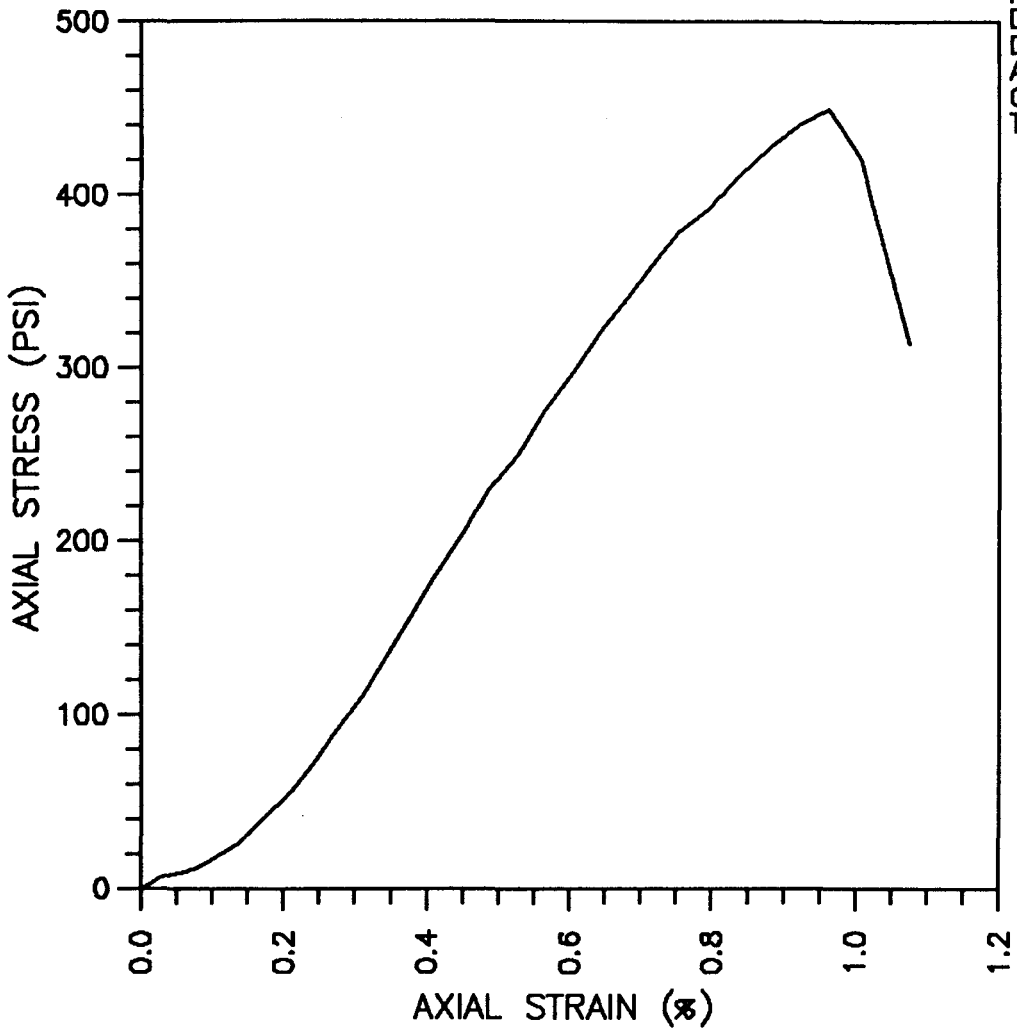
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 170.5 ft
DEVIATOR STRESS (PSI)
700
600
500
400
300
200
100
0
-2.6
-2.2
-1.8
-1.4
-1.0
-0.6
-0.2
0.2
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.0
DRY UNIT WEIGHT (PCF): 117.3
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT700; DATE: 07-02-90
JACKET-LVDT (1)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 170.5 ft
0.0
0.4
0.8
1.2
1.6
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.0
DRY UNIT WEIGHT (PCF): 117.3
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY700; DATE: 07-02-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 170.9
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.7
DRY UNIT WEIGHT (PCF): 122.0
DEG. OF SATURATION (%): 111.7
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

DFILE: BE61709 DATE: 06-01-90 CAL: MCU2

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.606 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

STRESS-STRAIN PLOT

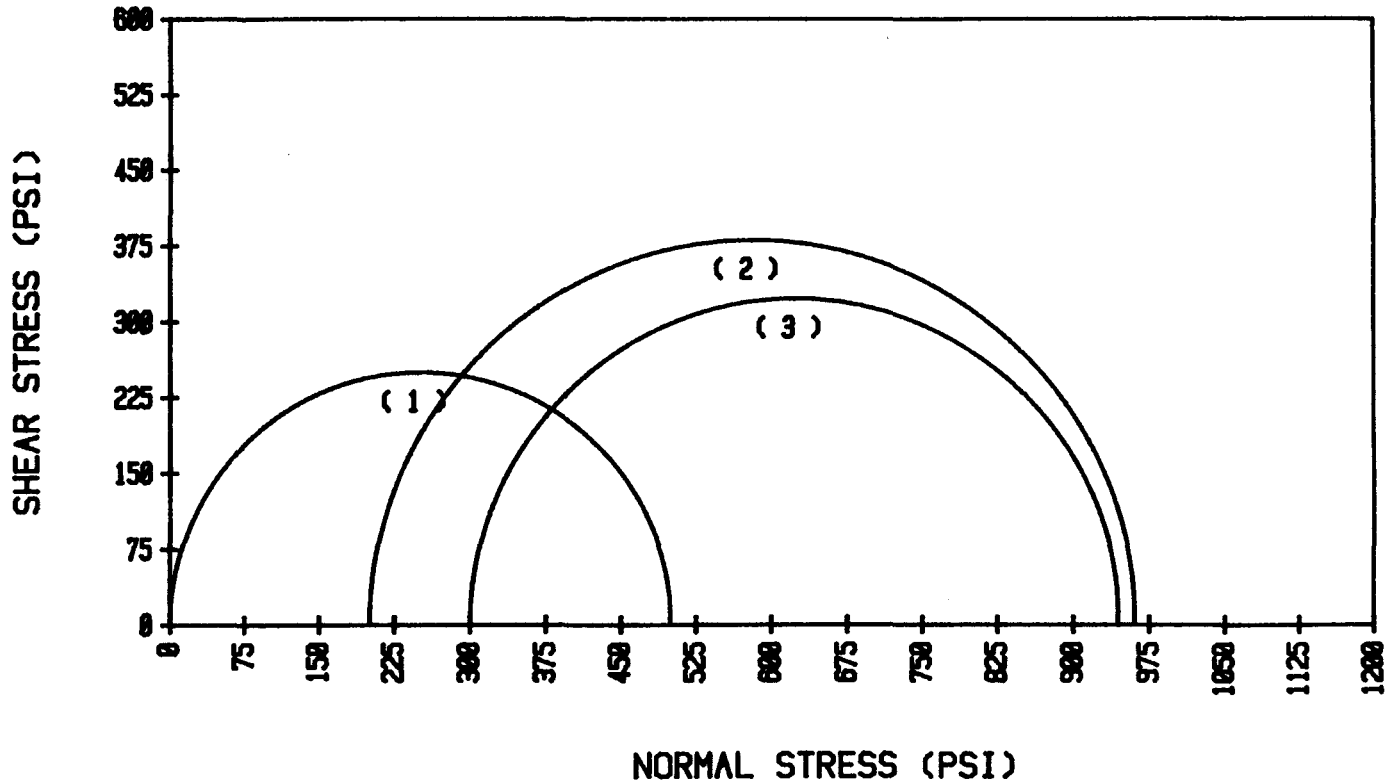
MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH RANGE (FT): 206.8-208.4
TAYLOR MARL

BORING INCLINATION (DEG): VERTICAL
TEST TYPE: UNCONFINED COMPRESSION (ASTM D2938)
TRIAXIAL COMPRESSION (ASTM D2664)



SEE STRESS - STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 206.8
(2) DEPTH (FT): 207.6
(3) DEPTH (FT): 208.0

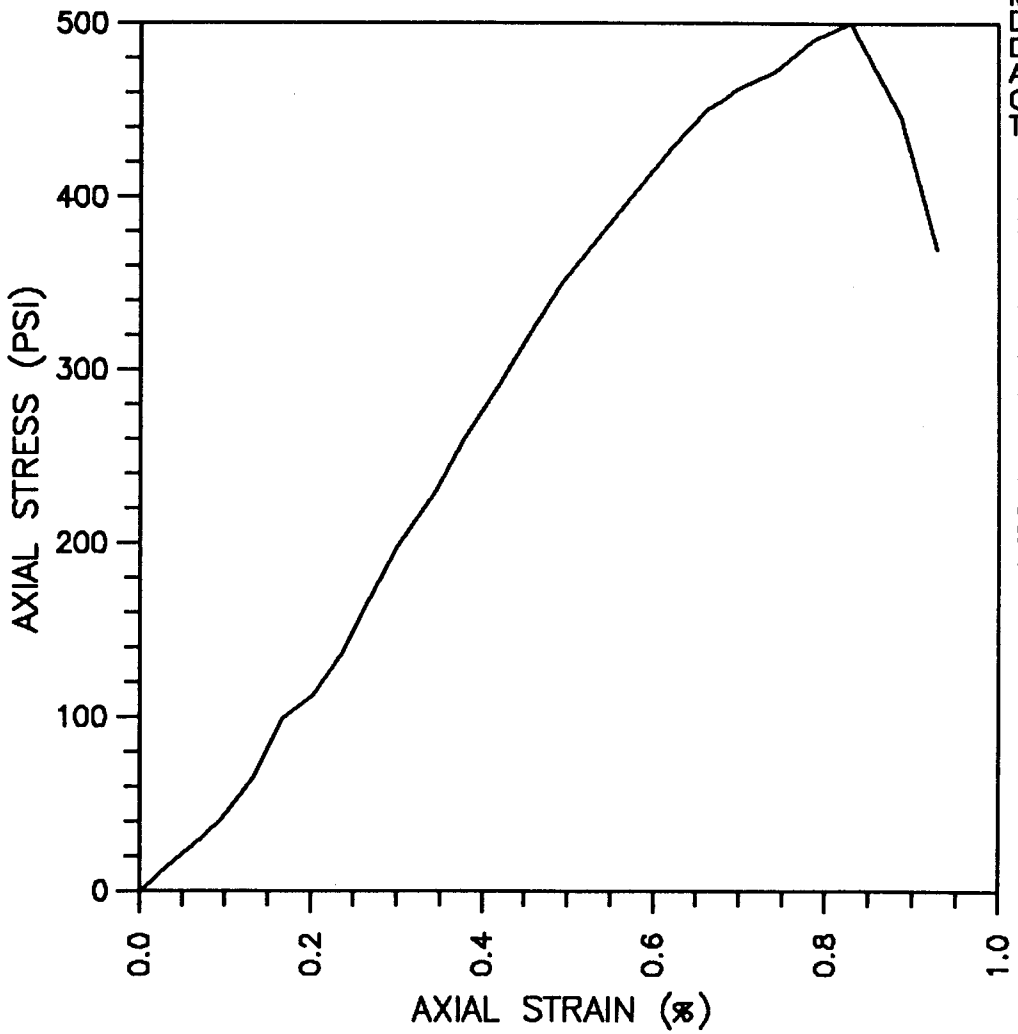
TEXAS SSC SITE

MOHR CIRCLE PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17 | FIGURE

BORING NO.: BE6
DEPTH (FT): 206.8
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.4
DRY UNIT WEIGHT (PCF): 116.8
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

FILE: BE6206B DATE: 06-01-90 DN: MCUZ

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.889 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

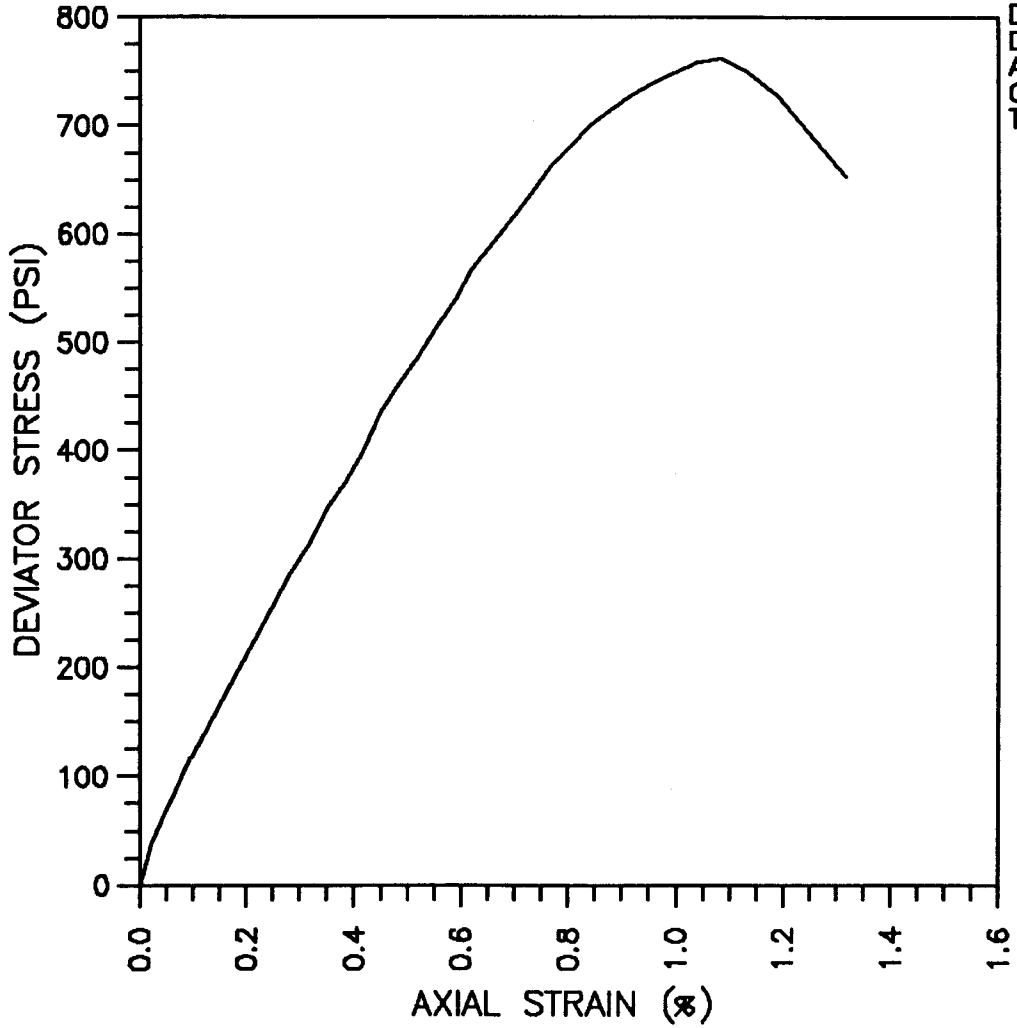
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 207.6
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.7
DRY UNIT WEIGHT (PCF): 114.5
DEG. OF SATURATION (%): 95.6
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: BE62076 DATE: 06-02-00 CAL: MCT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.870 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 30 DEG.

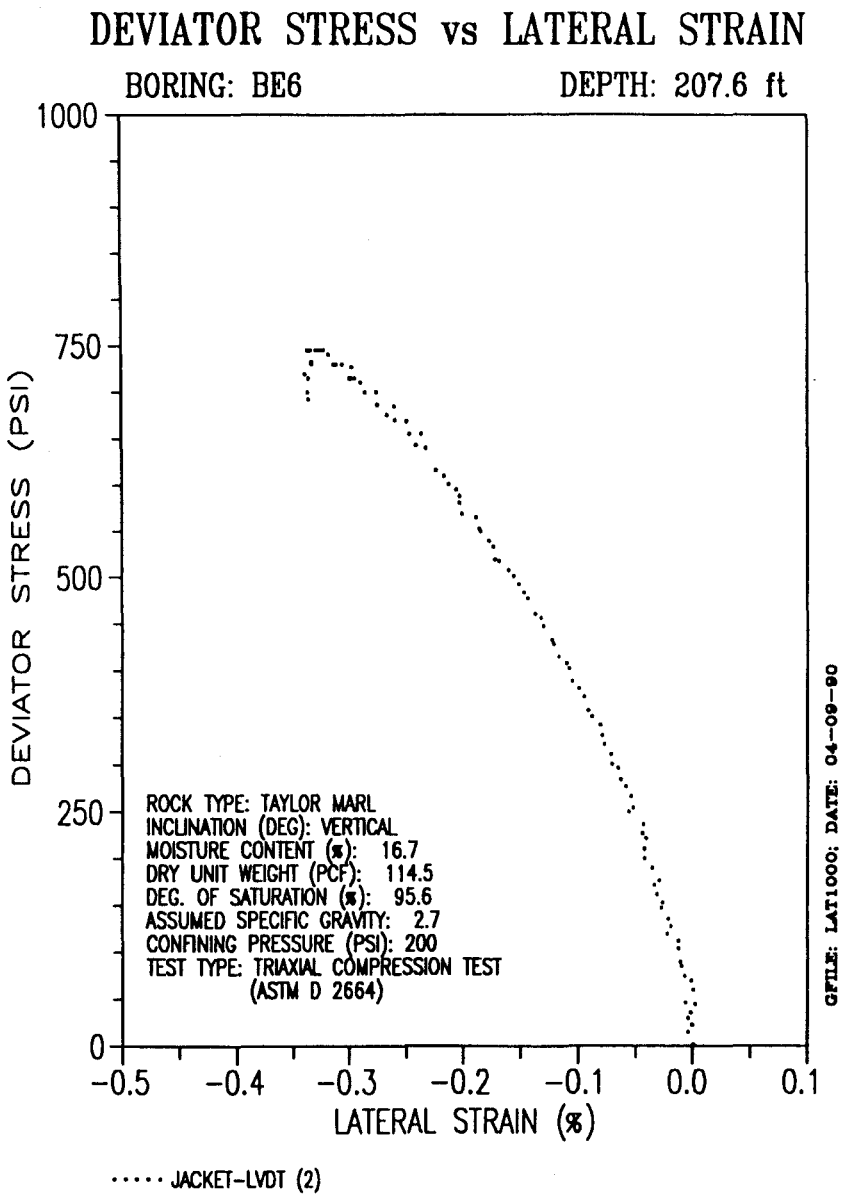
TEXAS SSC SITE

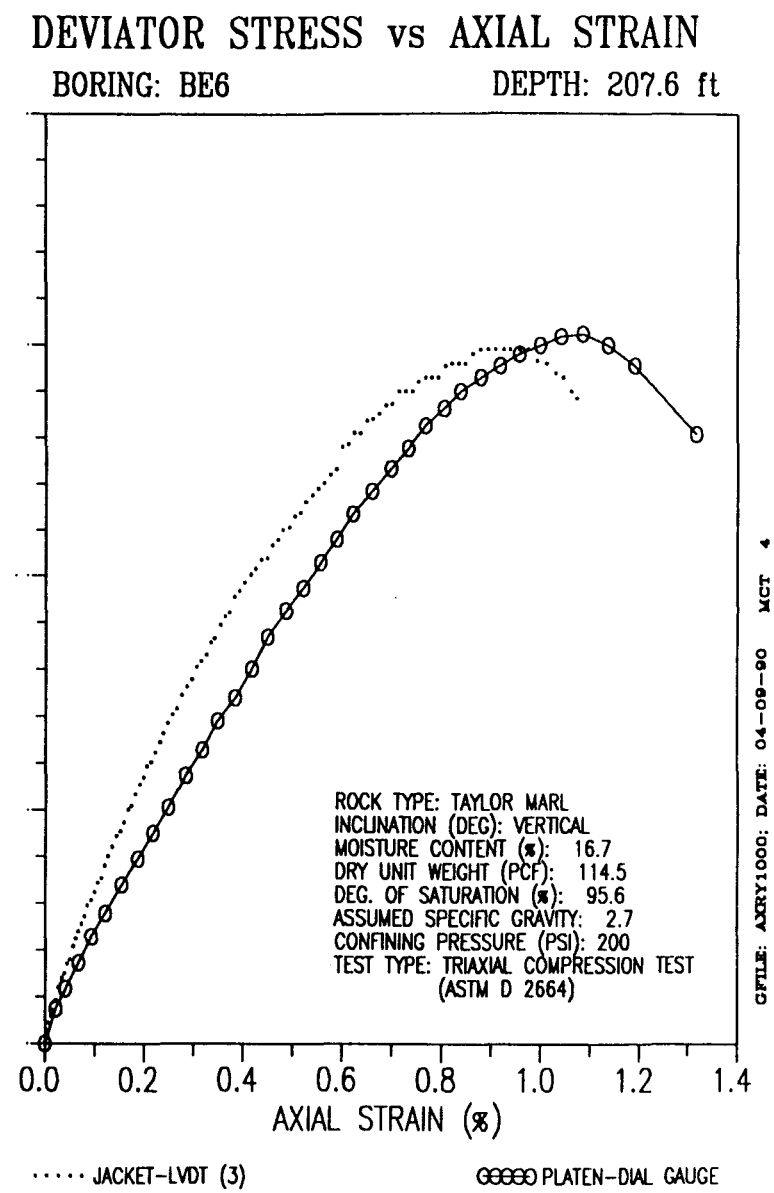
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

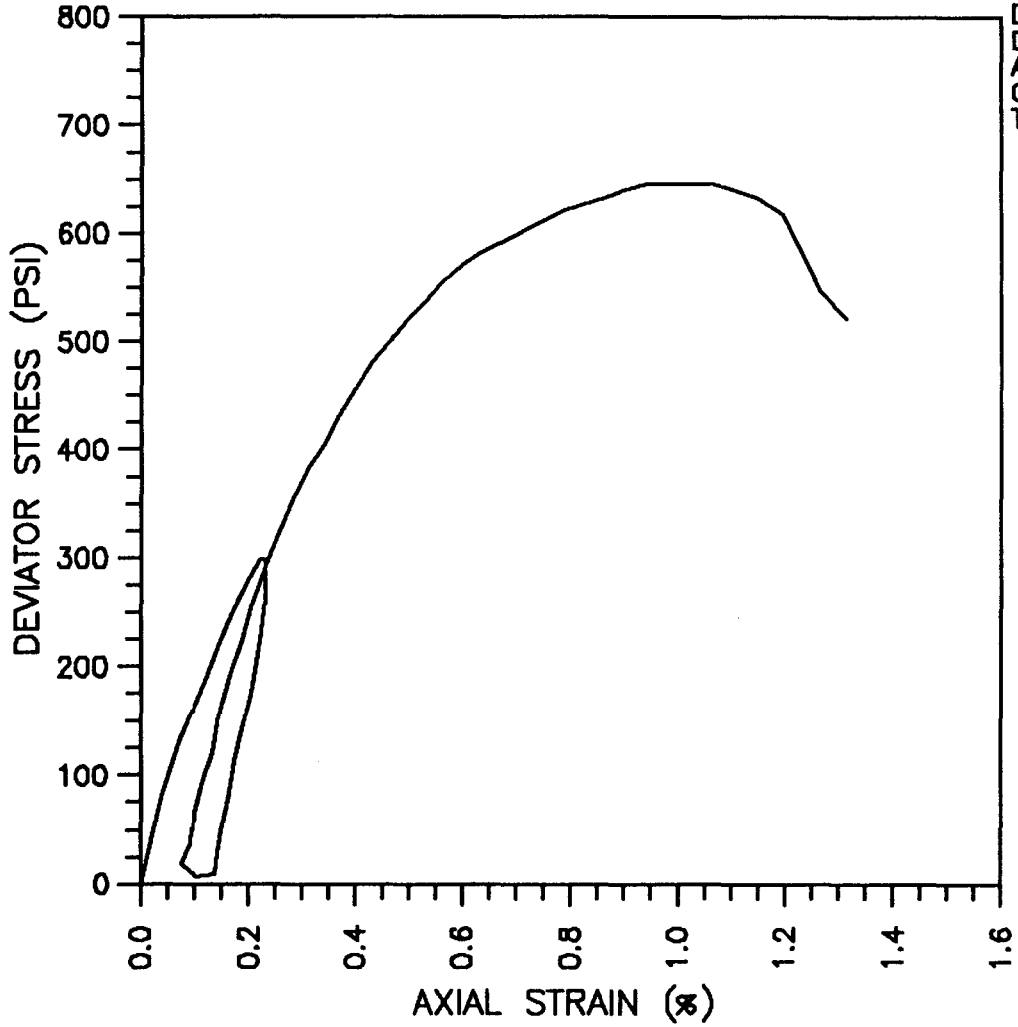
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 207.6 ft
DEVIATOR STRESS (PSI)
1000
750
500
250
0
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.7
DRY UNIT WEIGHT (PCF): 114.5
DEG. OF SATURATION (%): 95.6
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT1000; DATE: 04-09-90
JACKET-LVDT (2)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 207.6 ft
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.7
DRY UNIT WEIGHT (PCF): 114.5
DEG. OF SATURATION (%): 95.6
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY1000; DATE: 04-09-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 208.0
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.2
DRY UNIT WEIGHT (PCF): 115.2
DEG. OF SATURATION (%): 100.6
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

STYLE: BE6XXXXX DATE: 04-02-90 CAL: MGT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
1.176 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 35 DEG.

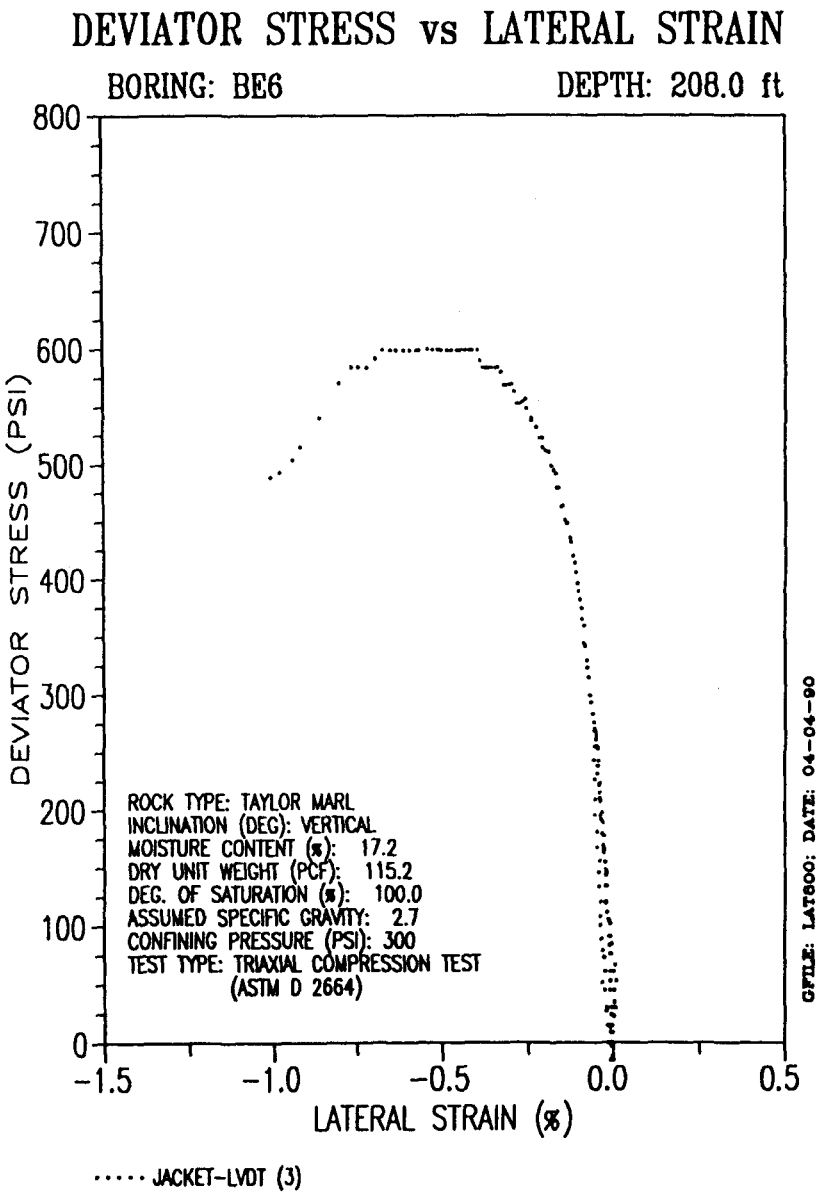
TEXAS SSC SITE

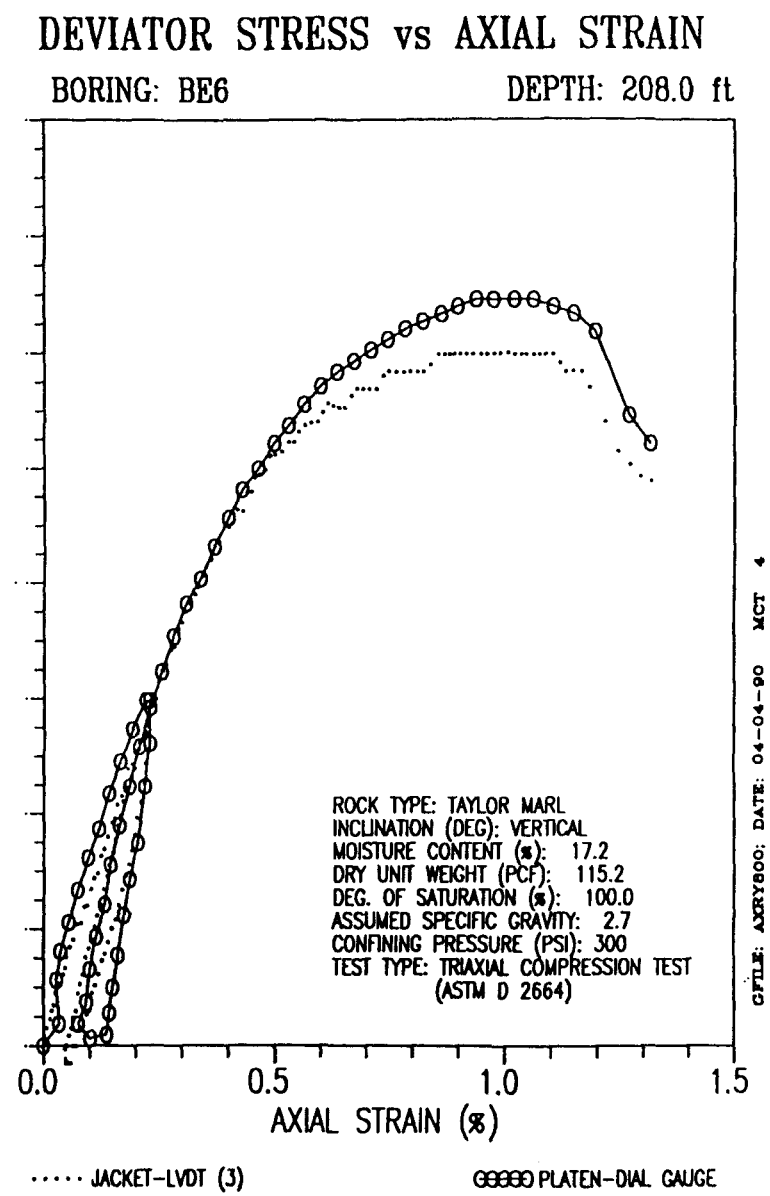
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

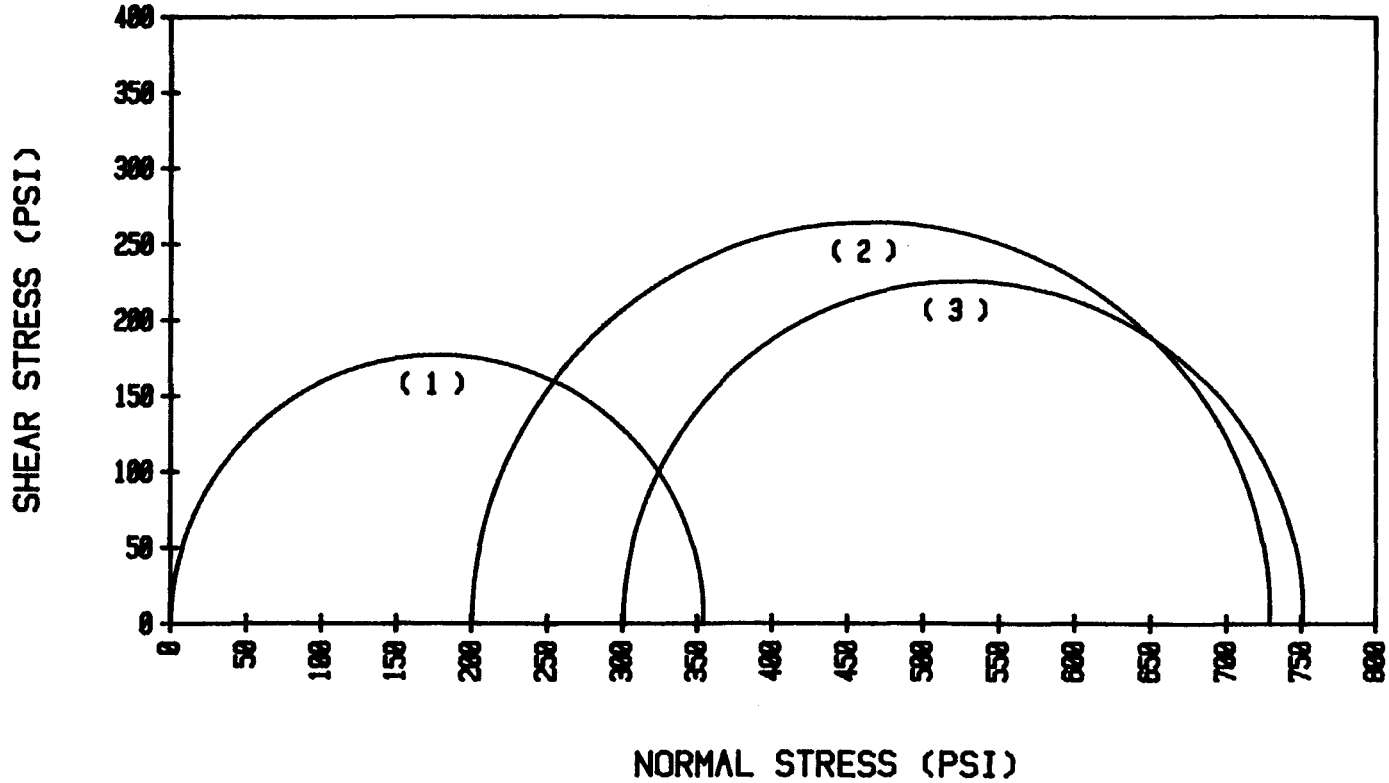
FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 208.0 ft
DEVIATOR STRESS (PSI)
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.2
DRY UNIT WEIGHT (PCF): 115.2
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT600; DATE: 04-04-90
JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 208.0 ft
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.2
DRY UNIT WEIGHT (PCF): 115.2
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY600; DATE: 04-04-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH RANGE (FT): 253.2-255.0
TAYLOR MARL

BORING INCLINATION (DEG): VERTICAL
TEST TYPE: UNCONFINED COMPRESSION (ASTM D2938)
TRIAXIAL COMPRESSION (ASTM D2664)



SEE STRESS - STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 253.2
(2) DEPTH (FT): 254.1
(3) DEPTH (FT): 254.8

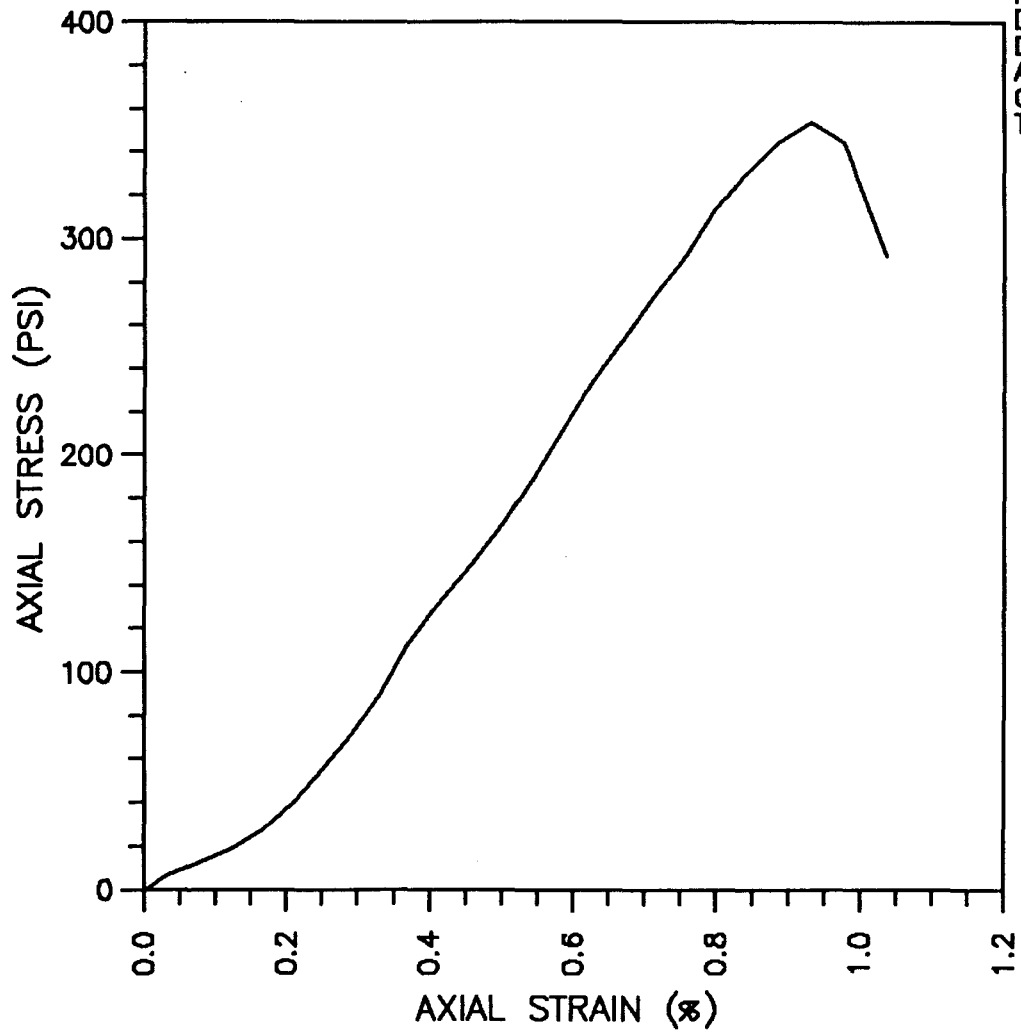
TEXAS SSC SITE

MOHR CIRCLE PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17 | FIGURE

BORING NO.: BE6
DEPTH (FT): 253.2
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.0
DRY UNIT WEIGHT (PCF): 118.7
DEG. OF SATURATION (%): 96.5
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.492 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

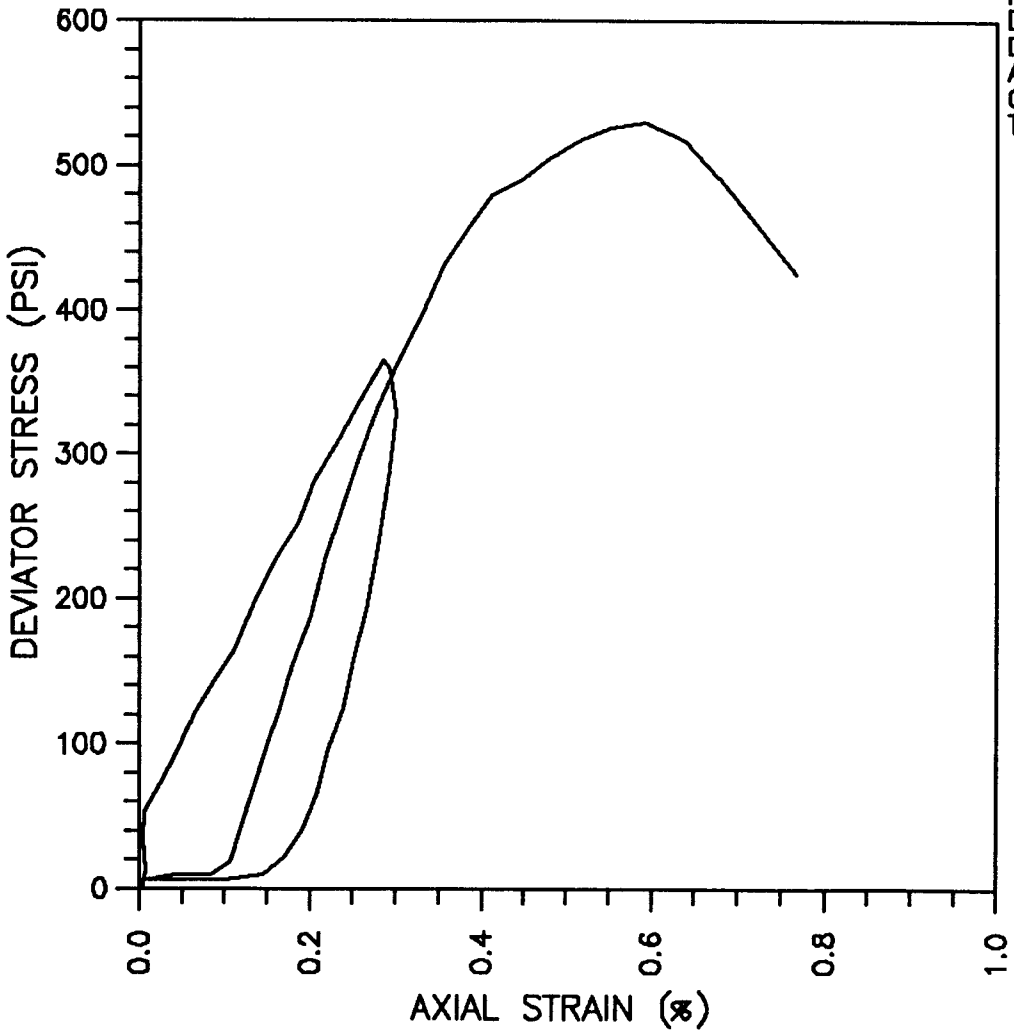
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 254.1
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.4
DRY UNIT WEIGHT (PCF): 117.9
DEG. OF SATURATION (%): 96.9
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
1.124 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

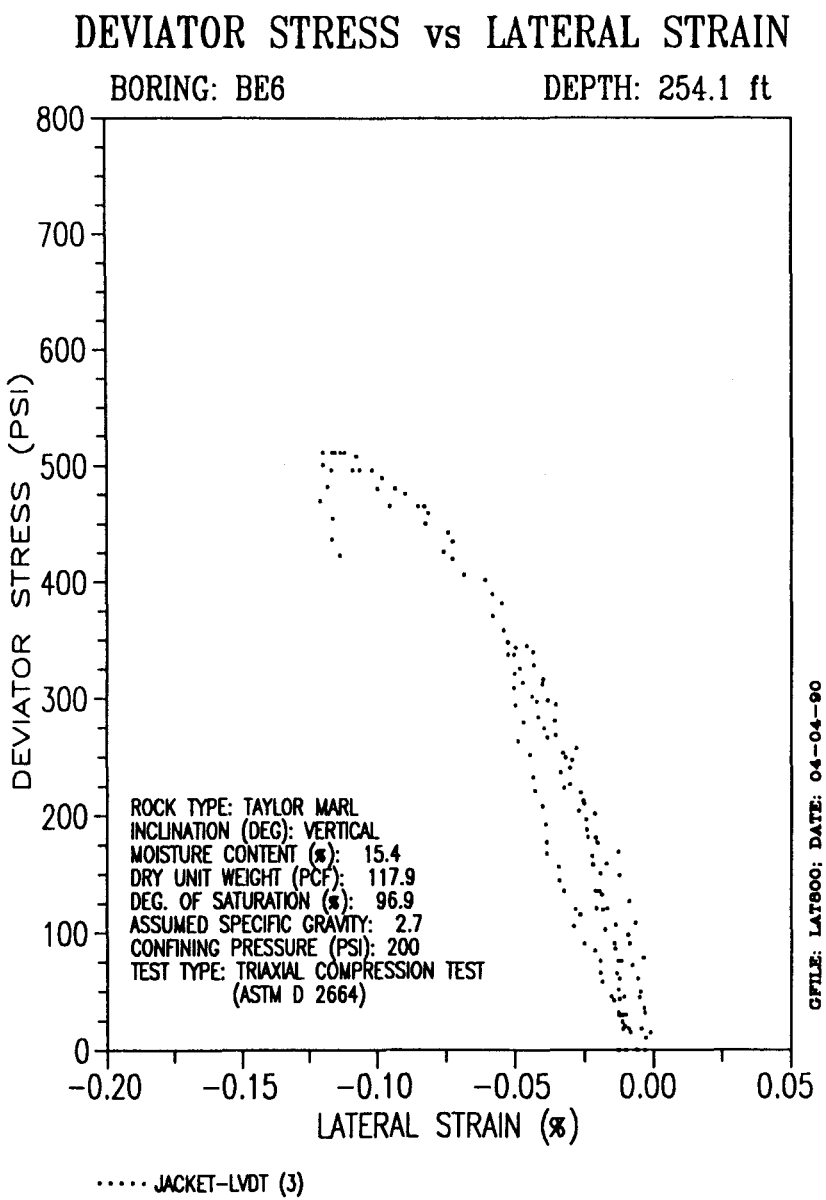
TEXAS SSC SITE

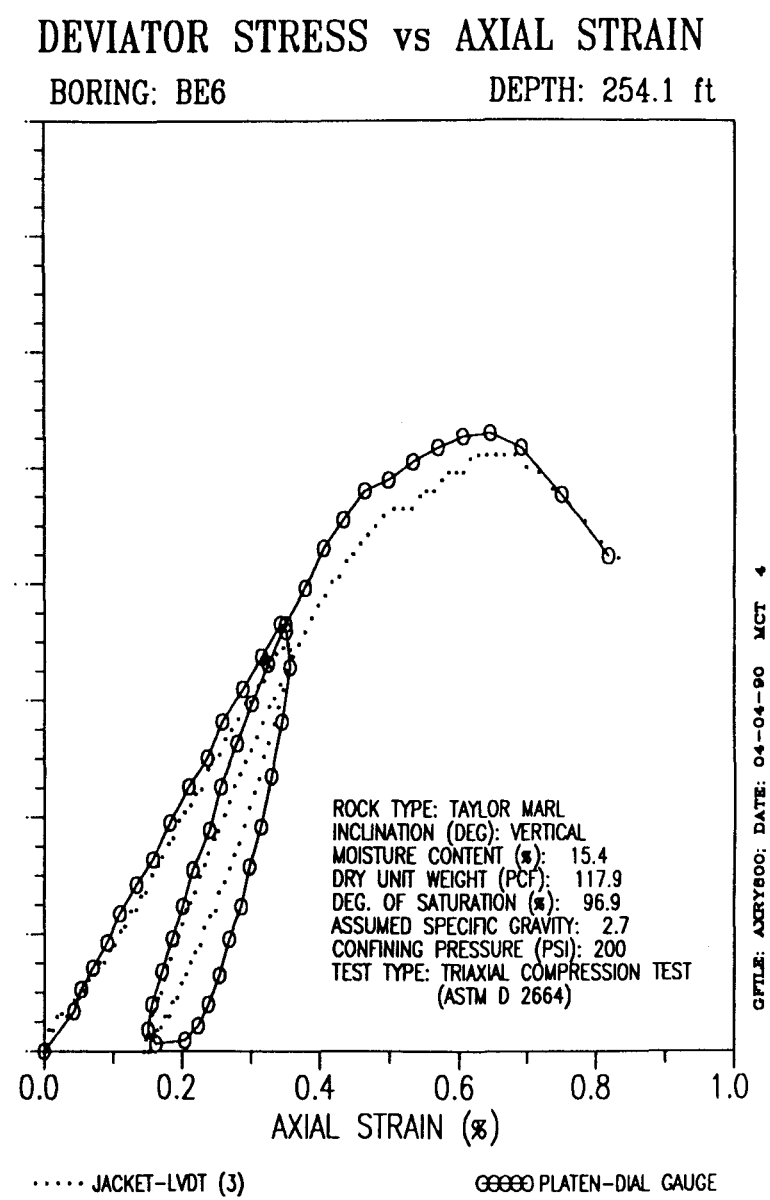
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

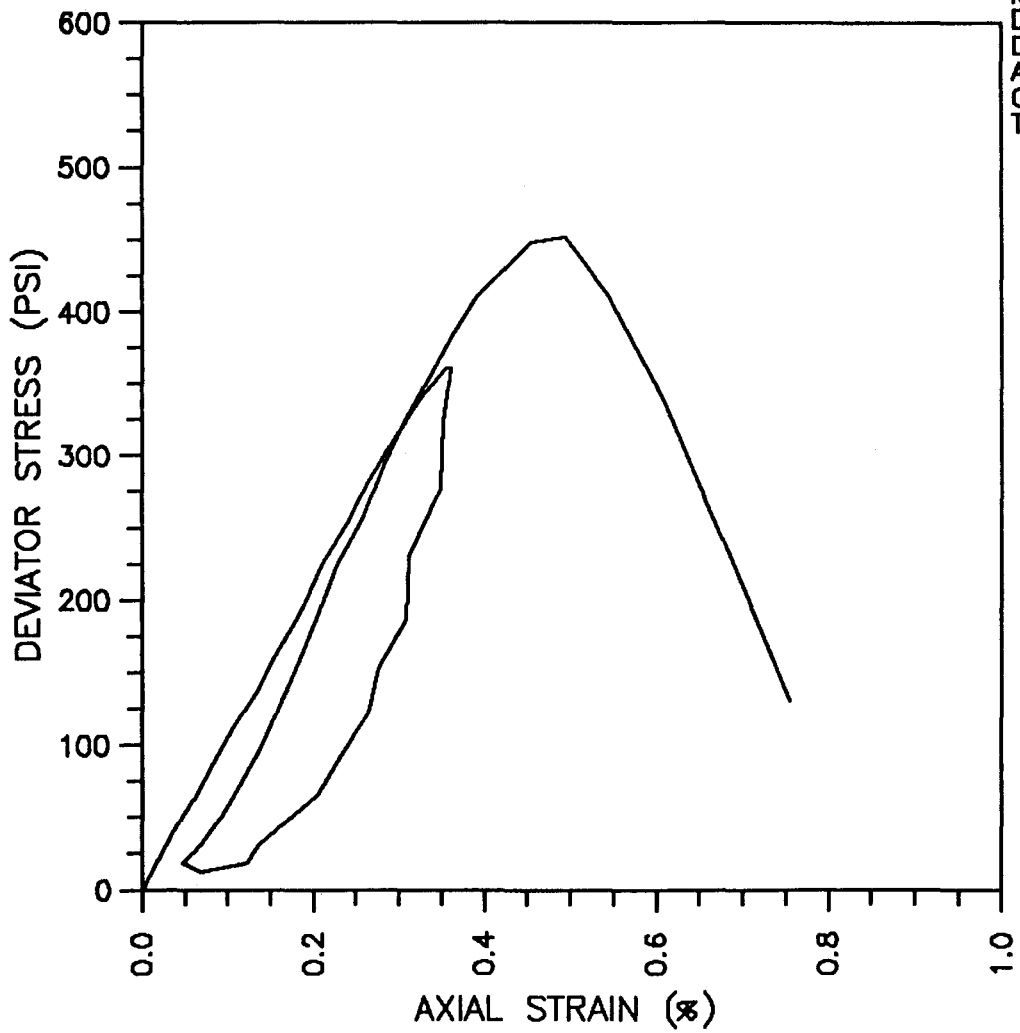
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 254.1 ft
DEVIATOR STRESS (PSI)
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.4
DRY UNIT WEIGHT (PCF): 117.9
DEG. OF SATURATION (%): 96.9
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT800; DATE: 04-04-90
JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 254.1 ft
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.4
DRY UNIT WEIGHT (PCF): 117.9
DEG. OF SATURATION (%): 96.9
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY800; DATE: 04-04-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 254.6
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.2
DRY UNIT WEIGHT (PCF): 119.1
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

GFILE: BE32456 DATE: 06-02-90 CAL: MCT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
1.127 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

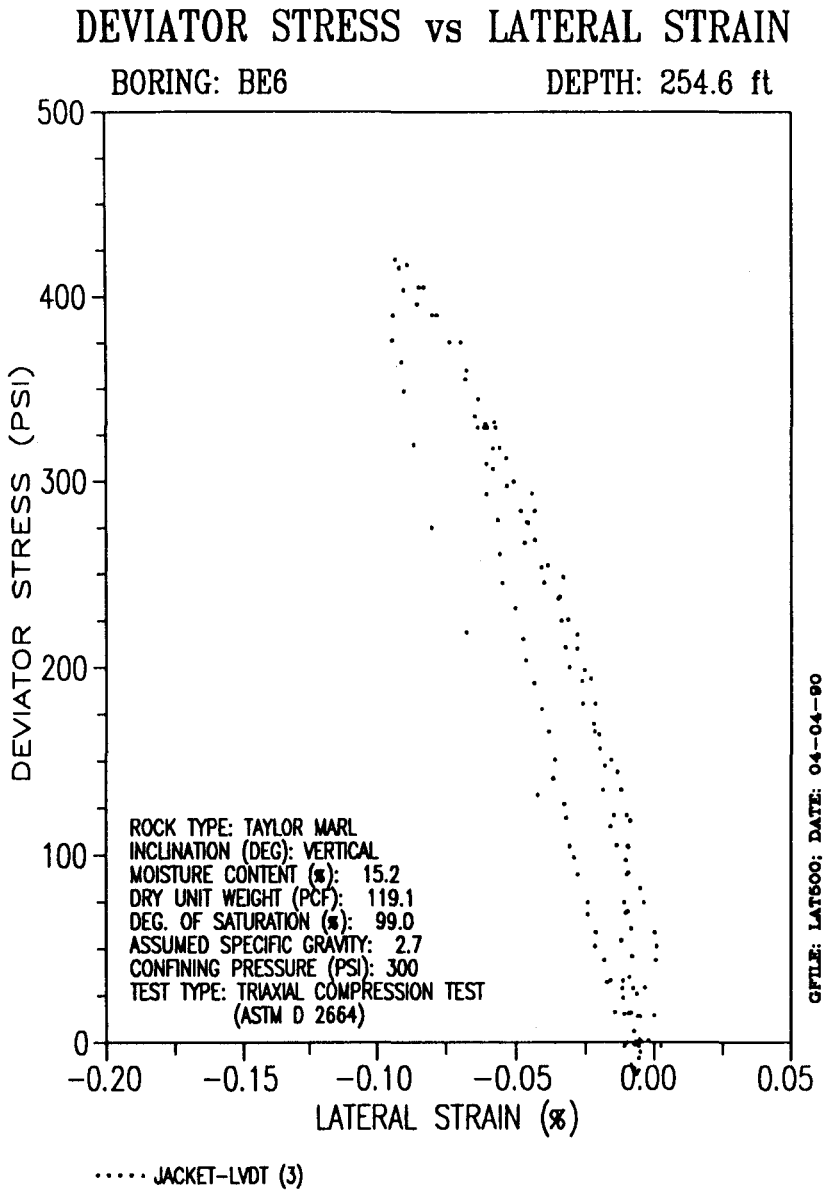
TEXAS SSC SITE

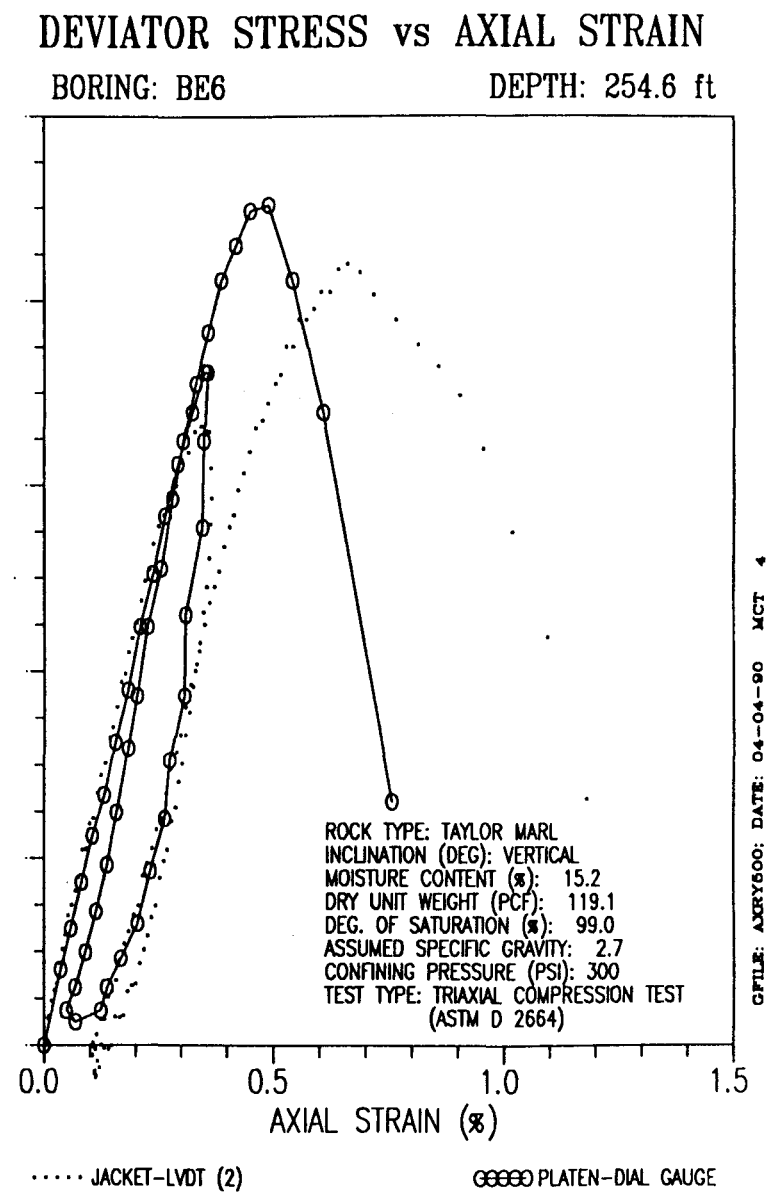
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

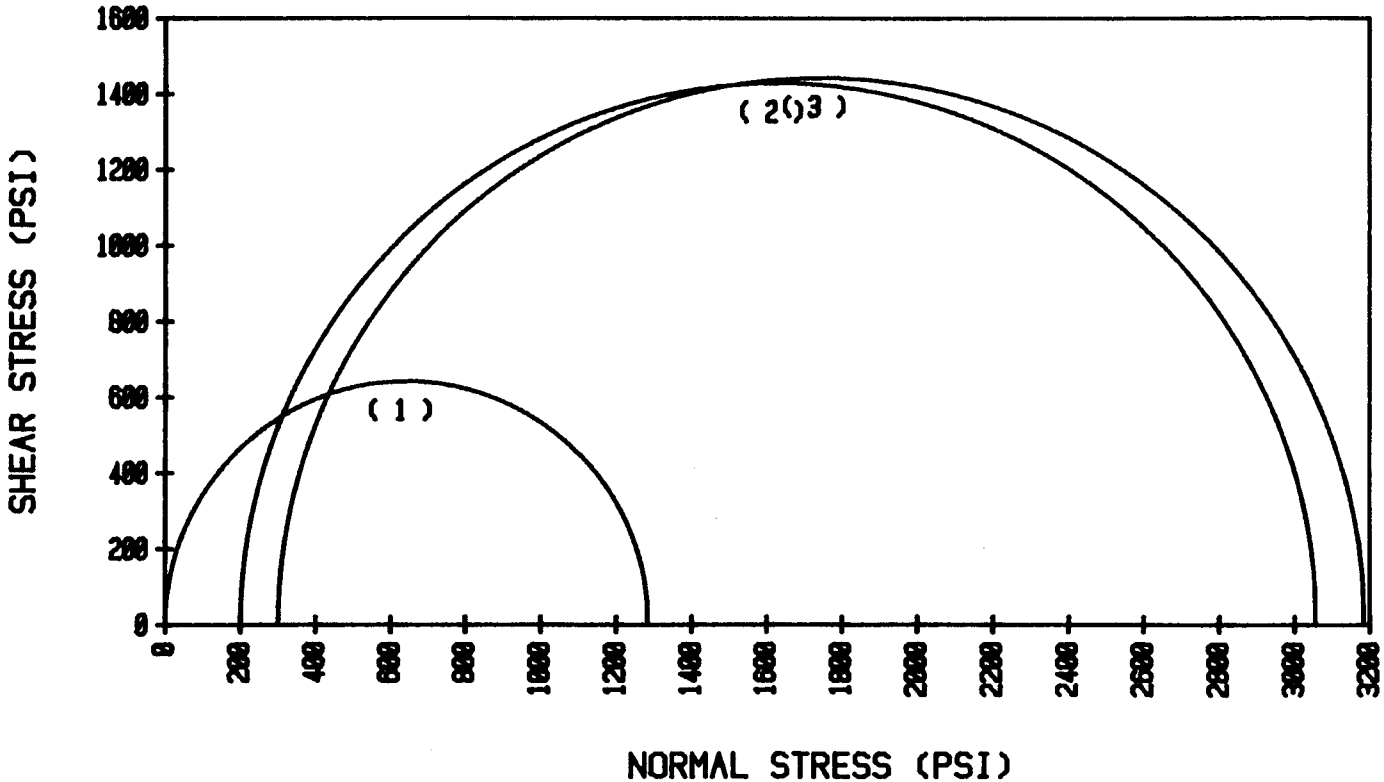
FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 254.6 ft
DEVIATOR STRESS (PSI)
500
400
300
200
100
0
-0.20
-0.15
-0.10
-0.05
0.00
0.05
LATERAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.2
DRY UNIT WEIGHT (PCF): 119.1
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT500; DATE: 04-04-90
JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 254.6 ft
0.0
0.5
1.0
1.5
AXIAL STRAIN (%)
ROCK TYPE: TAYLOR MARL
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 15.2
DRY UNIT WEIGHT (PCF): 119.1
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY600; DATE: 04-04-90 MCT 4
JACKET-LVDT (2)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH RANGE (FT): 312.1-314.0
TAYLOR MARL

BORING INCLINATION (DEG): VERTICAL
TEST TYPE: UNCONFINED COMPRESSION (ASTM D2938)
TRIAXIAL COMPRESSION (ASTM D2664)



SEE STRESS - STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 312.1
(2) DEPTH (FT): 313.2
(3) DEPTH (FT): 313.6

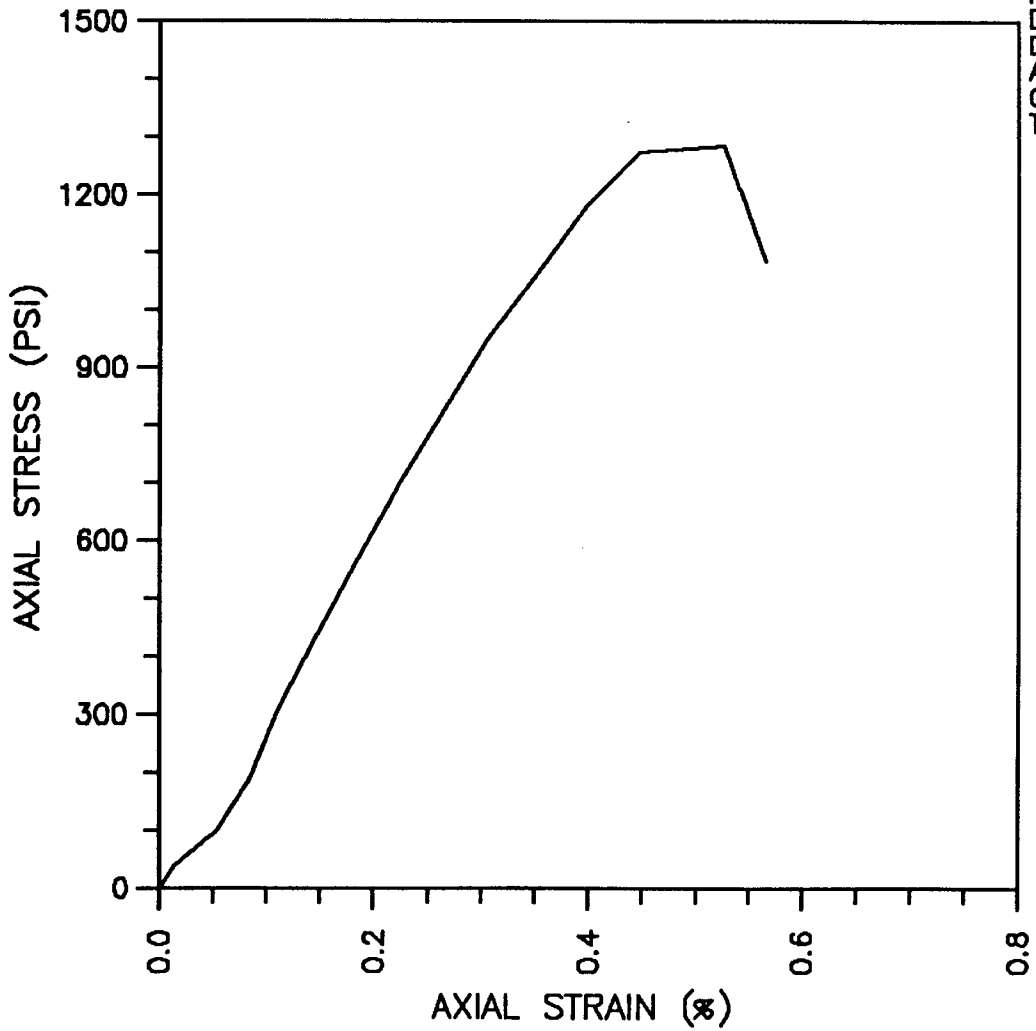
TEXAS SSC SITE

MOHR CIRCLE PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17 | FIGURE

BORING NO.: BE6
DEPTH (FT): 312.1
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 9.8
DRY UNIT WEIGHT (PCF): 133.3
DEG. OF SATURATION (%): 100.1
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
3.288 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

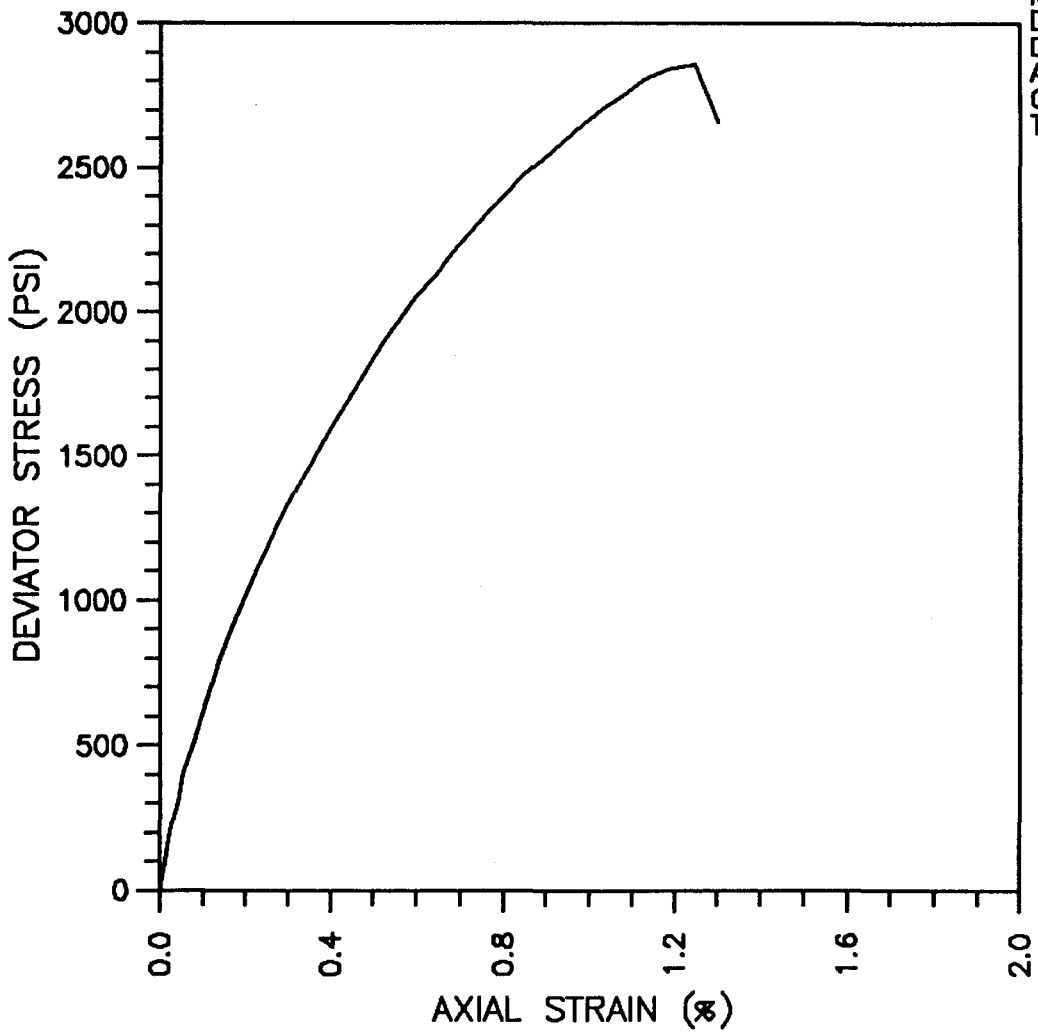
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 313.2
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 10.1
DRY UNIT WEIGHT (PCF): 132.9
DEG. OF SATURATION (%): 102.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

BFILE: BE3S132 DATE: 06-02-90 CAL: MGT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
2.632 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 30 DEG.

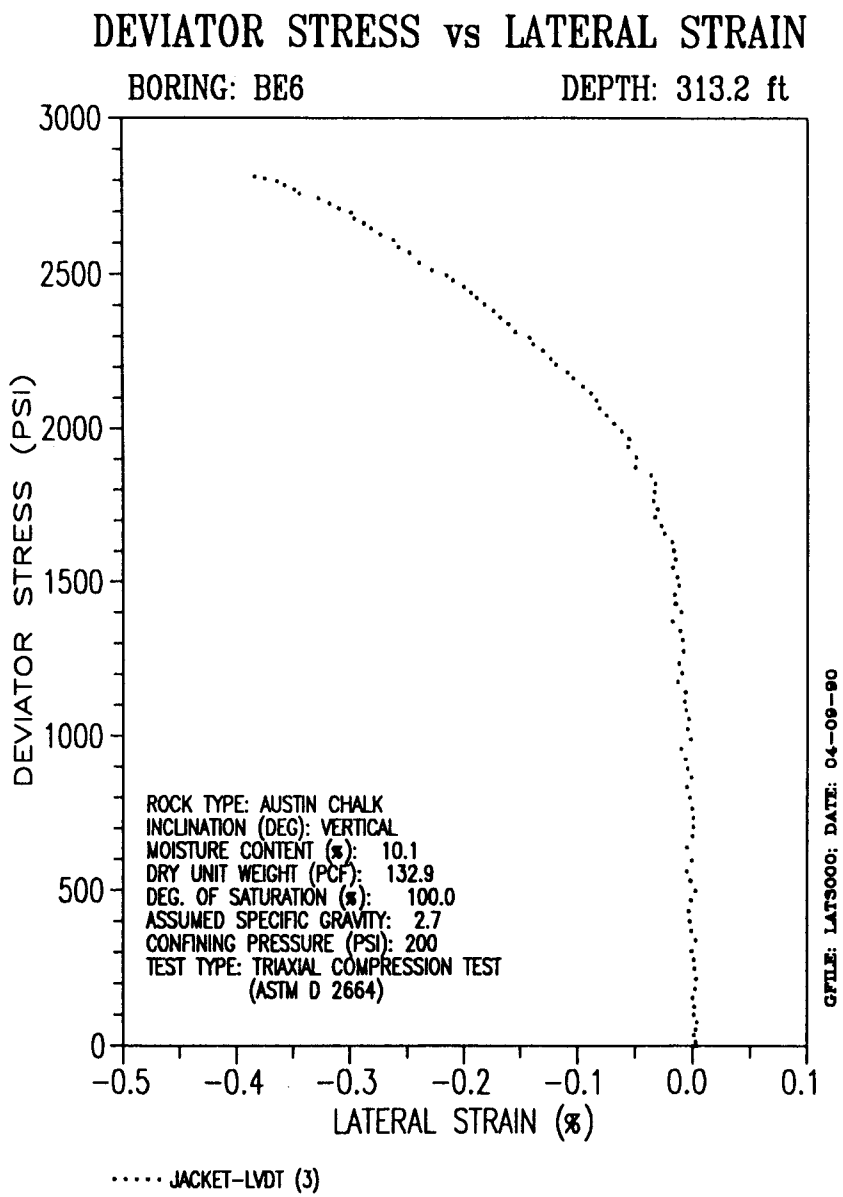
TEXAS SSC SITE

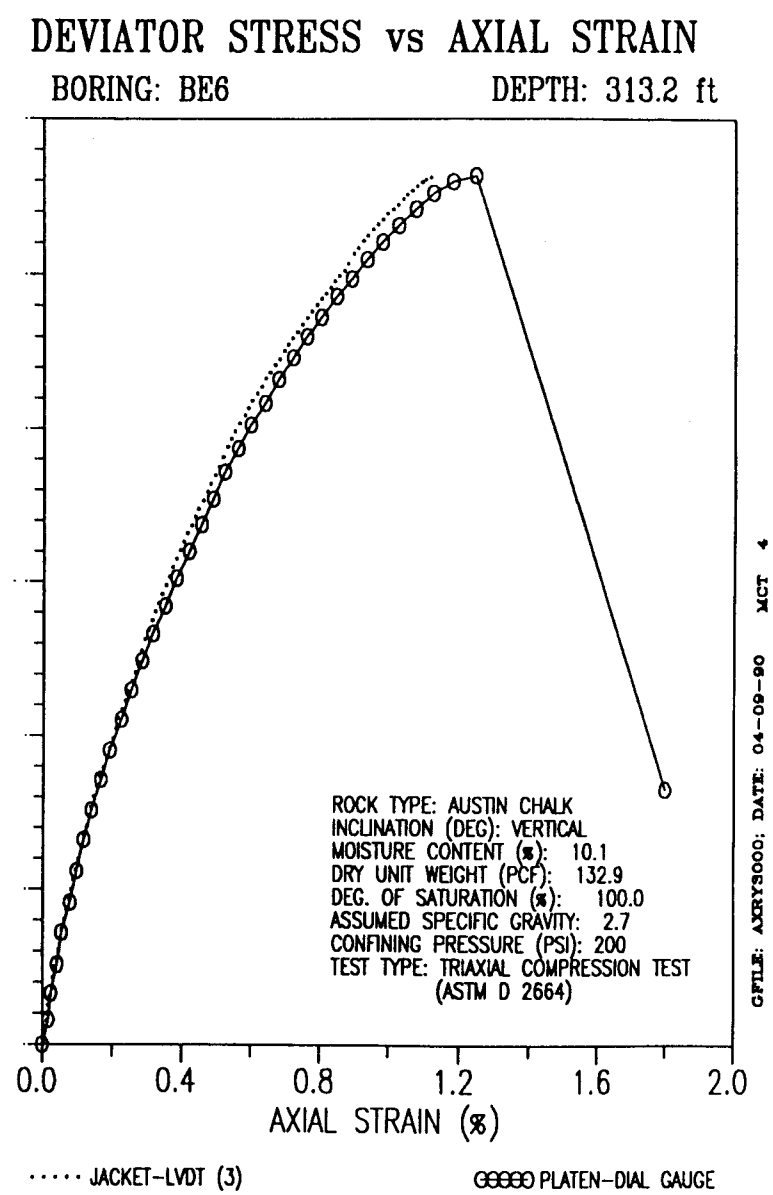
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

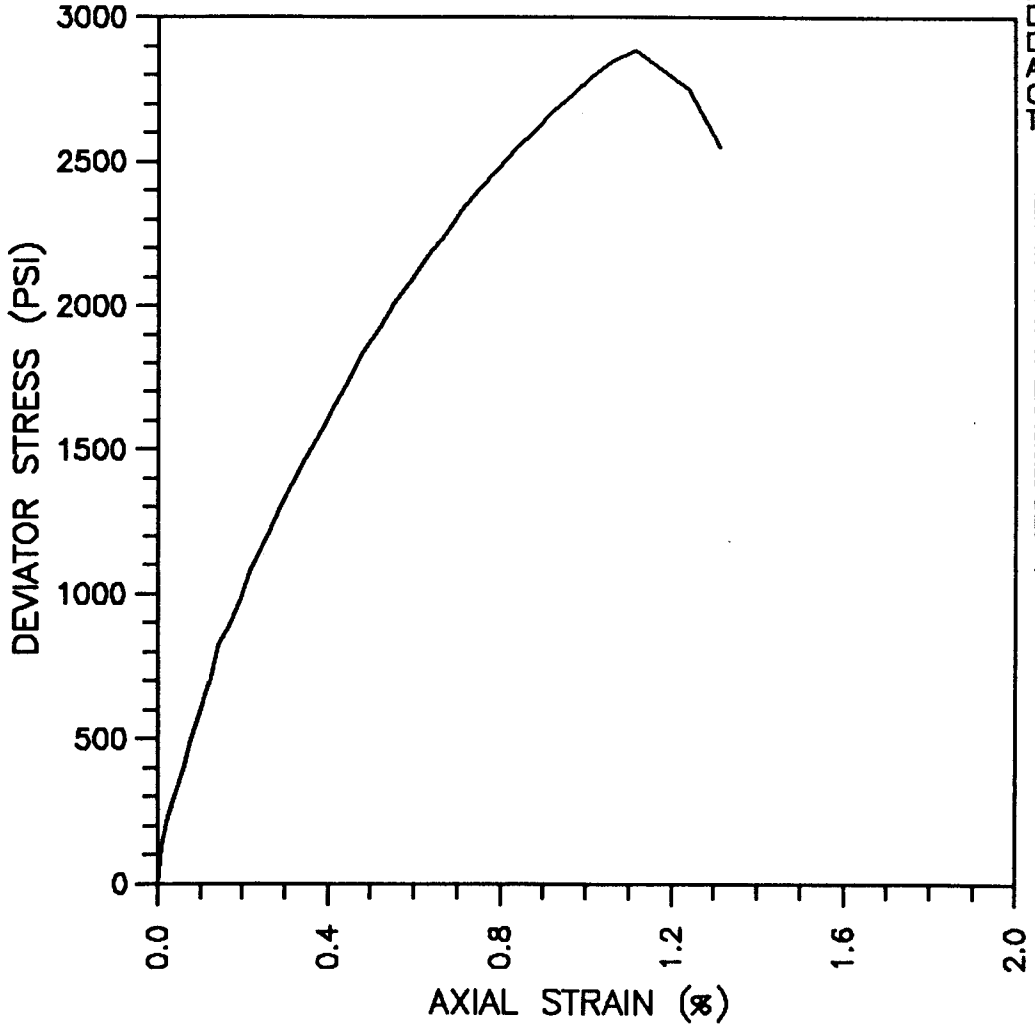
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 313.2 ft
DEVIATOR STRESS (PSI)
3000
2500
2000
1500
1000
500
0
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: AUSTIN CHALK
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 10.1
DRY UNIT WEIGHT (PCF): 132.9
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT3000; DATE: 04-09-90
····· JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 313.2 ft
0.0
0.4
0.8
1.2
1.6
2.0
AXIAL STRAIN (%)
ROCK TYPE: AUSTIN CHALK
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 10.1
DRY UNIT WEIGHT (PCF): 132.9
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY3000; DATE: 04-09-90 MCT 4
····· JACKET-LVDT (3)
ooooo PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 313.6
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 10.0
DRY UNIT WEIGHT (PCF): 132.9
DEG. OF SATURATION (%): 100.9
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

GFILE: BE3S138 DATE: 06-02-00 CAL: MCT4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
2.747 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 25 DEG.

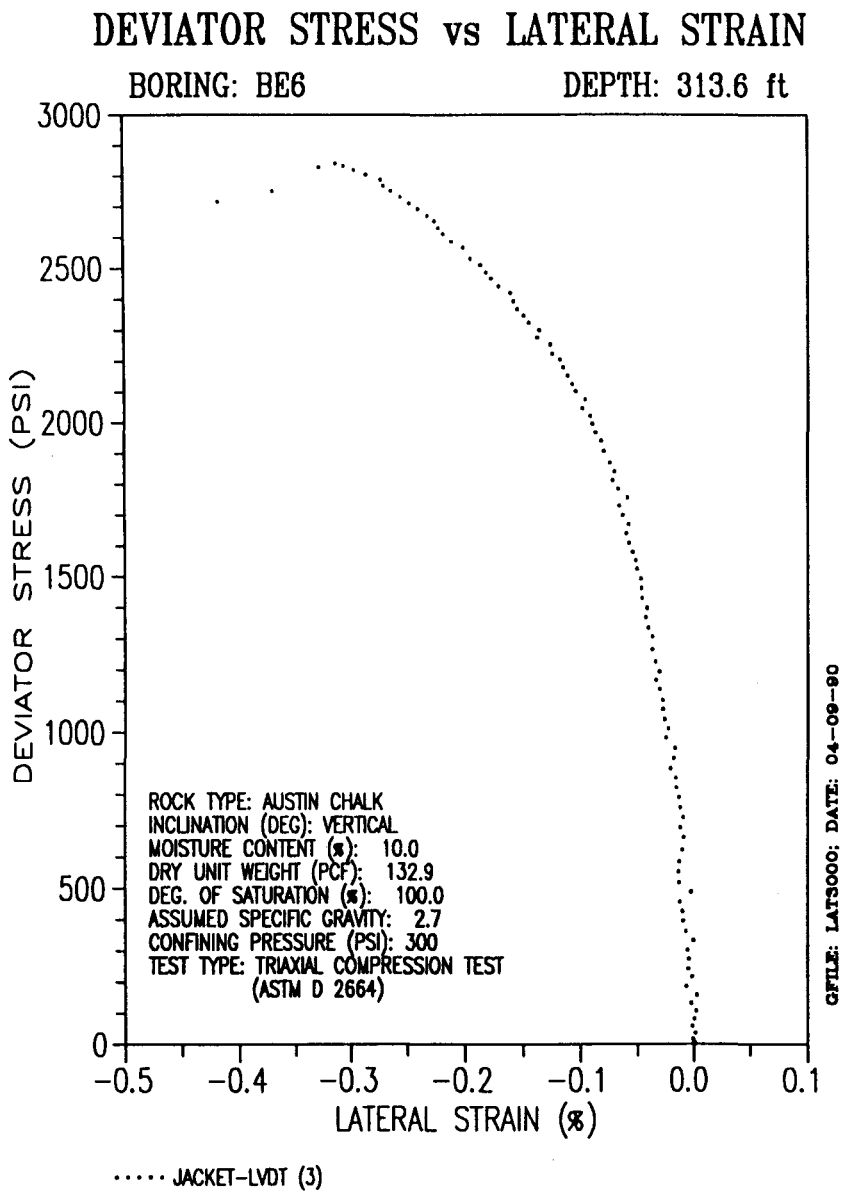
TEXAS SSC SITE

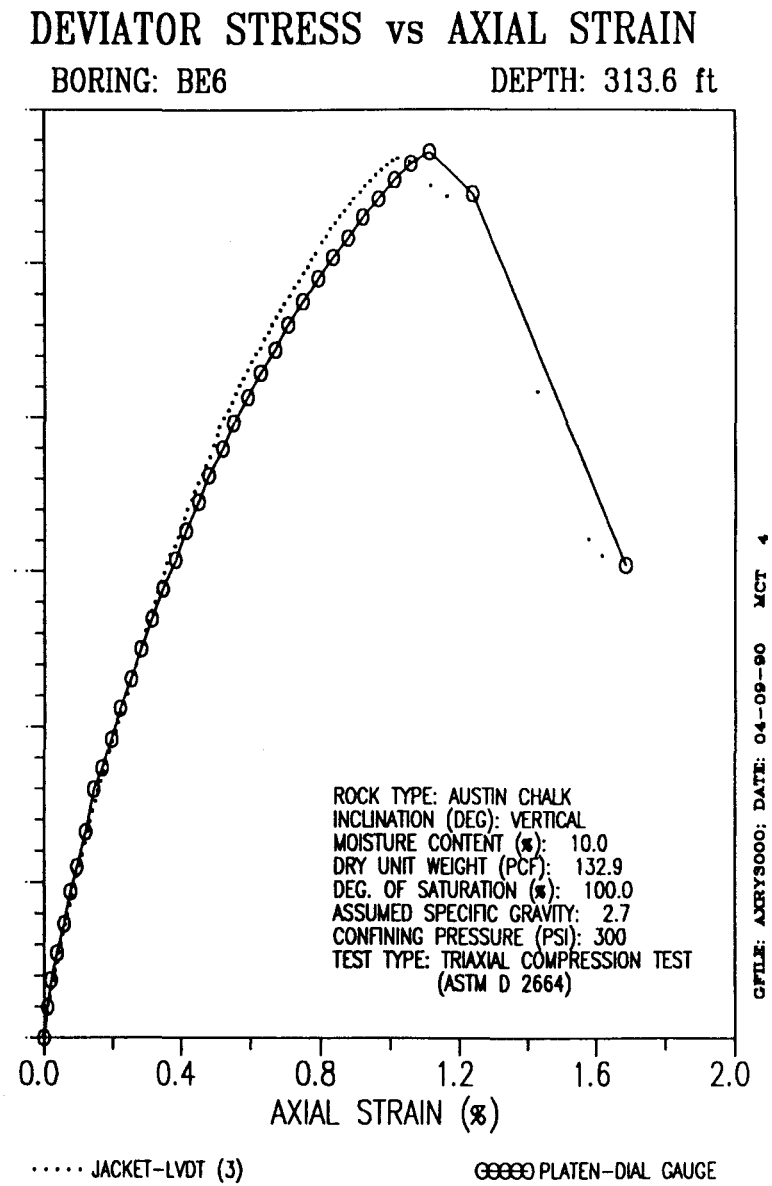
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

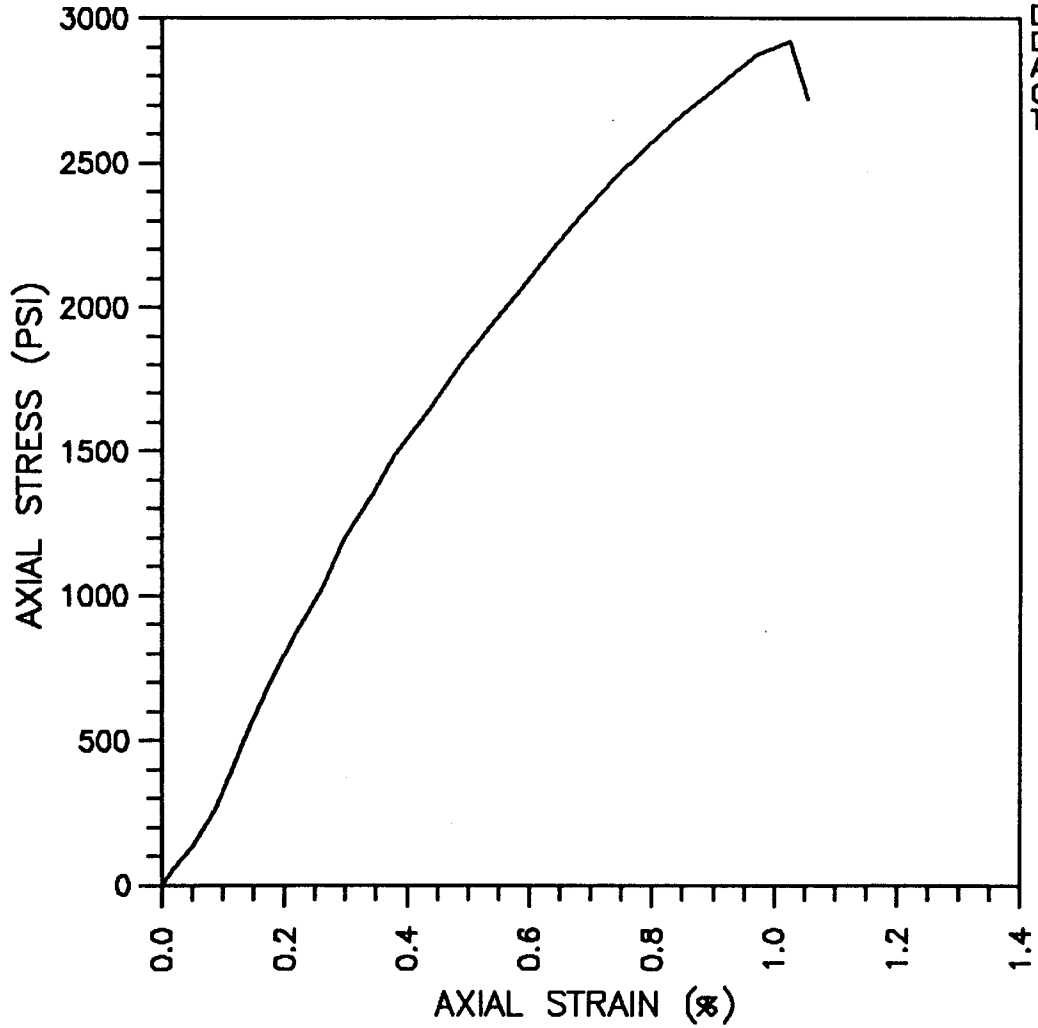
JOB NO.: 5530.17

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: BE6
DEPTH: 313.6 ft
DEVIATOR STRESS (PSI)
3000
2500
2000
1500
1000
500
0
-0.5
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: AUSTIN CHALK
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 10.0
DRY UNIT WEIGHT (PCF): 132.9
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT3000; DATE: 04-09-90
····· JACKET-LVDT (3)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: BE6
DEPTH: 313.6 ft
0.0
0.4
0.8
1.2
1.6
2.0
AXIAL STRAIN (%)
ROCK TYPE: AUSTIN CHALK
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 10.0
DRY UNIT WEIGHT (PCF): 132.9
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: ADRY3000; DATE: 04-09-90 MCT 4
····· JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: BE6
DEPTH (FT): 332.1
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 10.4
DRY UNIT WEIGHT (PCF): 133.4
DEG. OF SATURATION (%): 106.3
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
3.205 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

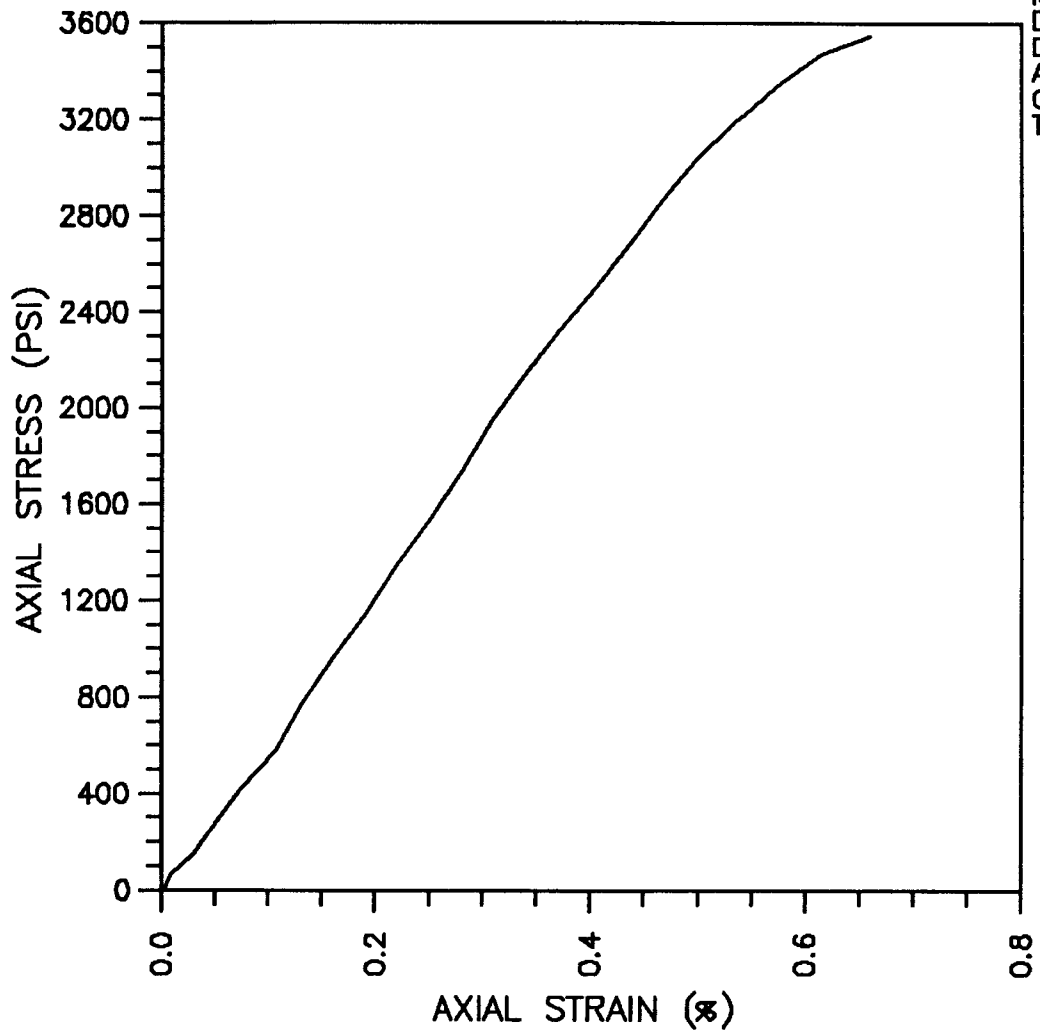
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 382.9
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 8.6
DRY UNIT WEIGHT (PCF): 135.3
DEG. OF SATURATION (%): 95.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

GFILE: BE03029 DATE: 06-01-90 CAL: MCLS

TANGENT MODULUS AT 50%
MAXIMUM STRESS:
6.250 x10E5 PSI

FAILURE MODE:
LOADED TO 3549 PSI
W/O FAILURE

TEXAS SSC SITE

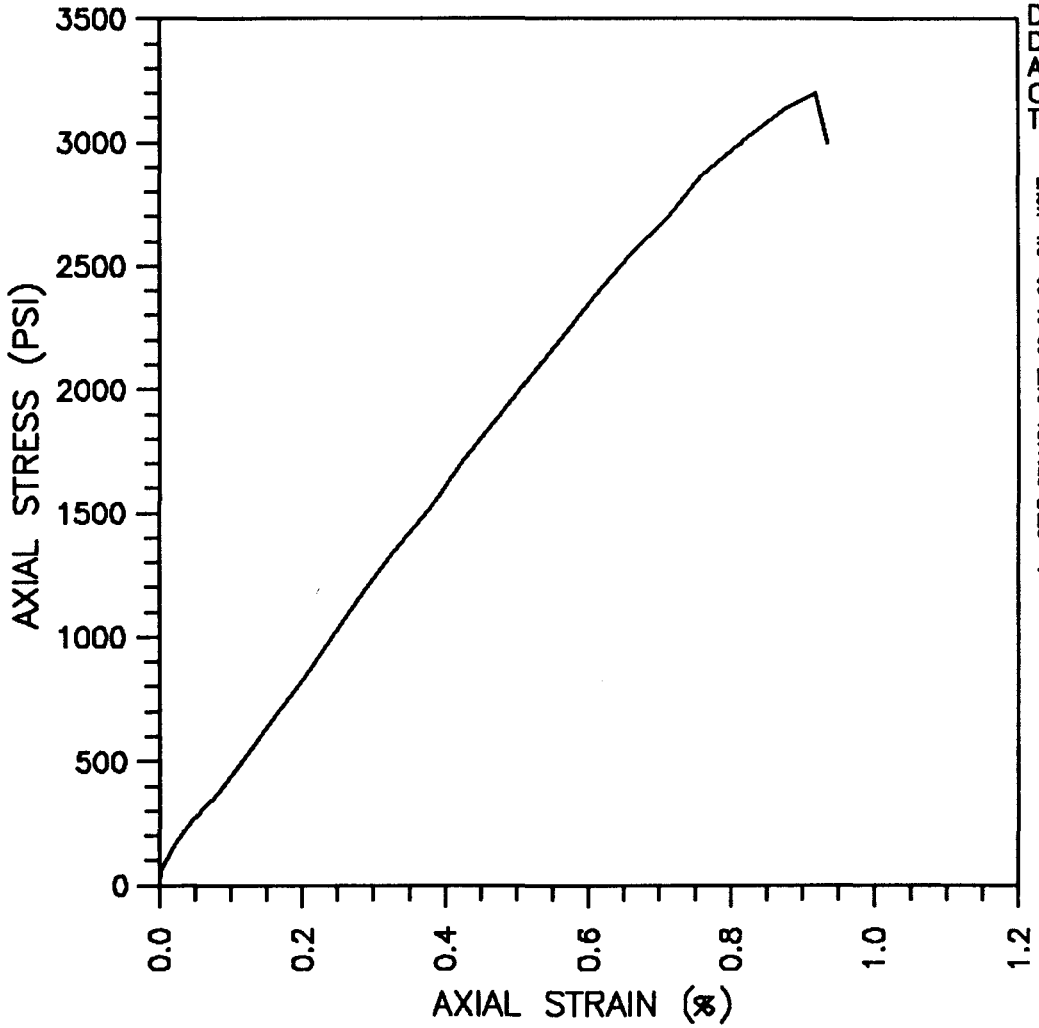
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 413.4
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 9.2
DRY UNIT WEIGHT (PCF): 135.1
DEG. OF SATURATION (%): 100.4
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

FILE: BE34134 DATE: 08-01-90 CAL: MCU3

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
3.822 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING W/
CONICAL AT TOP

TEXAS SSC SITE

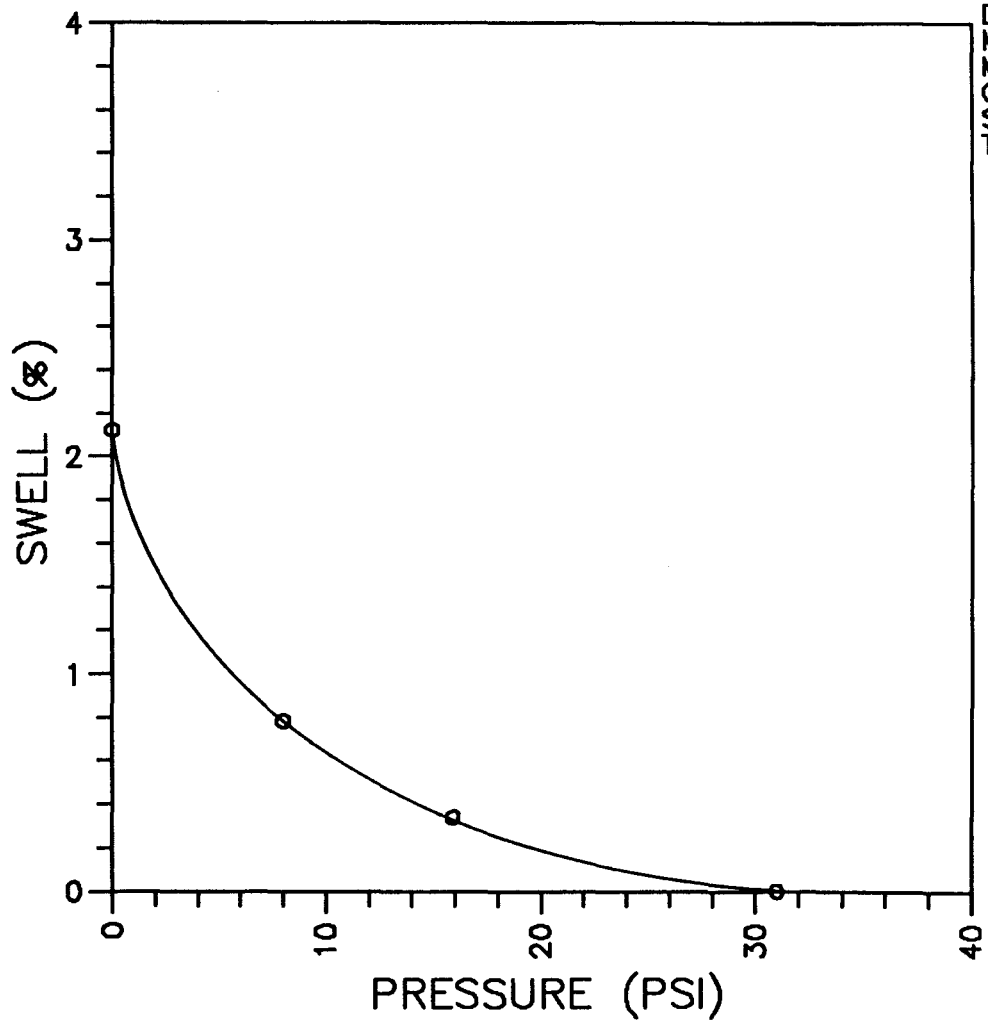
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 82.7
TAYLOR MARL



INCLINATION (DEG): VERTICAL
DRY UNIT WEIGHT (PCF): 115.5
M.C. BEFORE TEST (%): 16.0
M.C.AFTER TEST (%): 20.4
GAIN IN MOISTURE (%): 4.4
SWELLING PRESSURE INDEX (PSI): 32
TEST TYPE: SWELLING PRESSURE INDEX (ISRM)

TEXAS SSC SITE

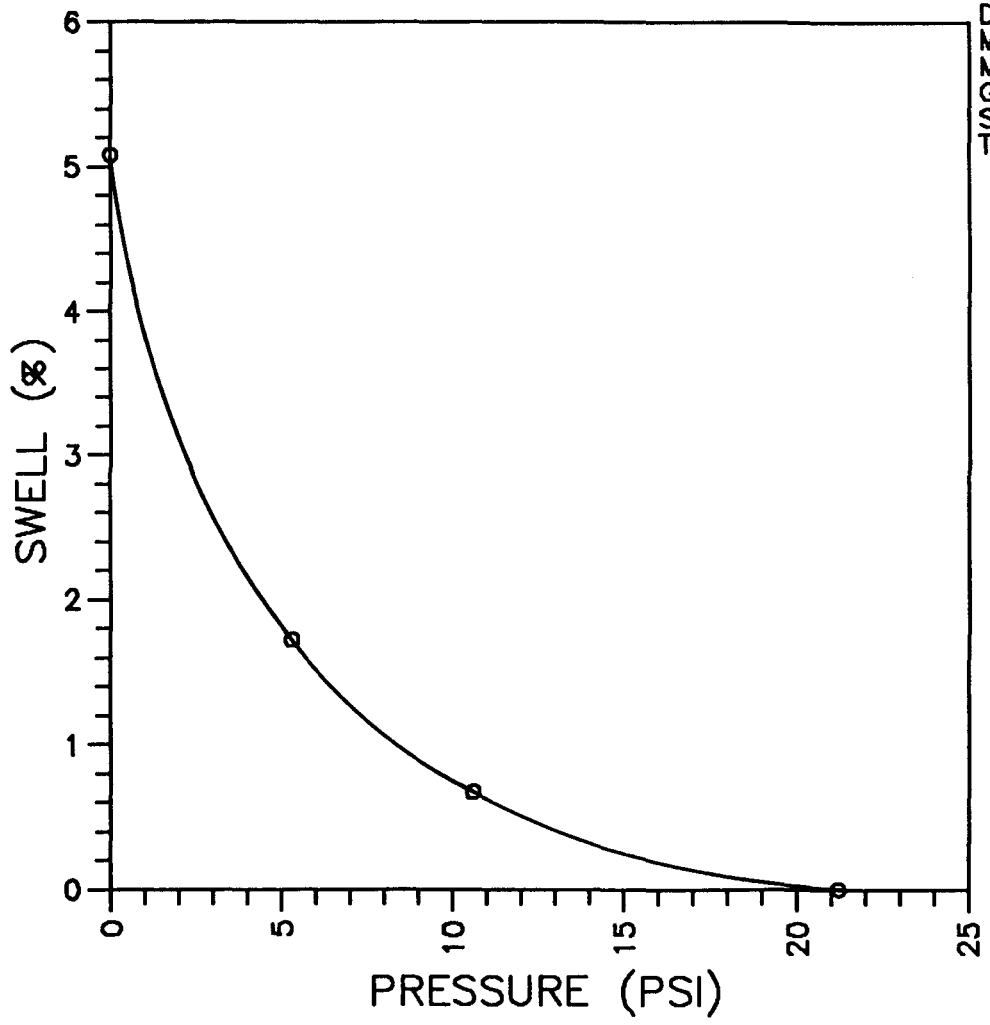
SWELLING PRESSURE INDEX

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: BE6
DEPTH (FT): 253.9
TAYLOR MARL



INCLINATION (DEG): VERTICAL
DRY UNIT WEIGHT (PCF): 109.9
M.C. BEFORE TEST (%): 15.7
M.C.AFTER TEST (%): 24.5
GAIN IN MOISTURE (%): 8.8
SWELLING PRESSURE INDEX (PSI): 21
TEST TYPE: SWELLING PRESSURE INDEX (ISRM)

TEXAS SSC SITE

SWELLING PRESSURE INDEX

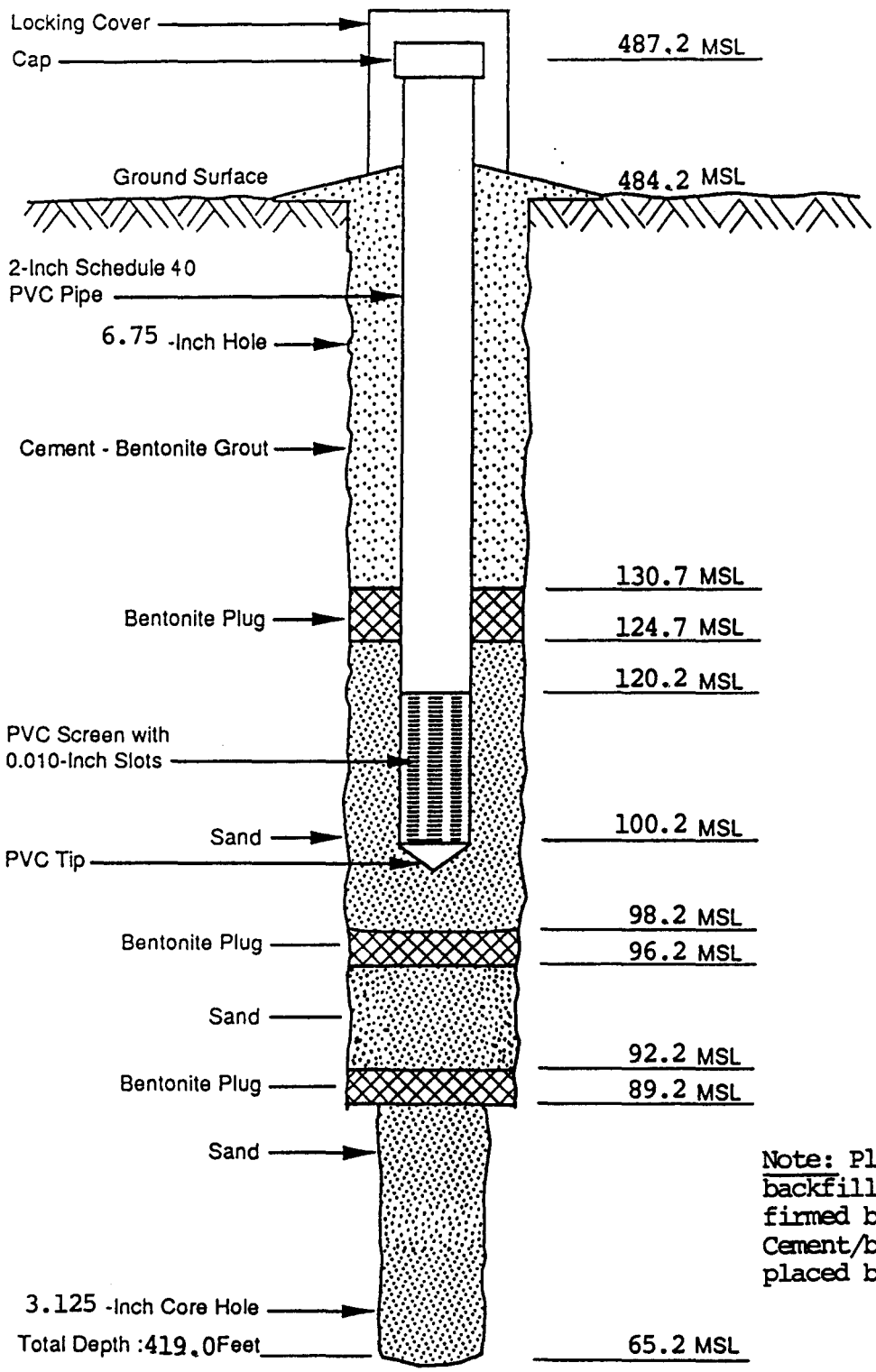
MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

APPENDIX E

WELL AS-BUILT DIAGRAM



Note: Placement depths of backfill materials were confirmed by manual measurement. Cement/bentonite slurry was placed by tremie.

NOT TO SCALE

Boring: BE 6
Location: N 251,280
E2,255,023
Date(s) Installed: 2/19/90-2/27/90
Well Construction
Supervising Geologist: Boyd Dreyer/Jim Sansom
Approved By: W.D. Flanigan **Date:** 5/15/90

Observation Well
No. BE 6

5/90 Figure