SSCL-SR-1117

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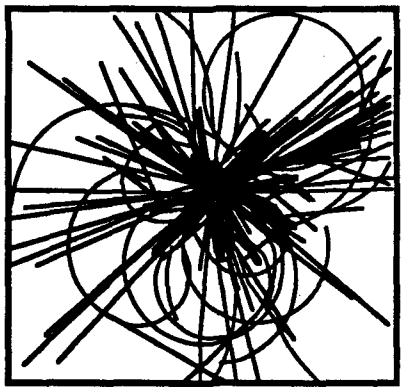
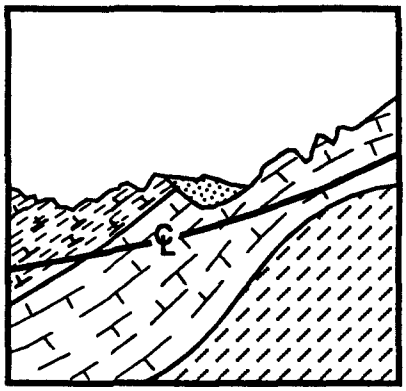
Project No. 87-888-0017
Report No. SSC-GR-58
July 1990

GR-58

Data Report for Tunnel Intercept with Taylor Marl/Austin Chalk - - Coreholes B 802 and B 2758





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 report was prepared as part of the global data phase of geotechnical characterization at the SSC site. Data collection for this study was focused on drillhole-based geological, geophysical, and geomechanical tests at key locations around the ring. At the locations reported here the main ring tunnel is expected to pass through, or run close to, formational contacts. In combination with data from the other phases, these data will allow conceptual designs of construction methods and structural supports for key underground structures. This data report includes the results of both field and laboratory tests for specific drilling and sampling sites.

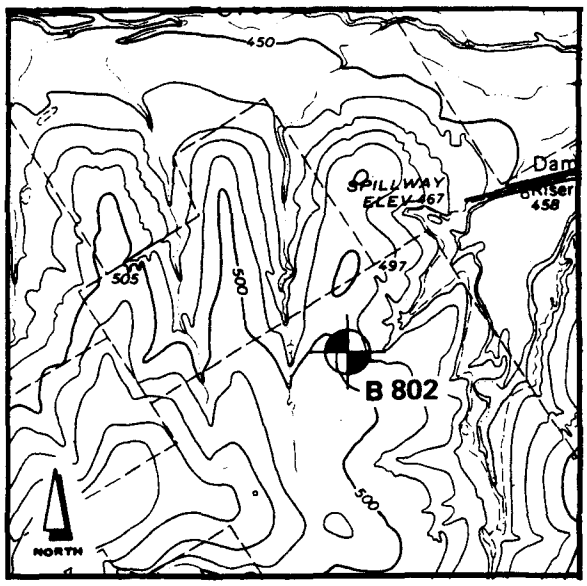
DATA REPORT

Site Designator: Tunnel Intercept with Taylor Marl/Austin Chalk.

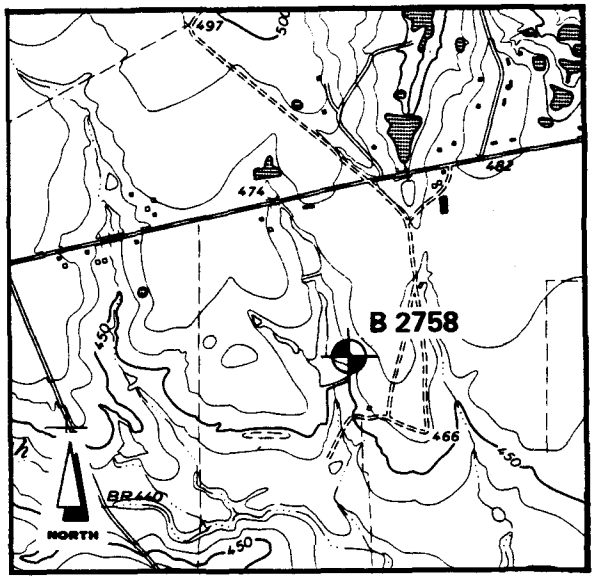
Objective: Drill two coreholes to determine geotechnical characteristics of formational contacts of Taylor Marl and Austin Chalk where the main tunnel is expected to pass through or be close to it; determine geotechnical conditions through in situ hydrological testing and laboratory geomechanical testing.

Locations:

B 802 is located on the southern section of the proposed tunnel alignment, approximately 1.5 miles north of Avalon, Texas.



B 2758 is located on the northeast section of the proposed tunnel alignment, approximately 2 miles west-southwest of Palmer, Texas.



SCALE 1:24,000

0 1000 2000 3000 4000 Feet

CONTOUR INTERVAL 10 FEET

Boring Locations:

Boring	Northing (feet)	Easting (feet)	Surface Elevation (feet)
B 802	204,473	2,220,525	495.0
B 2758	274,675*	2,247,175*	460.0*

*Approximate value

Scope and Schedule:

Boring	Drilling	Wire-Line Logging	Hydrologic Testing	Laboratory Testing	Plugging
B 802	March 21 to 23, 1990	March 23, 1990	March 23, 1990	March 26 to April 22, 1990	March 23, 1990
B 2758	March 26 to 27, 1990	March 28, 1990	March 28, 1990	April 10 to 25, 1990	March 29, 1990

Conditions Encountered: (see Lithologic Logs, Appendix A)

Boring No.	Total Depth (feet)	Soil (feet)	Taylor Marl (feet)	Austin Chalk (feet)
B 802	223.0	0.0 to 44.0	44.0 to 186.6	186.6 to 223.0
B 2758	192.0	0.0 to 25.0	25.0 to 154.6	154.6 to 192.0

Geophysical Logging: (see Wire-line Logs, Appendix B)

Boring No.	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)
B 802	X	X	X	X	X	X	X	Note
B 2758	X	X	X	X	X	X	X	X

Note: Tool malfunction.

Hydrologic Test Results: (see also Appendix C)

Boring	Vertical Test Depth (ft)	Packer Pressure (psi)	Gauge Pressure (psi)	Formation/Lithology	Hydraulic Conductivity (cm/sec)
B 802	183.3-223.0	160	15	Taylor Marl/Austin Chalk Contact	$<2.3 \times 10^{-8}$
B 2758	144.6-164.6	104	15	Taylor Marl/Austin Chalk Contact	$<5.5 \times 10^{-8}$

Bulk and Clay Mineralogy Test Results:

Boring: B 802 Formation: Taylor Marl Depth: 100.6 feet

Whole Rock Composition:

Mineral	Percent
total clay	48
non-clay	52
Total	100

Relative Clay Abundance:

Mineral	Percent
illite	33
kaolinite	8
mixed layer (illite/smectite)	59
Total	100

Boring: B 2758 Formation: Taylor Marl Depth: 152.5 feet

Whole Rock Composition:

Mineral	Percent
total clay	39
non-clay	61
Total	100

Relative Clay Abundance:

Mineral	Percent
illite	13
kaolinite	10
Fe-chlorite	4
mixed layer (illite/smectite)	73
Total	100

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

Vertical Depth (ft)	Formation/ Lithology	Moisture Content (%)	Dry Density (pcf)	Unconfined Compressive Strength (psi)	Tangent Young's Modulus E_{50} (psi x 10^5)	Brazil Tensile Strength (psi)
			Boring B 802			
77	Taylor Marl	17-18	114	252	0.35	
100-101	Taylor Marl	18-19	108	237	0.32	
110-113	Taylor Marl	19-20	107-110	157	0.28-0.54	
149	Taylor Marl	17	109-116			
183-184	Taylor Marl	17	114-118			
187-190	Austin Chalk	11-13	125-132	3086	3.51-7.24	311
217	Austin Chalk	10	133			
			Boring B 2758			
135-136	Taylor Marl	17	113-115	321	0.30-0.63	
146-153	Taylor Marl	17-18	112-114	107	0.15	
155-160	Austin Chalk	12-15	121-130	1820	0.13-2.78	224
170-176	Austin Chalk	11-16	127-130	523-1017	1.05-1.81	51

Hole Status: Both coreholes were plugged with cement grout and abandoned (see also Appendix E).

APPENDIX A

LITHOLOGIC LOGS

LITHOLOGIC LOG

BORING B 802

LOG OF BORING

PROJECT: Superconducting Supercollider
CLIENT: The Earth Technology Corporation
TASK NO.: 17

BORING NO: B 802 PG 1 OF 6
LOCATION: N 204,473 ft. E 2,220,525 ft.
GROUND EL: 495.0 ft.

DATE: 3/21-23/90 TYPE: Air/Water Rotary CASED TO: 15.0' CONTRACTOR: SwL (89-192)

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, soft, silty, organics, dark brown.
3.0									
5									CLAY, soft, silty, trace organics, dark yellowish tan, with occasional calcareous fragments.
10									
15									
20									
25									
30									
35									-color change from dark brown to gray at 35.0'-40.0'
40									
42.0									CLAY, soft, silty, mottled, dark yellowish tan.

SAMPLE LEGEND

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

WATER INFORMATION

Began drilling with air to 40.0'. Seepage encountered from 20.0' to 40.0'. Switched to water rotary at 40.0'.

DRILLING GEOLOGIST Dale Brown ASSISTANT Doug Thomas CHECKED BY Shawn Wood

LOG OF BORING

BORING NO: B 802 PG 2 OF 6

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 204,473 ft. E 2,220,525 ft.

GROUND EL: 495.0 ft.

DATE: 3/21-23/90 TYPE: Water Rotary/NX Core CASED TO: 15.0' CONTRACTOR: SwL (89-192)

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 6

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, soft, silty, mottled, tan to dark brownish gray, slightly calcareous.
44.0									CALCAREOUS SHALE (Taylor Marl), soft, fresh, fissile, dark gray with occasional fossil partings.
45									
50									
55									
60									
65									
70									
75									-fossil partings at 75.5', 78.9', 79.4' and 82.8'
			75.0						
80		C1			93	93			

DRILLING GEOLOGIST Dale Brown ASSISTANT Doug Thomas CHECKED BY Shawn Wood

LOG OF BORING

BORING NO: B 802 PG 3 OF 6

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 204,473 ft. E 2,220,525 ft.

GROUND EL: 495.0 ft.

DATE: 3/21-23/90 TYPE: NX Core CASED TO: 15.0' CONTRACTOR: SwL (89-192)

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 6

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
									CALCAREOUS SHALE (Taylor Marl), soft, fresh, fissile, dark gray with occasional fossil partings.
85				85.0					
		C2	85.0	95.0	95	95			-fossil parting at 91.9'
90									
95				95.0					
		C3	95.0	105.0	100	100			
100									
105				105.0					
		C4	105.0	113.0	95	95			
110									
115			113.0						-fossil parting at 118.7'
		C5		123.0	97	97			
120									

DRILLING GEOLOGIST Dale Brown ASSISTANT Bobby Morgan CHECKED BY Shawn Wood

LOG OF BORING

BORING NO: B 802 PG 4 OF 6

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 204,473 ft. E 2,220,525 ft.

GROUND EL: 495.0 ft.

DATE: 3/21-23/90 TYPE: NX Core CASED TO: 15.0' CONTRACTOR: SwL (89-192)

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 6

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
									CALCAREOUS SHALE (Taylor Marl), soft, fresh, fissile, dark gray with occasional fossil partings.
125		C6	123.0	133.0	97	97			
130									
135		C7	133.0	143.0	91	91			-fossil partings at 135.4', 138.7' and 141.2'
140									
145		C8	143.0	153.0	100	100			-fossil parting at 148.7'
150									
155		C9	153.0	163.0	100	100			-fossil partings at 158.4' and 162.8'
160									

DRILLING GEOLOGIST Dale Brown ASSISTANT Bobby Morgan CHECKED BY Shawn Wood

LOG OF BORING

BORING NO: B 802 PG 5 OF 6

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 204,473 ft. E 2,220,525 ft.

GROUND EL: 495.0 ft.

DATE: 3/21-23/90 TYPE: NX Core CASED TO: 15.0' CONTRACTOR: SwL (89-192)

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 6

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
									CALCAREOUS SHALE (Taylor Marl), soft, fresh, fissile, dark gray with occasional fossil partings.
			163.0						
165									-fossil partings at 165.6' and 163.7'
		C10			100	100			
170									
				173.0					
			173.0						
175									-fossil partings at 177.9', 178.6', 181.5' and 182.3'
		C11			100	100			
180									
				183.0					
			183.0						
185									-fossil partings at 184.0' and 184.3'
									186.6 -Sharp Contact-
		C12			98	98			LIMESTONE (Austin Chalk), moderately to medium hard, fresh, light gray to dark gray with 0.2' to 1' thick moderately argillaceous limestone interbeds 2' apart. Also fossil partings.
190									-fossil parting at 190.2'
									-moderately argillaceous layer , dark gray, sharp contacts at 192.6'-192.8'
				193.0					
			193.0						-fossil partings at 194.9', 195.3', 195.6', 197.7', 198.9, 200.1', 201.0' and 201.5'
195									-moderately argillaceous layer , gradational contacts at 194.9'-195.4'
		C13			100	100			
200									
				203.0					

DRILLING GEOLOGIST Dale Brown ASSISTANT Bobby Morgan CHECKED BY Shawn Wood

LOG OF BORING

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: B 802 PG 6 OF 6

LOCATION: N 204,473 ft. E 2,220,525 ft.

GROUND EL: 495.0 ft.

DATE: 3/21-23/90 TYPE: NX Core CASED TO: 15.0' CONTRACTOR: SwL (89-192)

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 6

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), moderately to medium hard, fresh, light gray to dark gray with 1' to 3' thick slightly argillaceous limestone interbeds 1' apart. Also fossil partings.
205		C14	203.0	213.0	98	96			-fossil partings at 203.3', 203.4', 203.7', 204.0', 204.3', 205.3', 205.3', 206.6'. 208.1', 209.8' and 211.1' -slightly argillaceous layers, dark gray, gradational contact at 204.0' to sharp contact at 205.3', and gradational contacts at 206.8'-209.8'
210									
215		C15	213.0	223.0	99	99			-fossil partings at 214.7' and 215.9'
220									
225									Bottom of Exploration at 223.0 feet
230									
235									
240									

DRILLING GEOLOGIST Dale Brown ASSISTANT Bobby Morgan CHECKED BY Shawn Wood

LITHOLOGIC LOG

BORING B 2758

LOG OF BORING

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: B 2758 PG 1 OF 5

LOCATION: N 274,675 feet
E 2,247,175 feet

GROUND EL: 460.0 feet

DATE: 3/26-27/90 TYPE: Air/Water Rotary CASED TO: 15.0 CONTRACTOR: SwL 89-192

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.	SAMPLE LEGEND	WATER INFORMATION
									S= SPLIT SPOON T= 2" THIN WALL TUBE U= 3" THIN WALL TUBE C= NX ROCK CORE	Began drilling with air to 8.0'. Switched to air/water injection, therefore unable to determine groundwater parameters.

DESCRIPTION OF STRATUM

5, 10, 15, 20, 25, 30, 35, 40

CLAY, soft, fine, yellowish tan.

16.0

CLAY, soft, fine, reddish brown to tan.

25.0

CALCAREOUS SHALE (Taylor Marl), soft, fresh, fissile, dark gray.

DRILLING GEOLOGIST D. Brown ASSISTANT Kenneth Horton CHECKED BY Shawn Wood

LOG OF BORING

BORING NO: B 2758 PG 2 OF 5

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

LOCATION: N 274,675 feet
E 2,247,175 feet

GROUND EL: 460.0 feet

DATE: 3/26-27/90 TYPE: Water Rotary CASED TO: 15.0 CONTRACTOR: SwL (89-192)

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.	SAMPLE LEGEND	WATER INFORMATION
									S= SPLIT SPOON T= 2" THIN WALL TUBE U= 3" THIN WALL TUBE C= NX ROCK CORE	See p. 1 of 5
									DESCRIPTION OF STRATUM	
									CALCAREOUS SHALE (Taylor Marl), soft. fresh, fissile, dark gray	
45										
50										
55										
60										
65										
70										
75										
80										

DRILLING GEOLOGIST D. Brown ASSISTANT Kenneth Horton CHECKED BY Shawn Wood

LOG OF BORING

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: B 2758 PG 3 OF 5

LOCATION: N 274,675 feet
E 2,247,175 feet

GROUND EL: 460.0 feet

DATE: 3/26-27/90 TYPE: Water Rotary/NX Core CASED TO: 15.0 CONTRACTOR: SwL (89-192)

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 5

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
									CALCAREOUS SHALE (Taylor Marl) soft, fresh, fissile, dark gray with occasional fossil partings.
85									
90									
95									
100									
105									
110									
115			115.0						
120		C1			93	93			-fossil partings at 121.3'

DRILLING GEOLOGIST D. Brown ASSISTANT Kenneth Horton CHECKED BY Shawn Wood

LOG OF BORING

PROJECT: Superconducting Supercollider

CLIENT: The Earth Technology Corporation

TASK NO.: 17

BORING NO: B 2758 PG 4 OF 5

LOCATION: N 274,675 feet
E 2,247,175 feet

GROUND EL: 460.0 feet

DATE: 3/26-27/90 TYPE: NX Core CASED TO: 15.0 CONTRACTOR: SwL (89-192)

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 5

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
									CALCAREOUS SHALE (Taylor Marl), soft, fresh, fissile, dark gray,
125			125.0						
130		C2			15	15			
135			135.0	135.0					
140		C3			93	93			
145			145.0	145.0					
150		C4			86	86			
155			155.0	155.0					154.6 -Sharp Contact-
160		C5			100	100			LIMESTONE (Austin Chalk) medium hard, fresh, medium gray

DRILLING GEOLOGIST D. Brown ASSISTANT Kenneth Horton CHECKED BY Shawn Wood

LOG OF BORING

PROJECT: Superconducting Supercollider
CLIENT: The Earth Technology Corporation
TASK NO.: 17

BORING NO: B 2758 PG 5 OF 5
LOCATION: N 274,675 feet, E 2,247,175 feet
GROUND EL: 460.0 feet

DATE: 3/26-27/90 TYPE: NX Core CASED TO: 15.0 CONTRACTOR: SwL (89-192)

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 5

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), moderately to medium hard, fresh, light gray to dark gray with 0.2' to 1' thick slightly, moderately argillaceous limestone interbeds 2' to 8' apart. Also fossil partings, and medium to high angle fractures.
165									
		C6	165.0	175.0	99	99			-slightly argillaceous layers, gray, gradational contacts at 166.5'-167.1' -40°, smooth, tight, slickensided fracture at 167.0' -70°, smooth, tight, slickensided fracture at 167.7' -multiple healed, tight, fractures at 169.1'-170.0' -80°, smooth, tight, slickensided fracture at 167.9' -moderately argillaceous layers, severely fractured, gradational contacts at 171.4'-172.4'
170									
175									
		C7	175.0	185.0	100	100			-fossil partings at 176.5', 182.5', and 183.7' -70°, smooth, tight, slickensided fracture at 179.3' -45°, smooth, tight, slickensided fracture at 183.0' -75°, smooth, tight, slickensided fracture at 183.2' -50°, smooth, tight, slickensided fracture at 183.4'
180									
185									
		C8	185.0	192.0	87	87			-moderately argillaceous layers, gray, gradational contacts at 184.8'-185.0' -moderately argillaceous layers, gray, sharp contacts at 185.0'-185.2' -fossil partings at 185.5' and 185.6' -moderately argillaceous layers, gray, gradational contacts at 187.3'-188.0'
190									
									Bottom of Exploration at 192.0 feet
195									
200									

DRILLING GEOLOGIST D. Brown ASSISTANT Kenneth Horton CHECKED BY Shawn Wood

APPENDIX B

WIRE-LINE LOGS

WIRE-LINE LOGGING PARAMETERS

Hole No. B 802 **Log Measured From:** Ground Level

Drilling Parameters

Depth 223.0 feet

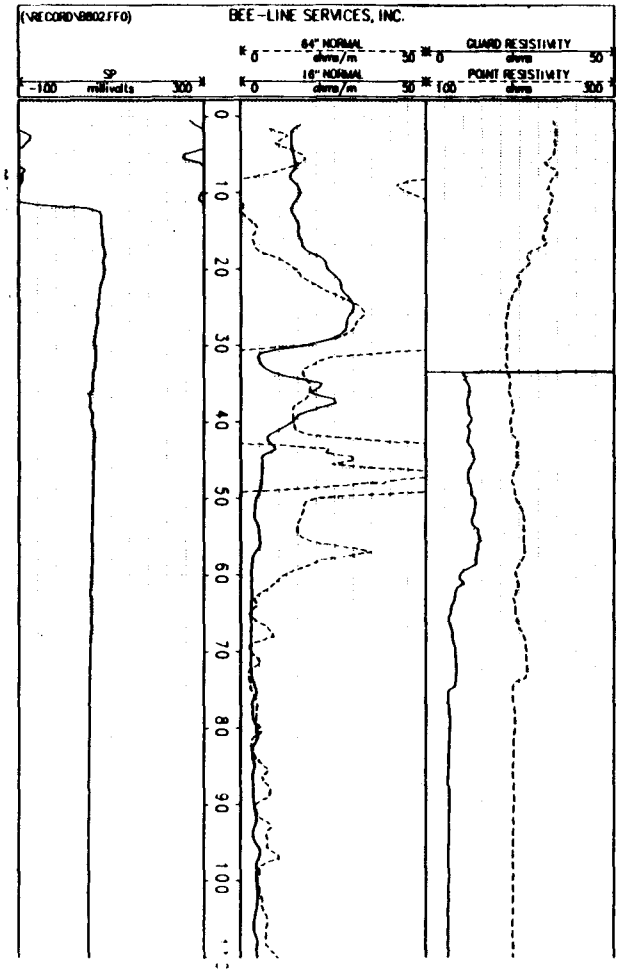
Bit Diameter 4.0 inches

Logging Parameters	Electrical Log	Gamma Log	Sonic Log
Date	March 23, 1990	March 23, 1990	Tool Malfunction
Bottom Log Interval	220.5 feet	221.0 feet	
Top Log Interval	surface	surface	
Type of Fluid in Hole	drilling mud	drilling mud	
Time Since Circulation Stop	20 minutes	20 minutes	
Probe Type/S.N.	ALP-4979	XAP-4383	
Module Type/S.N.	ALM-4979	XAM-4383	
Logging Speed	40 feet/min.	20 feet/min.	
Sample Interval	0.5 foot	0.5 foot	

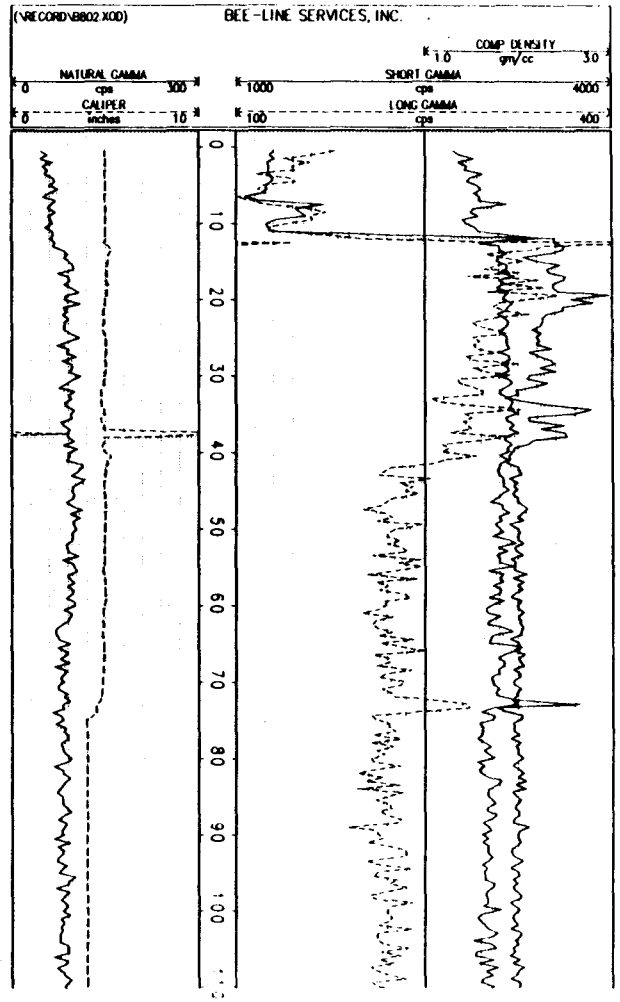
Logged by: BEE-LINE SERVICES, INC.
P. O. Box 2096
Corsicana, TX 75151

B 802 Wire-line logs run March 23, 1990. Surface elevation 495.0 feet.

ELECTRICAL LOG

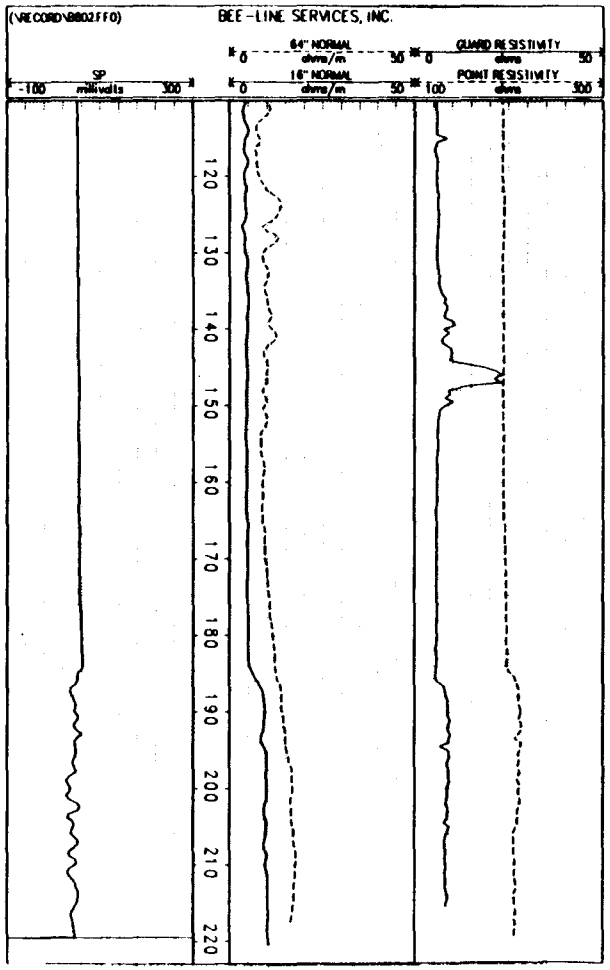


GAMMA LOG

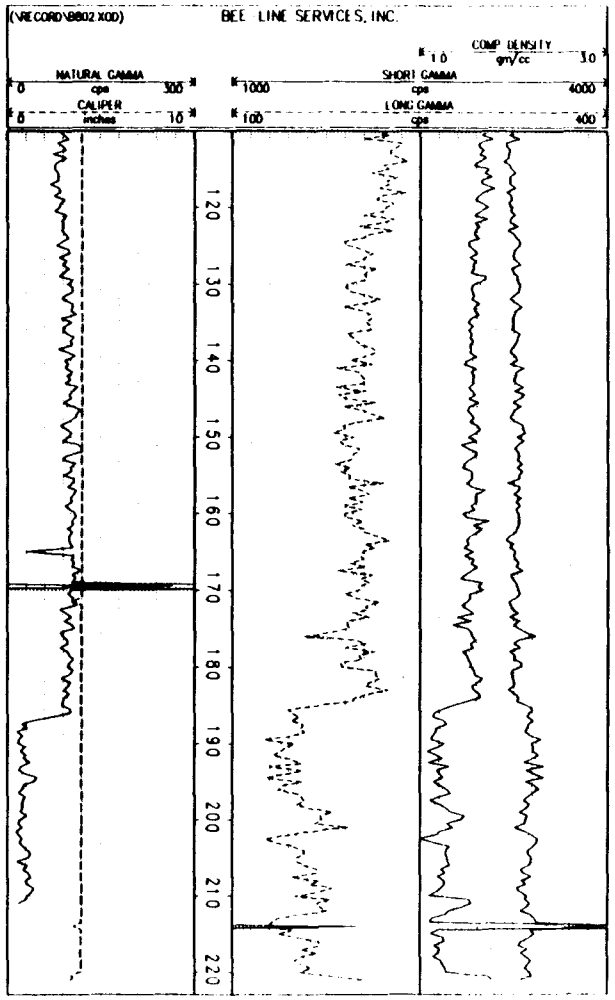


B 802 Wire-line logs run March 23, 1990 (Continued). Surface elevation 495.0 feet.

ELECTRICAL LOG CONTINUED



GAMMA LOG CONTINUED



WIRE-LINE LOGGING PARAMETERS

Hole No. B 2758 **Log Measured From:** Ground Level

Drilling Parameters

Depth 192.0 feet

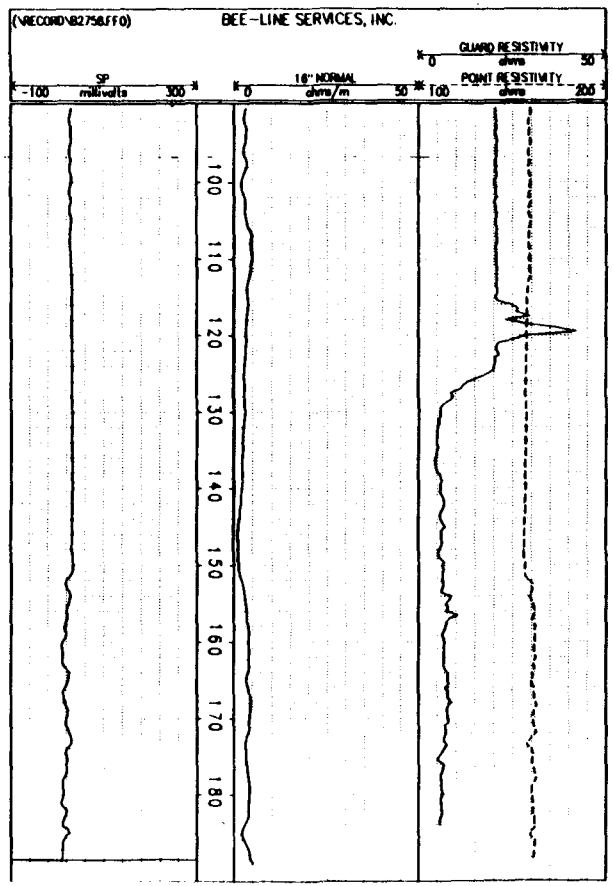
Bit Diameter 4.75 inches and 3.1 inches

Logging Parameters	Electrical Log	Gamma Log	Sonic Log
Date	March 28, 1990	March 28, 1990	March 28, 1990
Bottom Log Interval	189.0 feet	189.5 feet	185.4 feet
Top Log Interval	surface	surface	surface
Type of Fluid in Hole	drilling mud	drilling mud	drilling mud
Time Since Circulation Stop	17 hours	17 hours	17 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

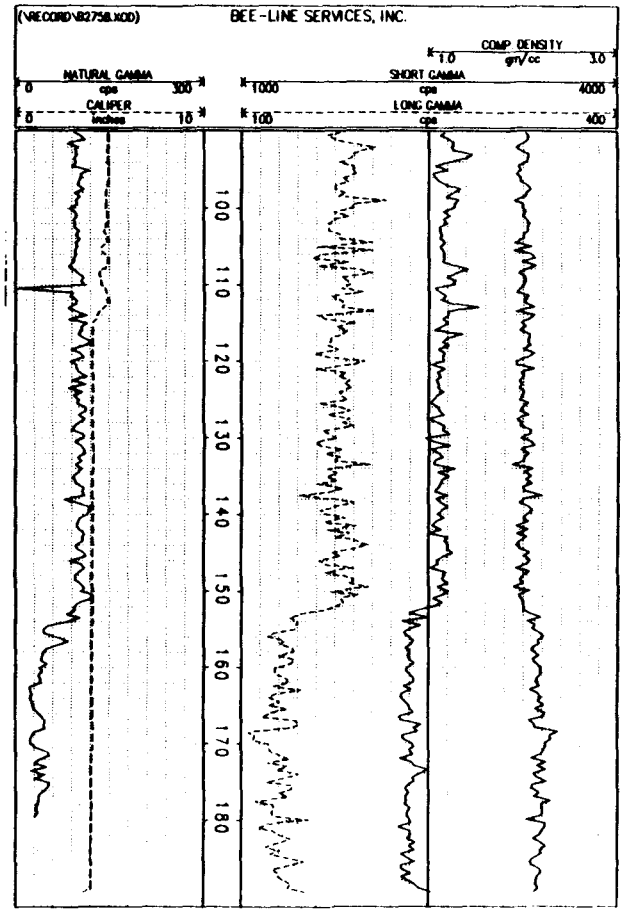
Logged by: BEE-LINE SERVICES, INC.
P. O. Box 2096
Corsicana, TX 75151

B 2758 Wire-line logs run March 28, 1990 (Continued). Surface elevation 460.0 feet.

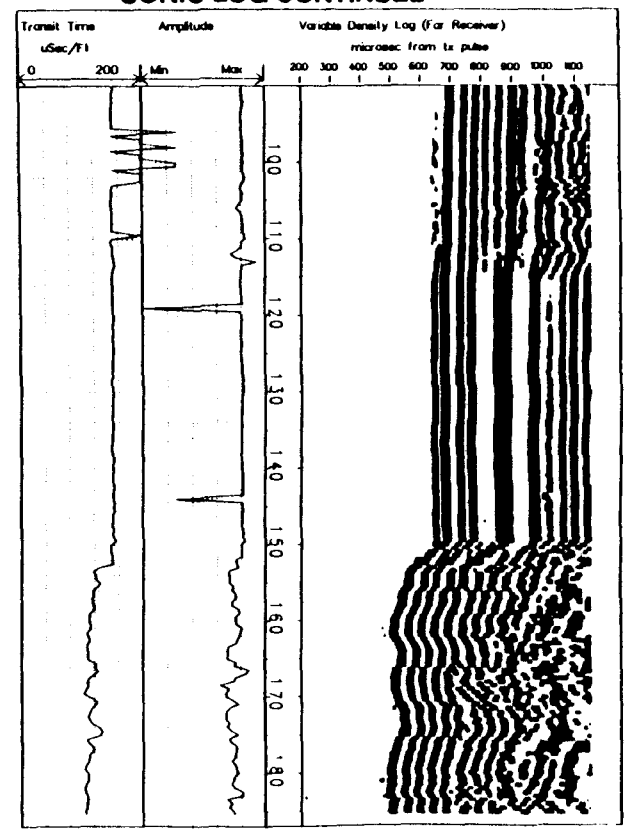
ELECTRICAL LOG CONTINUED



GAMMA LOG CONTINUED

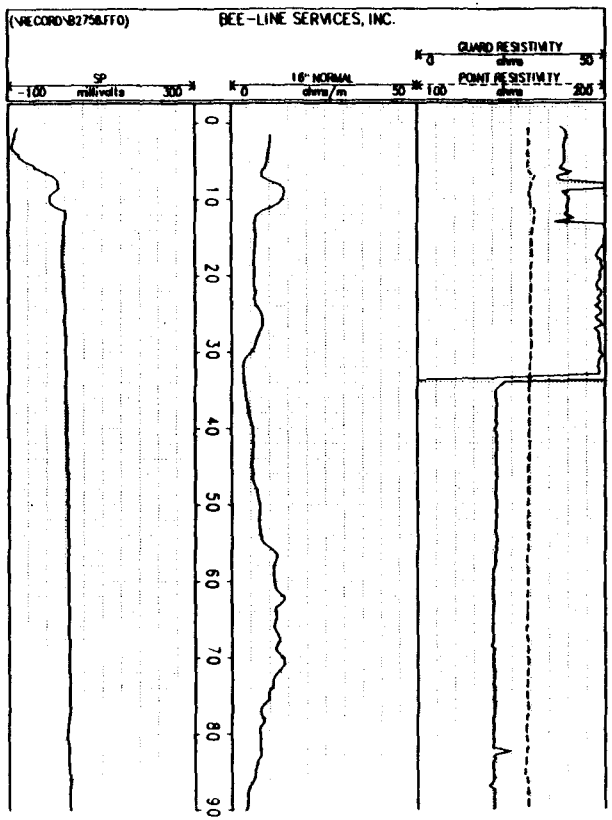


SONIC LOG CONTINUED

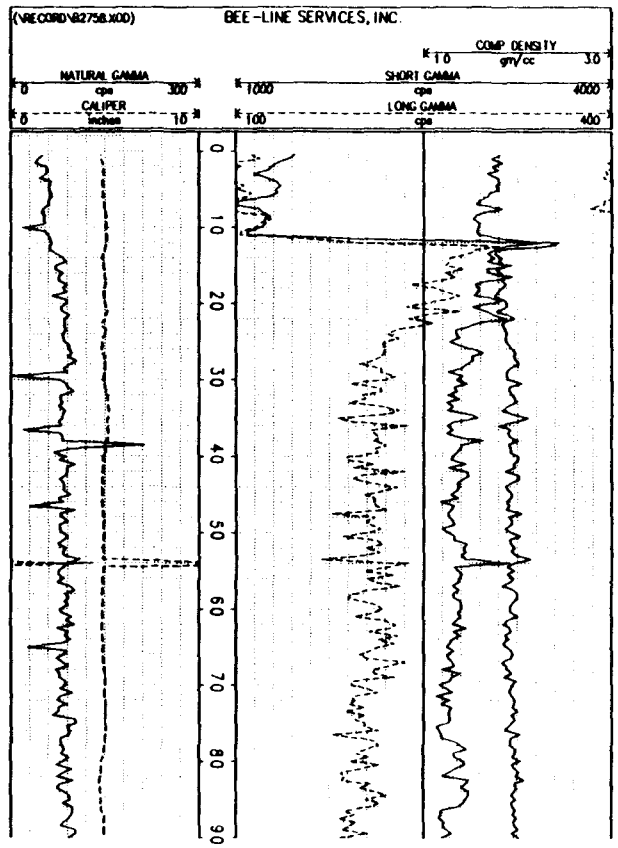


B 2758 Wire-line logs run March 28, 1990. Surface elevation 460.0 feet.

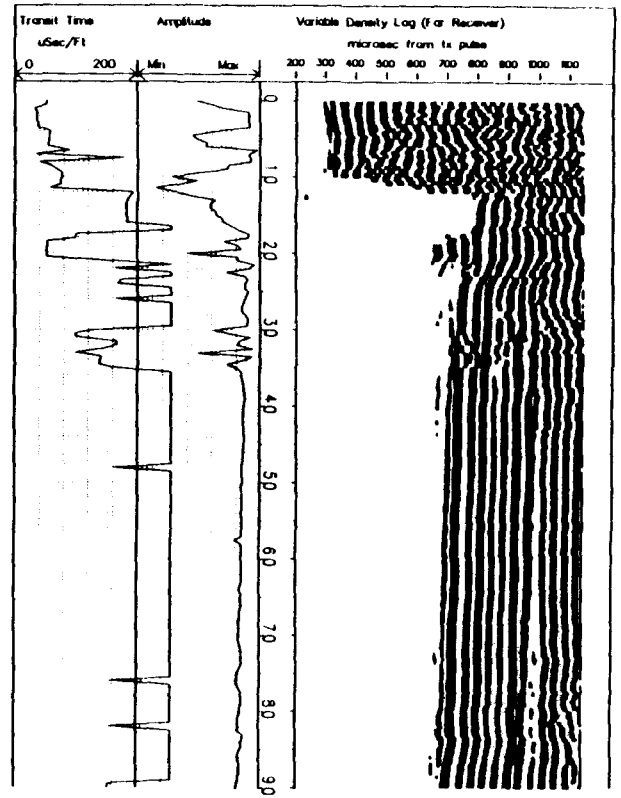
ELECTRICAL LOG



GAMMA LOG



SONIC LOG



APPENDIX C

HYDROLOGIC TEST RESULTS

APPENDIX C

The objectives of the hydrogeologic (packer) tests were to provide estimates of the hydraulic conductivity at 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.

The procedure used to conduct this test included lowering a single pneumatically operated rubber packer attached above a perforated pipe into the drill hole to a predetermined depth above the hole bottom. The packer was 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 encountered in this test, 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, was recorded. The test was continued for 15 minutes. Standard forms were used for data records and the hydraulic conductivity was calculated using standard Bureau of Reclamation procedures.

STRADDLE PACKER TEST RESULTS
Boring B 802

Test Depth (feet)	Packer Pressure (psi)	Gauge Pressure (psi)	Formation/ Lithology	Hydraulic Conductivity* (cm/sec)
183.3-223.0	160	15	Taylor Marl/ Austin Chalk	$<2.3 \times 10^{-8}$

* Based on an estimated depth to ground water of 20 feet.

At boring B 802 a single test interval was selected based on a review of the lithologic and wire-line logs. The test interval was selected to provide hydrologic data for the contact between the Taylor Marl and Austin Chalk. 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 calibrated container.

Boring B 2758

Test Depth (feet)	Packer Pressure (psi)	Gauge Pressure (psi)	Formation/ Lithology	Hydraulic Conductivity* (cm/sec)
144.6-164.6	104	15	Taylor Marl/ Austin Chalk	$<5.5 \times 10^{-8}$

* Based on an estimated depth to ground water of 5 feet.

At boring B 2758 the test interval was selected based on a review of the lithologic and wire-line logs. The test interval was selected to provide hydrologic data for the contact between the Taylor Marl and Austin Chalk. 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 calibrated container.

APPENDIX D

LABORATORY RESULTS

TABLE D-1. GEOMECHANICAL TEST RESULTS-BORING B 802

GENERAL LITHOLOGY	VERTICAL DEPTH	MOISTURE CONTENT	DRY DENSITY	SPECIFIC GRAVITY	ATTERBERG LIMITS		FRACTION FINER THAN # 200 SIEVE	CARBONATE CONTENT	SAMPLE DIMENSION RATIO	SAMPLE FAILURE MODE/ DEGREES*	UNCONFINED COMPRESSIVE STRENGTH	TRIAXIAL COMPRESSION		FAILURE STRAIN	TANGENT YOUNG'S MODULUS			POISSON'S RATIO	BRAZIL TENSILE STRENGTH	2ND CYCLE SLAKE DURABILITY INDEX	MODIFIED TABOR ABRASION/ HARDNESS INDEX	SWELL PRESSURE INDEX	COMMENTS
					LL	PI						CONFINING PRESSURE σ_3	DEVIATOR STRESS $\sigma_1-\sigma_3$		E50	UNLOAD/ RELOAD	σ_3						
	feet	percent	pcf				percent	percent	L/D	DEGREES*	psi	psi	psi	percent	(psi)x10E5	(psi)x10E5	psi		psi	percent			
TAYLOR MARL	77.0	17.7																					
TAYLOR MARL	77.1	17.5	113.7	2.73	87	53	98.8	30.5	2.2	D	252			1.36	0.35		0						
TAYLOR MARL	100.0	18.5																					
TAYLOR MARL	100.1	19.1	108.1	2.72	103	68	96.3	31.2	2.2	D	237			1.38	0.32		0						
TAYLOR MARL	100.9	18.8																		68.1			
TAYLOR MARL	110.0	19.1	110.2																				
TAYLOR MARL	110.4	19.4	109.8						2.2	D		100	297	1.14	0.54		100						
TAYLOR MARL	110.8	19.4	108.6	2.70	84	54	98.2	27.4	2.1	B-1/40		200	407	1.57	0.38		200						NOTES 1 & 3
TAYLOR MARL	110.8														0.48	0.78		0.24					NOTES 2 & 3
TAYLOR MARL	113.0	19.1	109.4		77	49	97.9	26.2	2.2	E	157			0.93	0.28		0						
TAYLOR MARL	113.4	19.6	107.4																				
TAYLOR MARL	148.7	16.9	113.5		74	46	98.5	17.4															
TAYLOR MARL	149.1	16.9	116.3																			19.0	
TAYLOR MARL	149.3	16.8	108.6																			16.0	
TAYLOR MARL	183.2	17.1	118.4		70	43	98.2																
TAYLOR MARL	183.5	16.9	114.3																			6.0	
TAYLOR MARL	183.7	17.3	114.0																			11.0	
TAYLOR MARL	184.0	17.0																					
TAYLOR MARL	184.1				110	74	99.2	19.4															
AUSTIN CHALK	187.0	10.9																					
AUSTIN CHALK	187.2	10.9							0.5										311				
AUSTIN CHALK	187.3	11.0	129.0						2.1	B-1/30	3086			1.13	3.51		0						
AUSTIN CHALK	188.1	12.4	125.5																				
AUSTIN CHALK	188.3																				0.804		
AUSTIN CHALK	189.0	12.6	126.1	2.68					2.2	A		200	3416	0.71	5.46		200						NOTE 4
AUSTIN CHALK	189.4	12.6	126.0						2.3	A		300	3395	0.83	4.20		300						NOTES 1 & 4
AUSTIN CHALK	189.4														7.24			0.18					NOTES 2 & 4
AUSTIN CHALK	189.8	11.7	132.3																				
AUSTIN CHALK	216.6	9.9	133.0																				
AUSTIN CHALK	216.7																				0.906		
PROCEDURE		ASTM-D2216		ASTM-D854	ASTM-D4318		ASTM-D422				ASTM-D2938	ASTM-D2664				ASTM-D3148		ASTM-D3148	ISRM	ISRM	ISRM	ISRM	

B802PRT.WK1
REVISION 1.0
DATE 5/3/90

PRELIMINARY
(Subject to Revision)

* 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) MODULUS WAS CALCULATED FROM AXIAL STRAINS MEASURED USING DIAL MICROMETER. AXIAL LENGTH IS THE SAMPLE LENGTH.

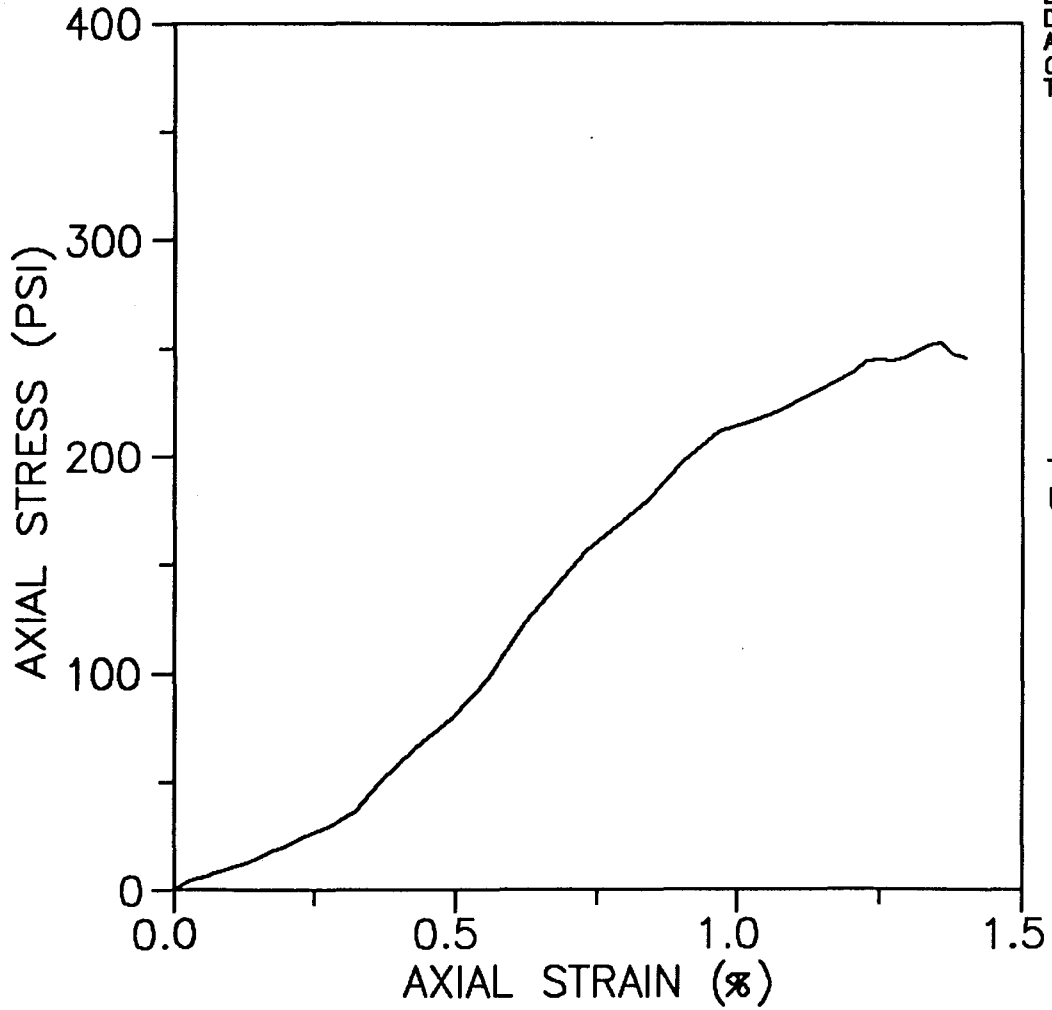
2) MODULII AND POISSON'S RATIO WERE CALCULATED FROM AXIAL AND LATERAL STRAINS MEASURED USING AXIAL AND LATERAL LVDTS. AXIAL LENGTH IS 2.8 INCHES.

3) TRIAXIAL TEST (UU) @ 110.8 FT IS A CYCLIC TEST WITH ONE UNLOAD-RELOAD CYCLE.

4) LOAD FRAME CAPACITY EXCEEDED. SAMPLE NOT TAKEN TO FAILURE. MODULUS TAKEN AT 50% OF MAXIMUM STRESS.

Note: Some values in this table may be revised based on reviews of test procedures and individual test results. The reader should refer to the latest revision of the gINT geotechnical data base (geotechnical report GR-70).

BORING NO.: B802
DEPTH (FT): 77.1
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.5
DRY UNIT WEIGHT (PCF): 113.7
DEG. OF SATURATION (%): 98.1
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE:UNCONFINED COMPRESSION
(ASTM D 2928)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
3.52 x 10E4 PSI

FAILURE MODE:
LONGITUDINAL (AXIAL)
SPLITTING

TEXAS SSC SITE

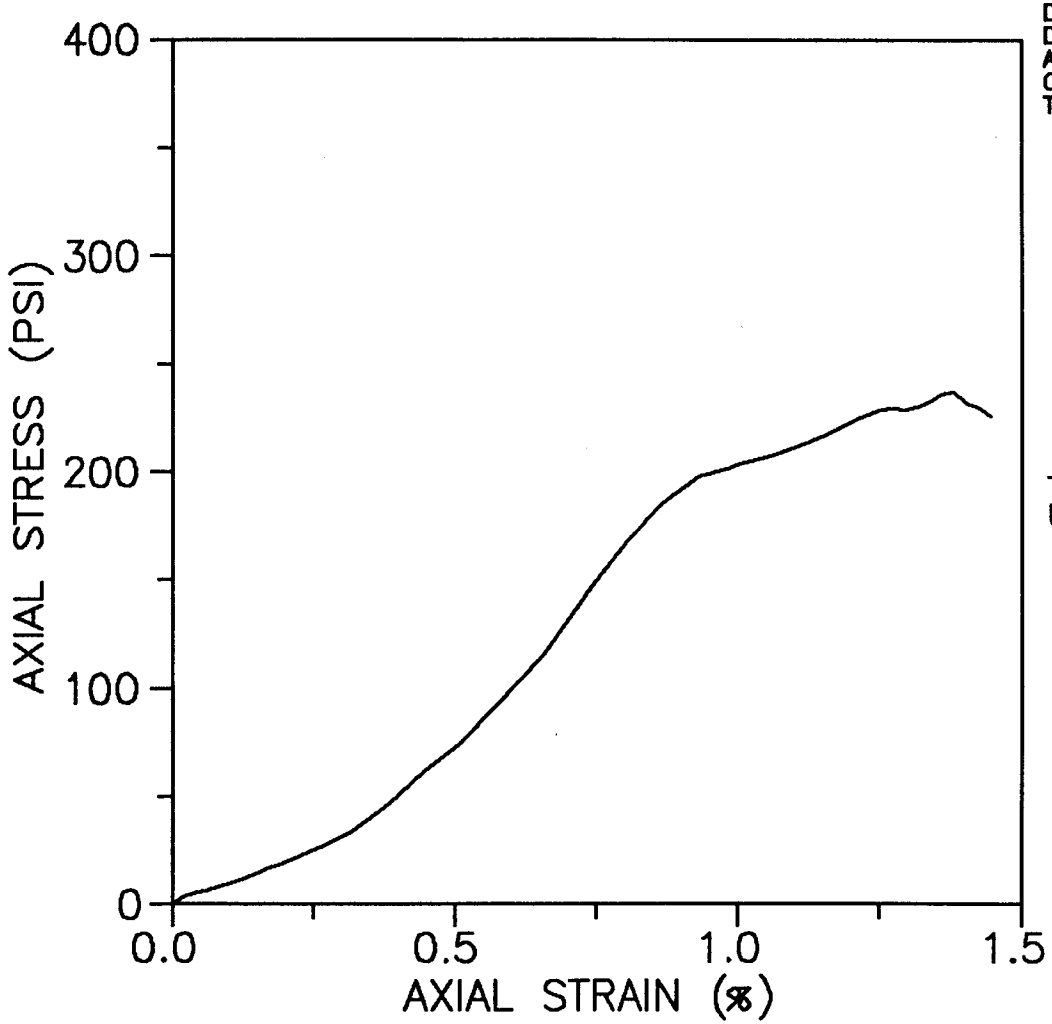
STRESS-STRAIN PLOT

SOUTHWESTERN LABORATORIES
GEOLOGISTS-ENGINEERS

JOB NO.: 89-192

FIGURE 1

BORING NO.: B802
DEPTH (FT): 100.1
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 19.1
DRY UNIT WEIGHT (PCF): 108.1
DEG. OF SATURATION (%): 92.3
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE:UNCONFINED COMPRESSION
(ASTM D 2928)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
3.233 x 10E4 PSI

FAILURE MODE:
LONGITUDINAL (AXIAL)
SPLITTING

TEXAS SSC SITE

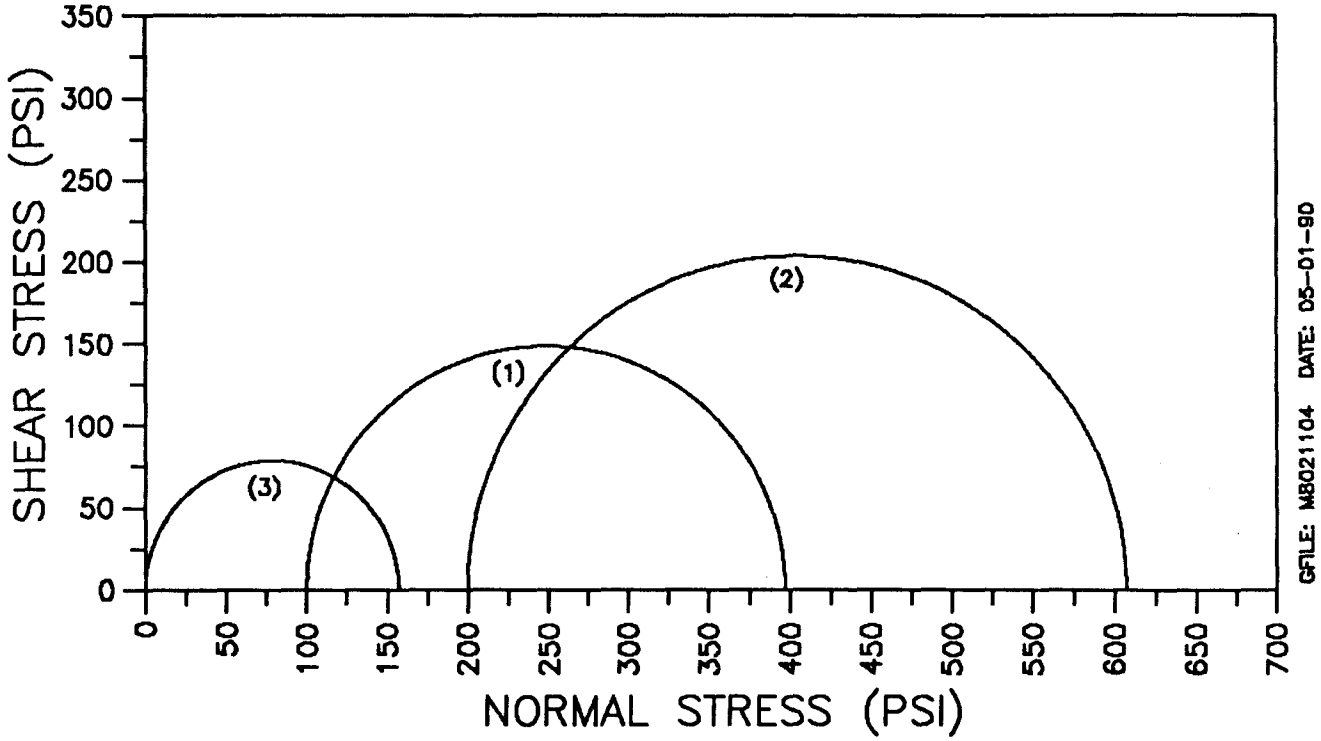
STRESS–STRAIN PLOT

SOUTHWESTERN LABORATORIES
GEOLOGISTS–ENGINEERS

JOB NO.: 89–192

FIGURE 1

BORING NO.: B802
DEPTH RANGE (FT): 110.4–113.4
TAYLOR MARL



GFILE: MB021104 DATE: 05-01-90

SEE STRESS–STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 110.4
(2) DEPTH (FT): 110.8
(3) DEPTH (FT): 113.0

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

TEXAS SSC SITE

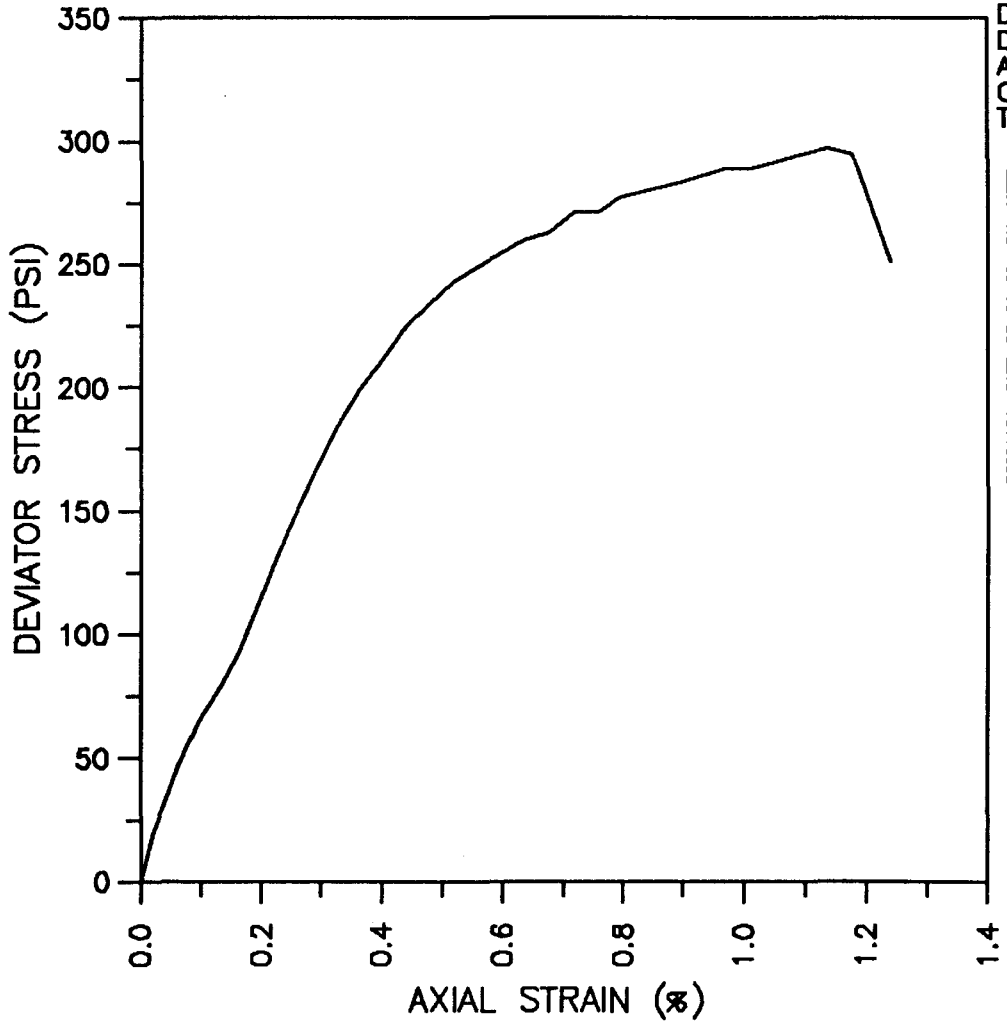
STRESS–STRAIN PLOT

MASON–JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS–ENGINEERS

JOB NO.: 5530.12

FIGURE

BORING NO.: B802
DEPTH (FT): 110.4
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 19.4
DRY UNIT WEIGHT (PCF): 109.8
DEG. OF SATURATION (%): 98.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

DFILE: B802I104 DATE: 05-01-00 CAL: MCTS

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.541 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

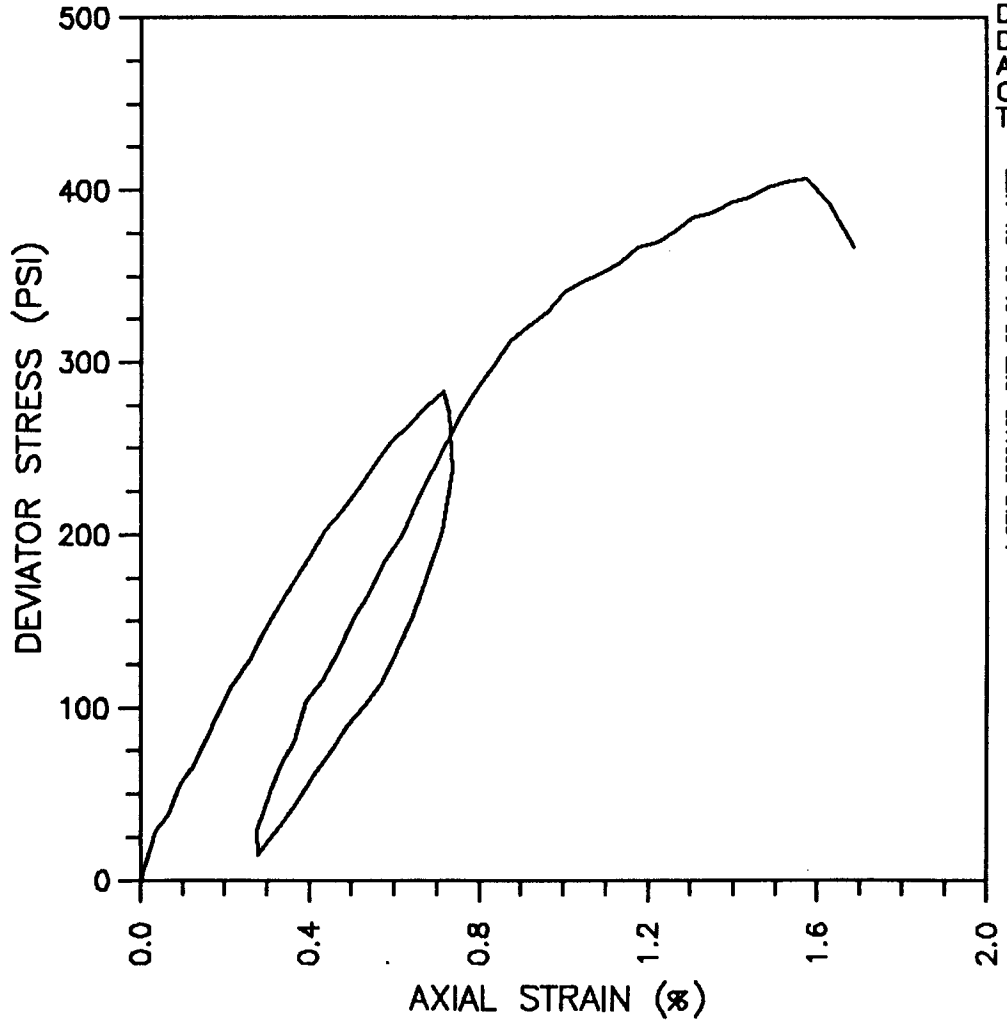
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.12

FIGURE

BORING NO.: B802
DEPTH (FT): 110.8
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 19.4
DRY UNIT WEIGHT (PCF): 108.6
DEG. OF SATURATION (%): 94.8
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: B802110B DATE: 05-01-90 DAL: MCTS

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.376 x10E5 PSI

FAILURE MODE:
SHEAR PLANE
AT 40 DEG.

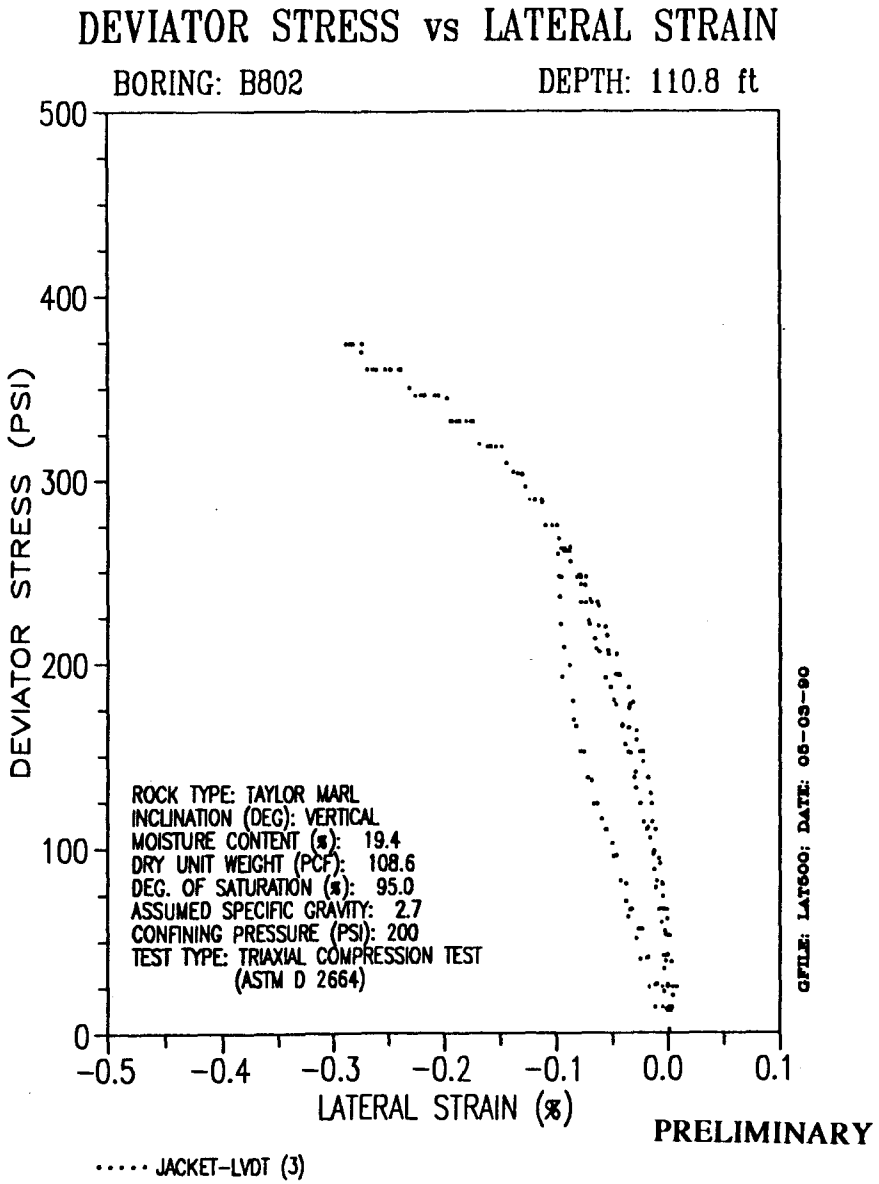
TEXAS SSC SITE

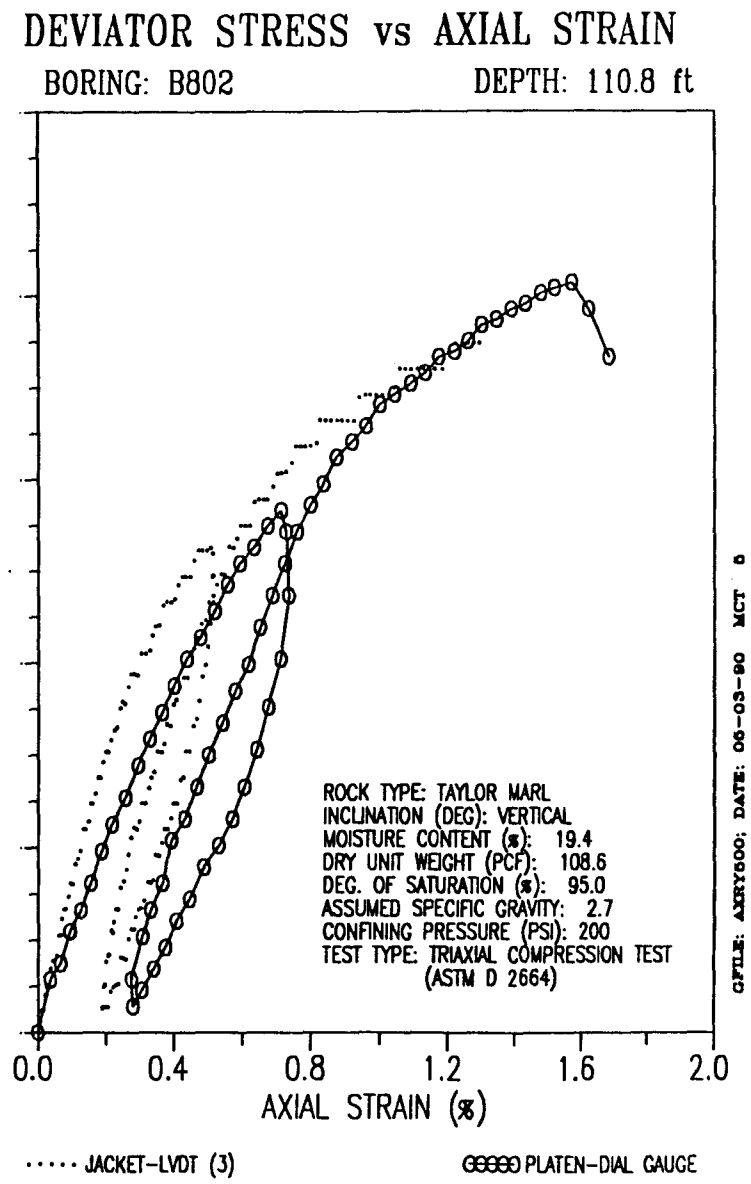
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.12

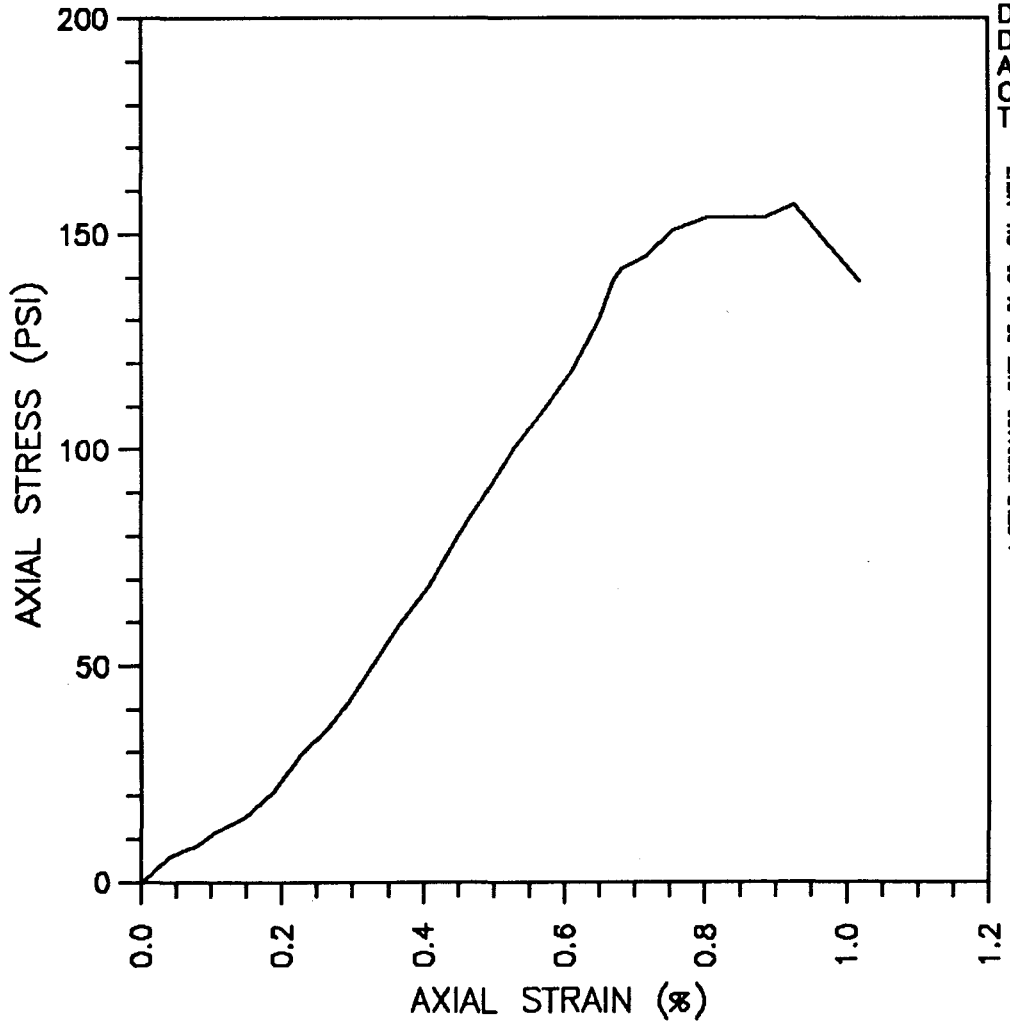
FIGURE





PRELIMINARY

BORING NO.: B802
DEPTH (FT): 113.0
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 19.1
DRY UNIT WEIGHT (PCF): 109.4
DEG. OF SATURATION (%): 95.8
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

DFILE: B802I130 DATE: 05-01-00 CAL: MCU3

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.278 x10E5 PSI

FAILURE MODE:
CONICAL FAILURE

TEXAS SSC SITE

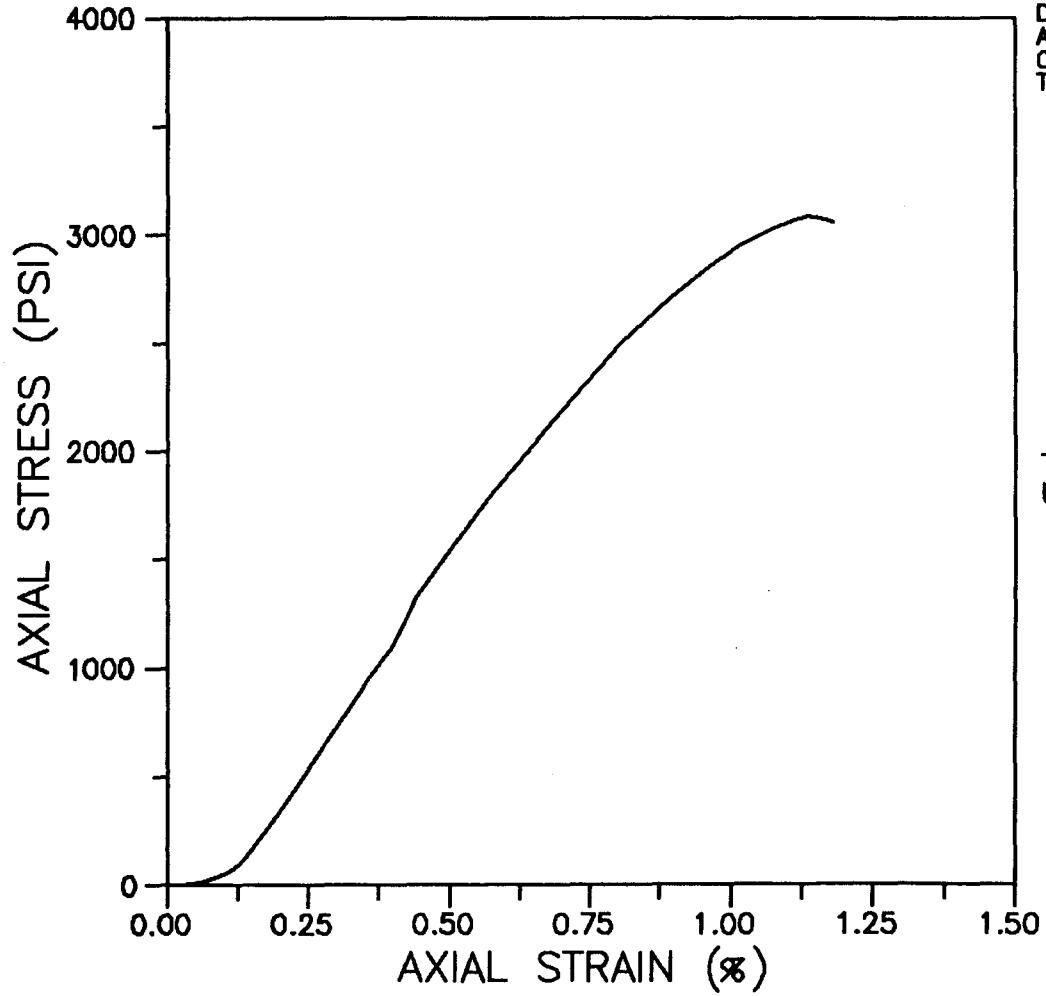
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.12

FIGURE

BORING NO: B802
DEPTH (FT): 187.3
AUSTIN CHALK



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 11.0
DRY UNIT WEIGHT (PCF): 129.0
DEG. OF SATURATION (%): 97.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE:UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
3.509 x 10E5 PSI

FAILURE MODE:
SHEAR PLANE AT 30 DEG

TEXAS SSC SITE

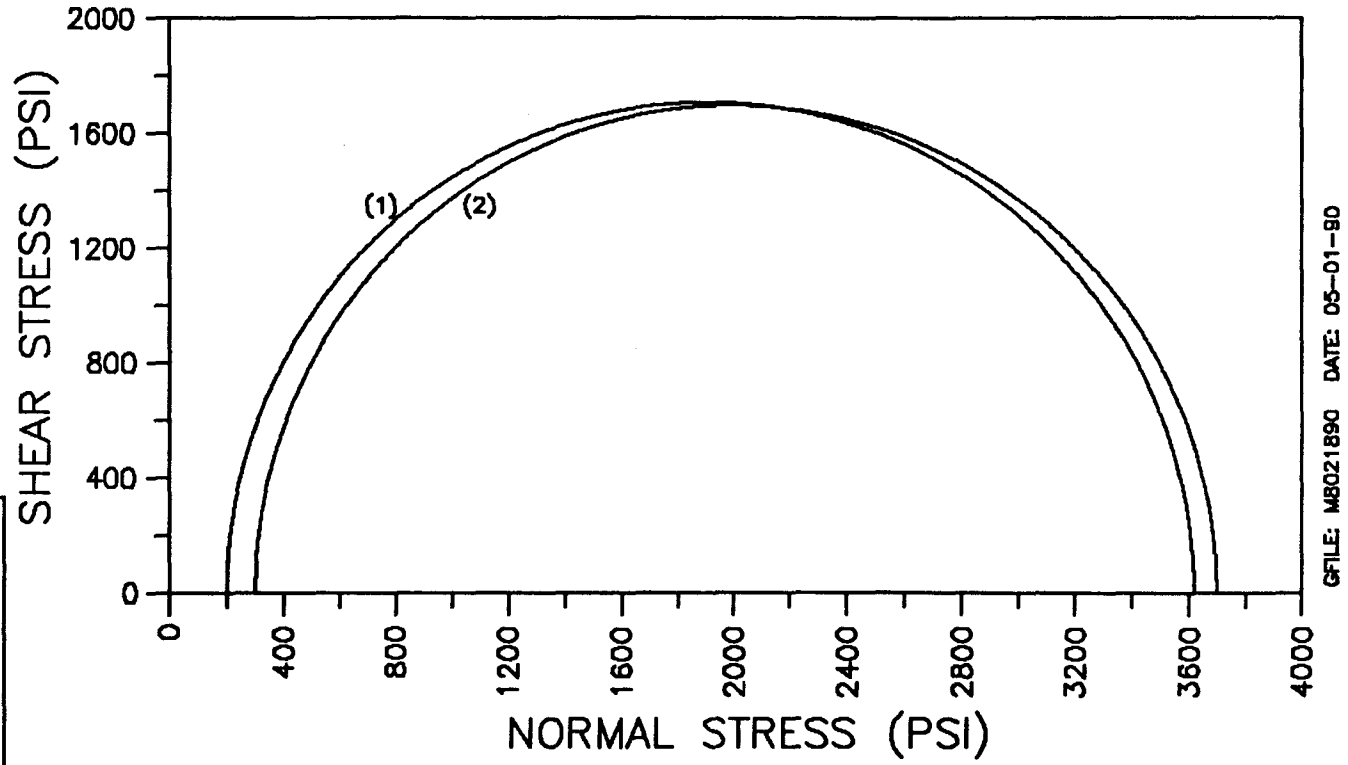
STRESS-STRAIN PLOT

SOUTHWESTERN LABORATORIES
DALLAS, TEXAS

JOB NO.: 89-192

FIGURE

BORING NO.: B802
DEPTH RANGE (FT): 189.0–189.8
AUSTIN CHALK LIMESTONE



GFILE: MB021890 DATE: 05-01-90

SEE STRESS–STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 189.0
(2) DEPTH (FT): 189.4

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

TEXAS SSC SITE

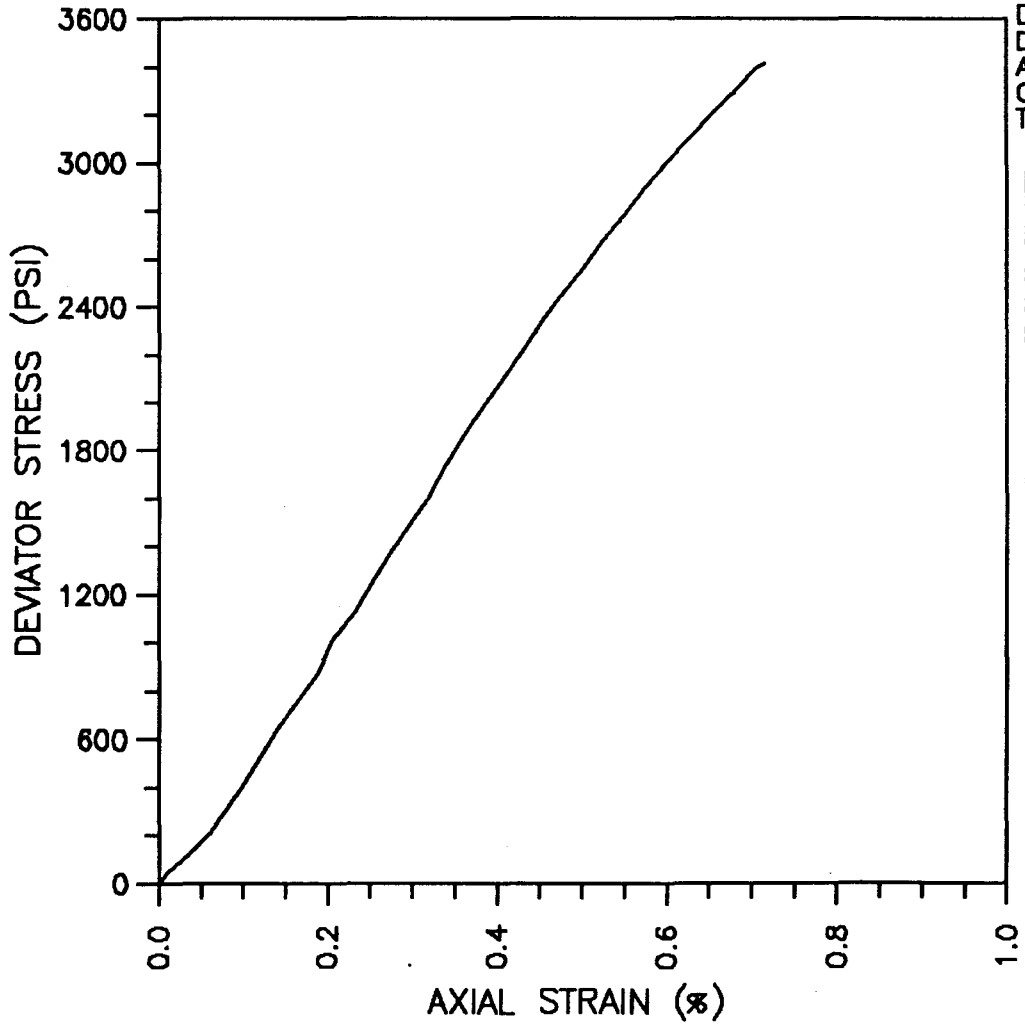
STRESS–STRAIN PLOT

MASON–JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS–ENGINEERS

JOB NO.: 5530.12

FIGURE

BORING NO.: B802
DEPTH (FT): 189.0
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 12.6
DRY UNIT WEIGHT (PCF): 126.1
DEG. OF SATURATION (%): 101.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: B802218B0 DATE: 05-01-90 CAL: MCTS

TANGENT MODULUS AT 50%
MAXIMUM STRESS:
5.455 x10E5 PSI

FAILURE MODE:
LOADED TO 3416 PSI
W/O FAILURE

TEXAS SSC SITE

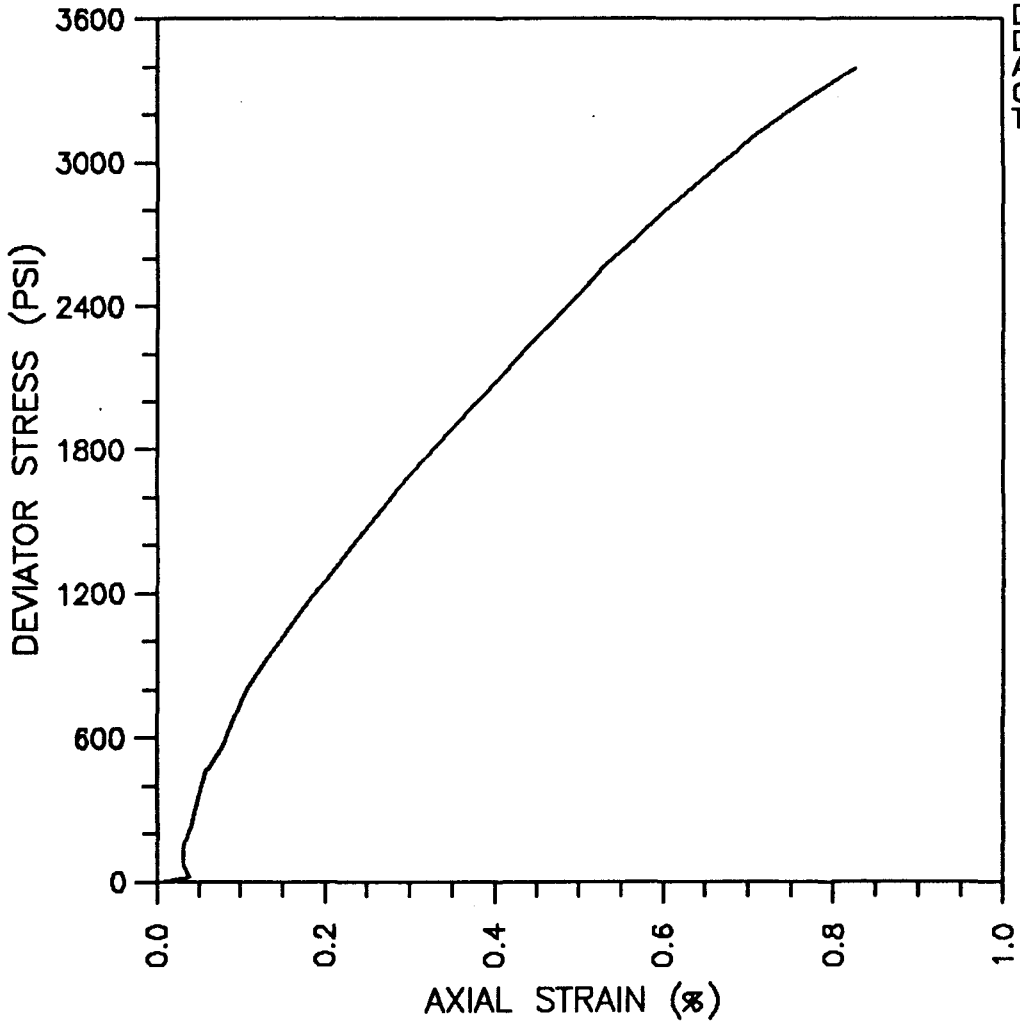
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.12

FIGURE

BORING NO.: B802
DEPTH (FT): 189.4
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 12.6
DRY UNIT WEIGHT (PCF): 126.0
DEG. OF SATURATION (%): 101.1
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

BFILE: B802189A DATE: 05-01-90 CAL: MGT4

TANGENT MODULUS AT 50%
MAXIMUM STRESS:
4.196 x10E5 PSI

FAILURE MODE:
LOADED TO 3395 PSI
W/O FAILURE

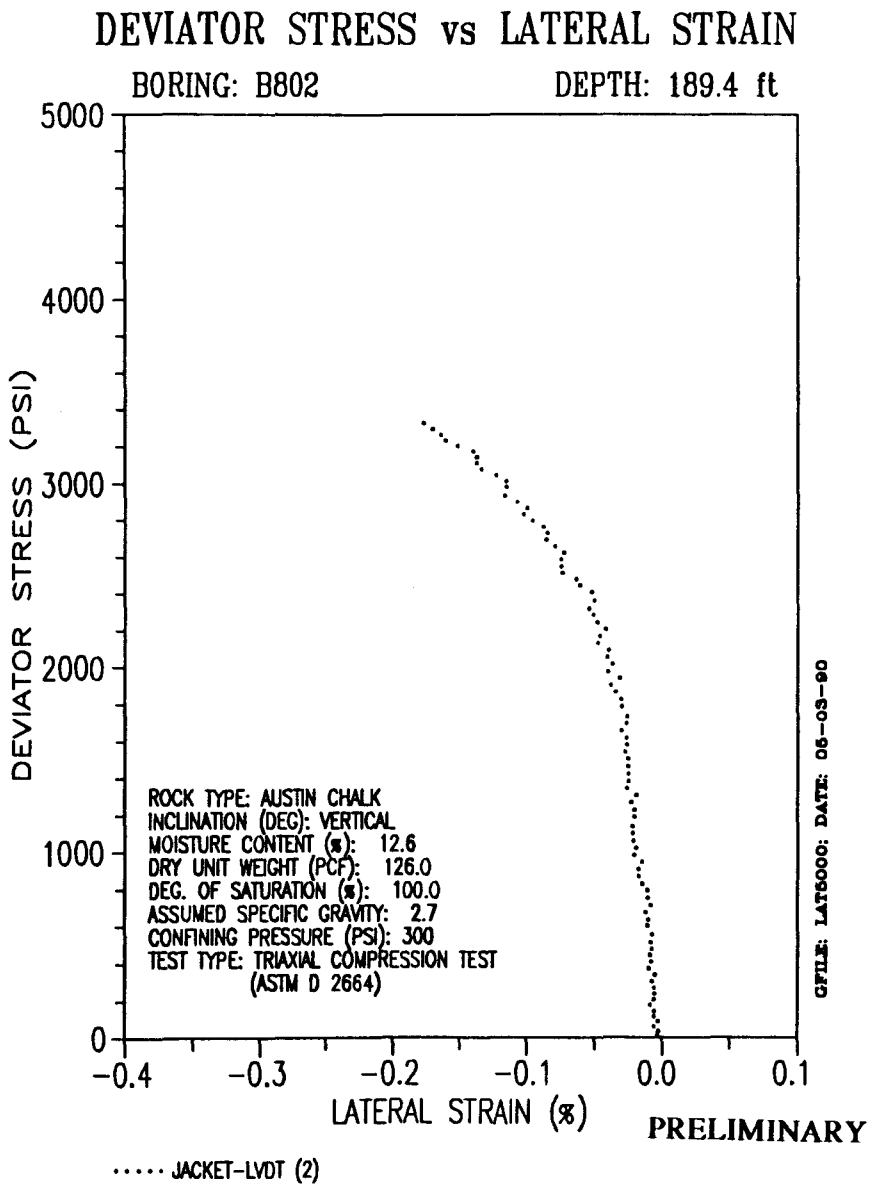
TEXAS SSC SITE

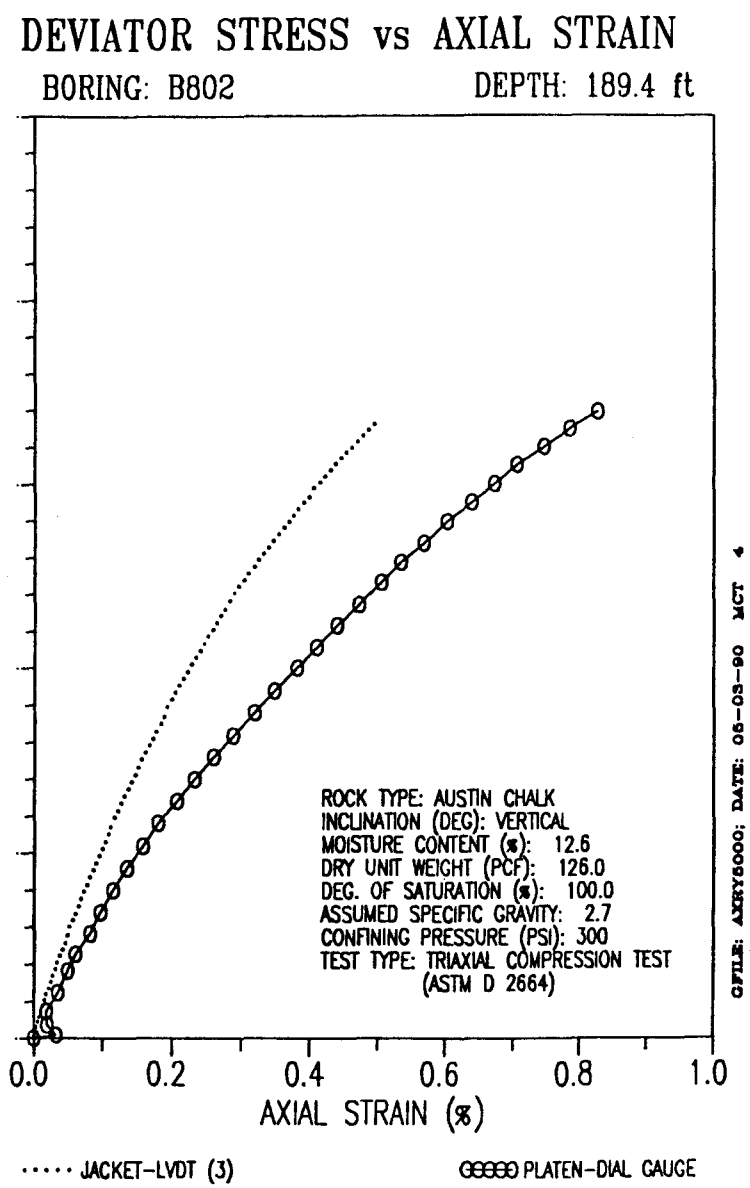
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

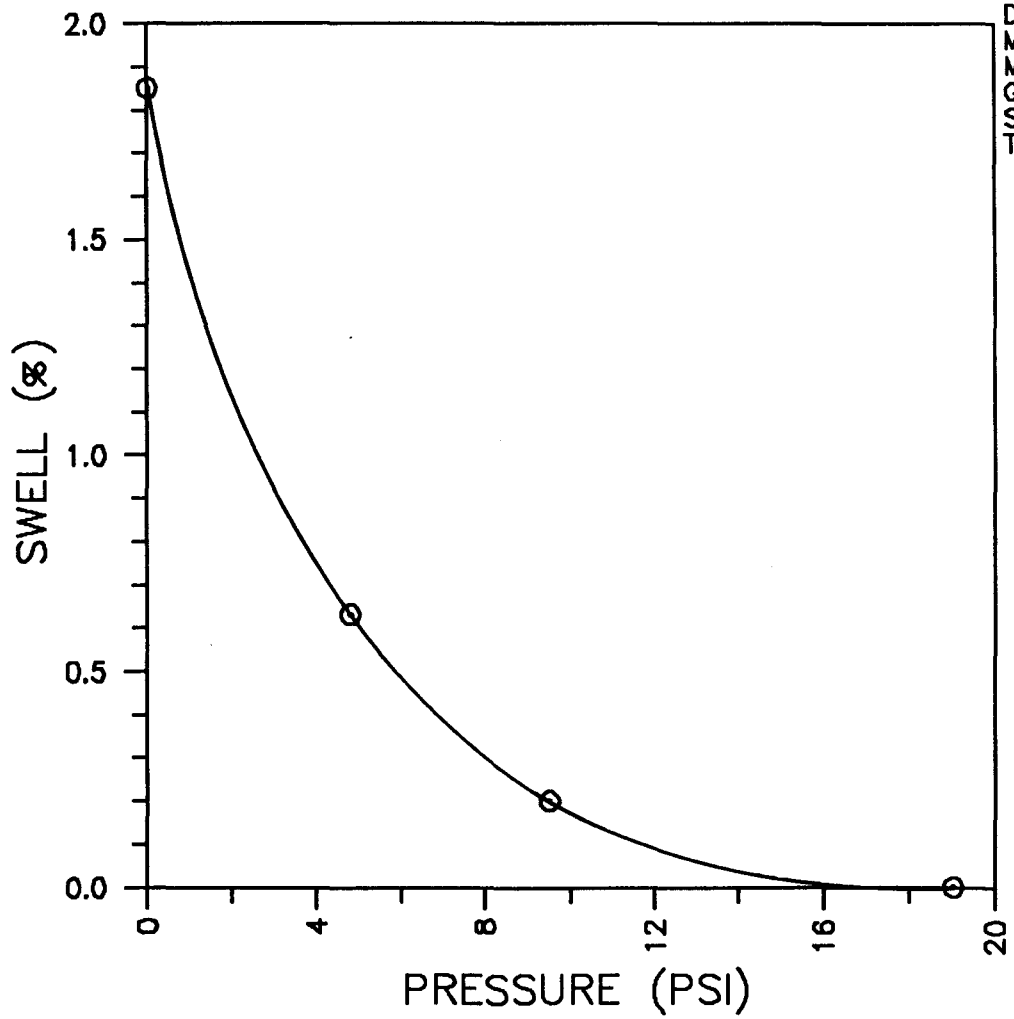
JOB NO.: 5530.12

FIGURE


DEVIATOR STRESS vs LATERAL STRAIN
BORING: B802
DEPTH: 189.4 ft
DEVIATOR STRESS (PSI)
5000
4000
3000
2000
1000
0
-0.4
-0.3
-0.2
-0.1
0.0
0.1
LATERAL STRAIN (%)
ROCK TYPE: AUSTIN CHALK
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 12.6
DRY UNIT WEIGHT (PCF): 126.0
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: LAT6000; DATE: 05-03-90
PRELIMINARY
JACKET-LVDT (2)


DEVIATOR STRESS vs AXIAL STRAIN
BORING: B802
DEPTH: 189.4 ft
0.0
0.2
0.4
0.6
0.8
1.0
AXIAL STRAIN (%)
ROCK TYPE: AUSTIN CHALK
INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 12.6
DRY UNIT WEIGHT (PCF): 126.0
DEG. OF SATURATION (%): 100.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 300
TEST TYPE: TRIAXIAL COMPRESSION TEST
(ASTM D 2664)
GFILE: AXRY6000; DATE: 05-03-90 MCT 4
JACKET-LVDT (3)
PLATEN-DIAL GAUGE

BORING NO.: B802
DEPTH (FT): 149.1
TAYLOR MARL



INCLINATION (DEG): VERTICAL
DRY UNIT WEIGHT (PCF): 116.3
M.C. BEFORE TEST (%): 16.9
M.C.AFTER TEST (%): 20.7
GAIN IN MOISTURE (%): 3.8
SWELLING PRESSURE INDEX (PSI): 19
TEST TYPE: SWELLING PRESSURE INDEX (ISRM)

TEXAS SSC SITE

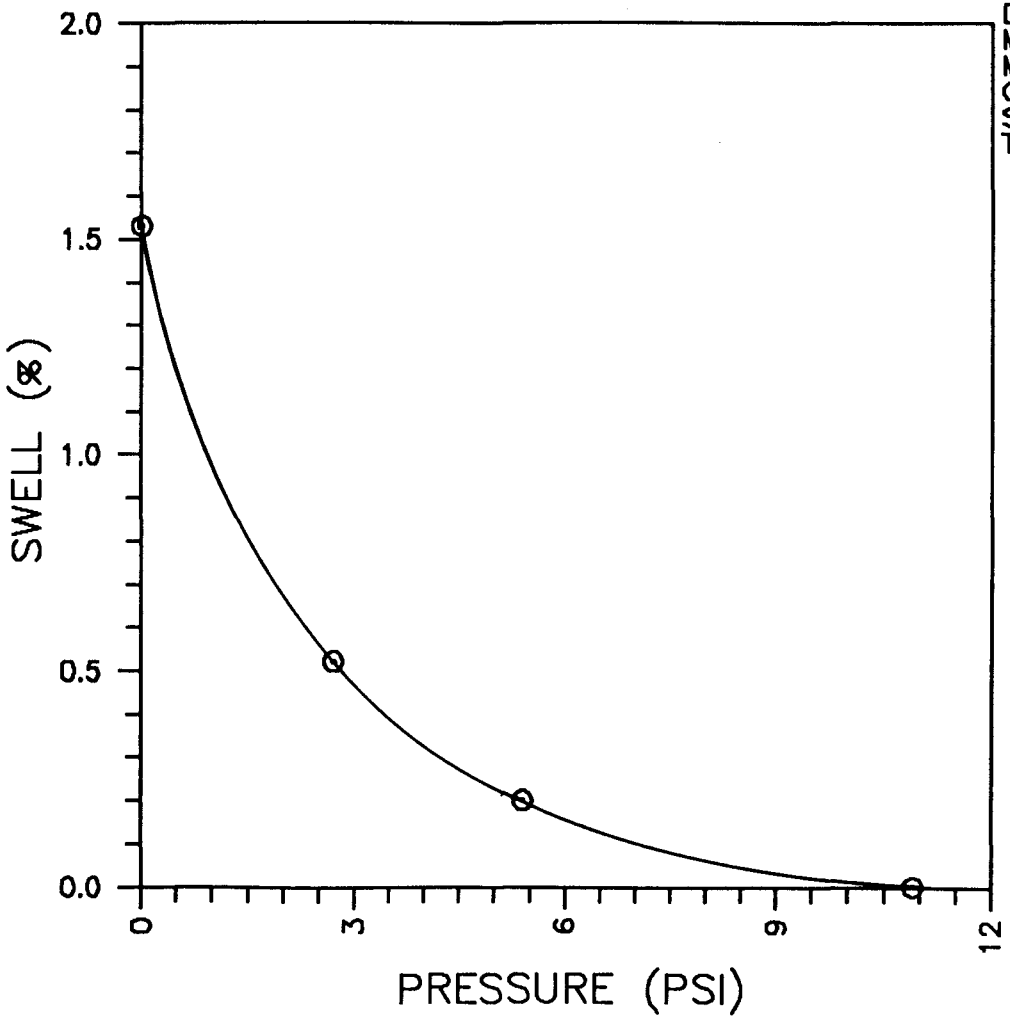
SWELLING PRESSURE INDEX

MASON–JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS–ENGINEERS

JOB NO.: 5530.12

FIGURE

BORING NO.: B802
DEPTH (FT): 183.7
TAYLOR MARL



INCLINATION (DEG): VERTICAL
DRY UNIT WEIGHT (PCF): 114.0
M.C. BEFORE TEST (%): 17.3
M.C.AFTER TEST (%): 21.1
GAIN IN MOISTURE (%): 3.8
SWELLING PRESSURE INDEX (PSI): 11
TEST TYPE: SWELLING PRESSURE INDEX (ISRM)

TEXAS SSC SITE

SWELLING PRESSURE INDEX

MASON–JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS–ENGINEERS

JOB NO.: 5530.12

FIGURE

TABLE D-2. GEOMECHANICAL TEST RESULTS-BORING B 2758

GENERAL LITHOLOGY	VERTICAL DEPTH	MOISTURE CONTENT	DRY DENSITY	SPECIFIC GRAVITY	ATTERBERG LIMITS		FRACTION FINER THAN # 200 SIEVE	CARBONATE CONTENT	SAMPLE DIMENSION RATIO	SAMPLE FAILURE MODE/ DEGREES *	UNCONFINED COMPRESSIVE STRENGTH	TRIAXIAL COMPRESSION		FAILURE STRAIN	TANGENT YOUNG'S MODULUS			POISSON'S RATIO	BRAZIL TENSILE STRENGTH	2ND CYCLE SLAKE DURABILITY INDEX	MODIFIED TABOR ABRASION/ HARDNESS INDEX	SWELL PRESSURE INDEX	COMMENTS
					LL	PI						CONFINING PRESSURE σ_3	DEVIATOR STRESS $\sigma_1-\sigma_3$		E50	UNLOAD/ RELOAD	σ_3						
	feet	percent	pcf				percent	percent			psi	psi	psi	percent	(psi)x10E5	(psi)x10E5	psi		psi	percent			
TAYLOR MARL	135.0	16.9	115.4																				
TAYLOR MARL	135.4	16.7	114.4						2.1	D	321			1.29	0.56		0						
TAYLOR MARL	136.0	17.0	113.2						2.3	B-1/30		100	488	1.39	0.63		100						
TAYLOR MARL	136.4	17.0	112.9	2.72	99	72	99.7	19.8	2.1	B-4		200	426	1.42	0.47		200						NOTES 1 & 2
TAYLOR MARL	136.4														0.30	0.79		0.21					NOTES 1 & 3
TAYLOR MARL	146.4	18.1																					
TAYLOR MARL	146.8	17.8	113.6		103	67	99.7		2.1	B-4	107			1.03	0.15		0						
TAYLOR MARL	150.1	17.2	111.8																				
TAYLOR MARL	150.2	18.2																		14.0			
TAYLOR MARL	152.1	17.2																					
TAYLOR MARL	153.1				106	36	99.8																
AUSTIN CHALK	155.3	13.3	124.4																				
AUSTIN CHALK	155.9	12.4	122.0																				
AUSTIN CHALK	156.2	13.1	124.0						2.3	D		100	484	1.51	0.44		100						
AUSTIN CHALK	156.6	14.7	121.4	2.67					2.1	D		200	329	1.85	0.15		200						NOTE 2
AUSTIN CHALK	156.6														0.13			0.73					NOTE 3
AUSTIN CHALK	158.0	12.0	128.2																				
AUSTIN CHALK	158.6	12.7																					
AUSTIN CHALK	159.3	11.6	130.0						2.1	E	1820			0.88	2.78		0						
AUSTIN CHALK	159.8	11.8							0.5										224				
AUSTIN CHALK	170.3	11.7																					
AUSTIN CHALK	170.5	11.2	129.8						2.2	B-1/30	523			0.43	1.81		0						
AUSTIN CHALK	175.2	13.5																					
AUSTIN CHALK	175.6	16.4							0.5										51				
AUSTIN CHALK	175.8	13.1	127.5						2.1	D	1017			1.19	1.05		0						
PROCEDURE		ASTM-D2216		ASTM-D854	ASTM-D4318		ASTM-D422				ASTM-D2938	ASTM-D2664			ASTM-D3148			ASTM-D3148	ISRM	ISRM	ISRM	ISRM	

B2758PRT.WK1
REVISION: 1.0
DATE: 4/25/90

PRELIMINARY
(Subject to Revision)

* 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

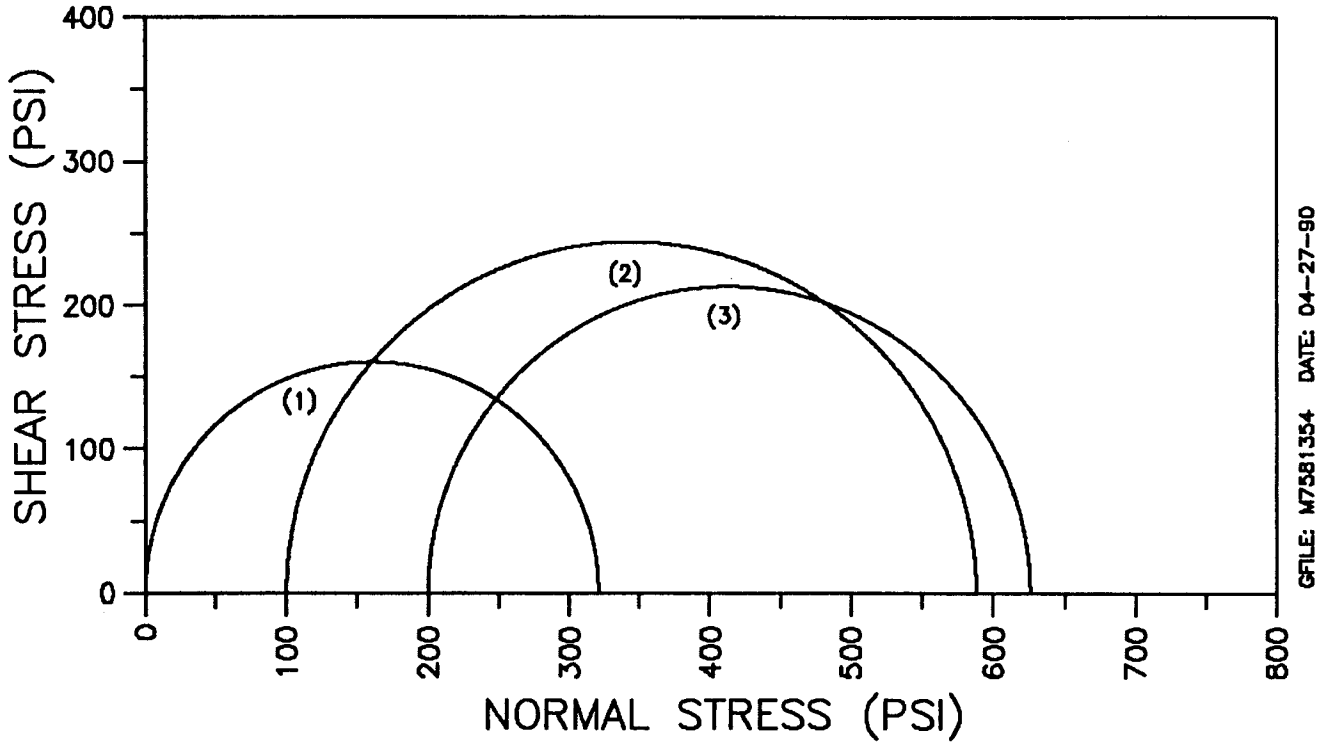
NOTES: 1) TRIAXIAL COMPRESSION TEST (UU) @ 136.4 FT IS A CYCLIC TEST WITH ONE UNLOAD-RELOAD CYCLE.

2) MODULUS WAS CALCULATED FROM AXIAL STRAINS MEASURED USING DIAL MICROMETER. AXIAL LENGTH IS THE SAMPLE LENGTH.

3) MODULII AND POISSON'S RATIO WERE CALCULATED FROM AXIAL AND LATERAL STRAINS MEASURED USING AXIAL AND LATERAL LVDTS OFFSET @ 120 DEGREES APART. AXIAL LENGTH IS 2.8 INCHES.

Note: Some values in this table may be revised based on reviews of test procedures and individual test results. The reader should refer to the latest revision of the gINT geotechnical data base (geotechnical report GR-70).

BORING NO.: B2758
DEPTH RANGE (FT): 135.4–136.8
TAYLOR MARL



GFILE: M7581354 DATE: 04-27-90

SEE STRESS–STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 135.4
(2) DEPTH (FT): 136.0
(3) DEPTH (FT): 136.4

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

TEXAS SSC SITE

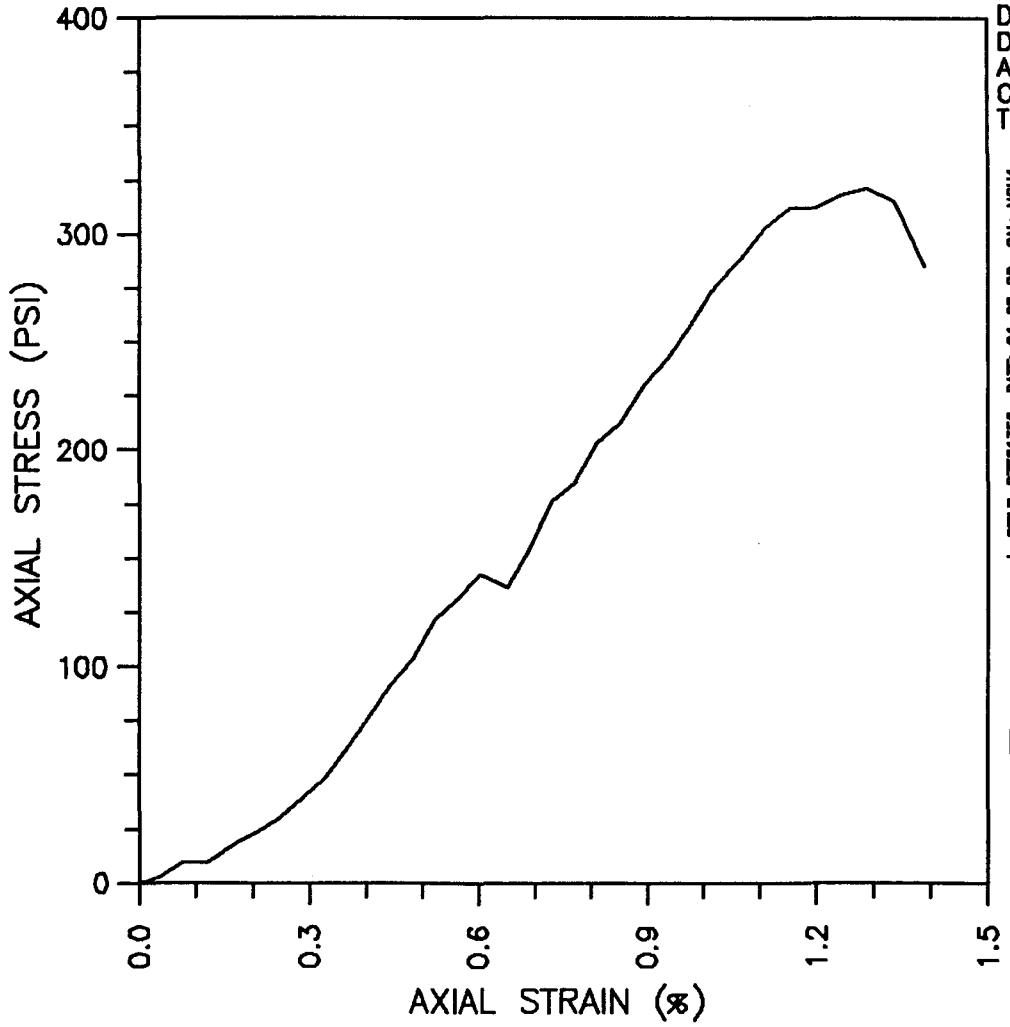
STRESS–STRAIN PLOT

MASON–JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS–ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: B2758
DEPTH (FT): 135.4
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 16.7
DRY UNIT WEIGHT (PCF): 114.4
DEG. OF SATURATION (%): 95.7
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE: UNCONFINED COMPRESSION
(ASTM D 2938)

BFILE: 27581358 DATE: 04-28-90 CAL: MCU4

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.562 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

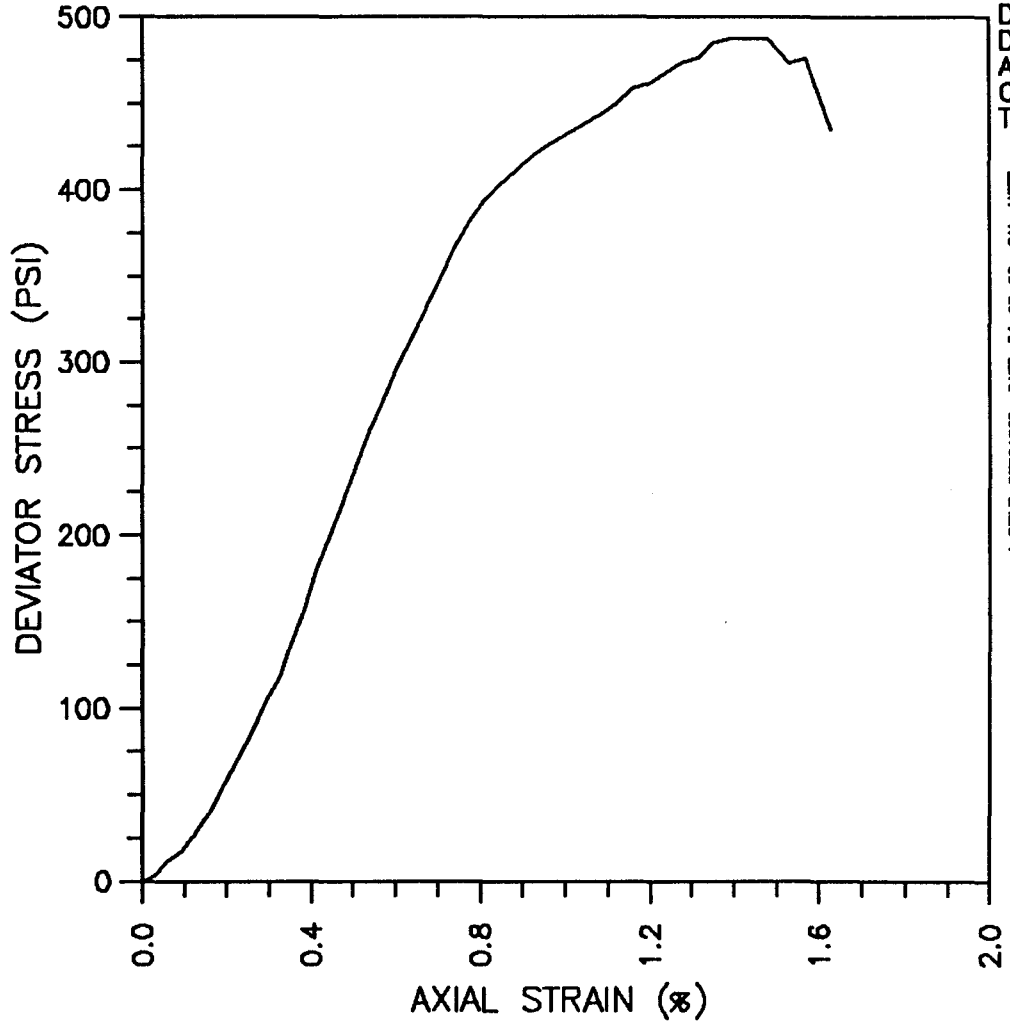
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: B2758
DEPTH (FT): 136.0
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.0
DRY UNIT WEIGHT (PCF): 113.2
DEG. OF SATURATION (%): 93.8
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: 27581380 DATE: 04-28-00 CAL: MCTS

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.633 x10E5 PSI

FAILURE MODE:
SHEAR PLANE AT 30 DEG.

TEXAS SSC SITE

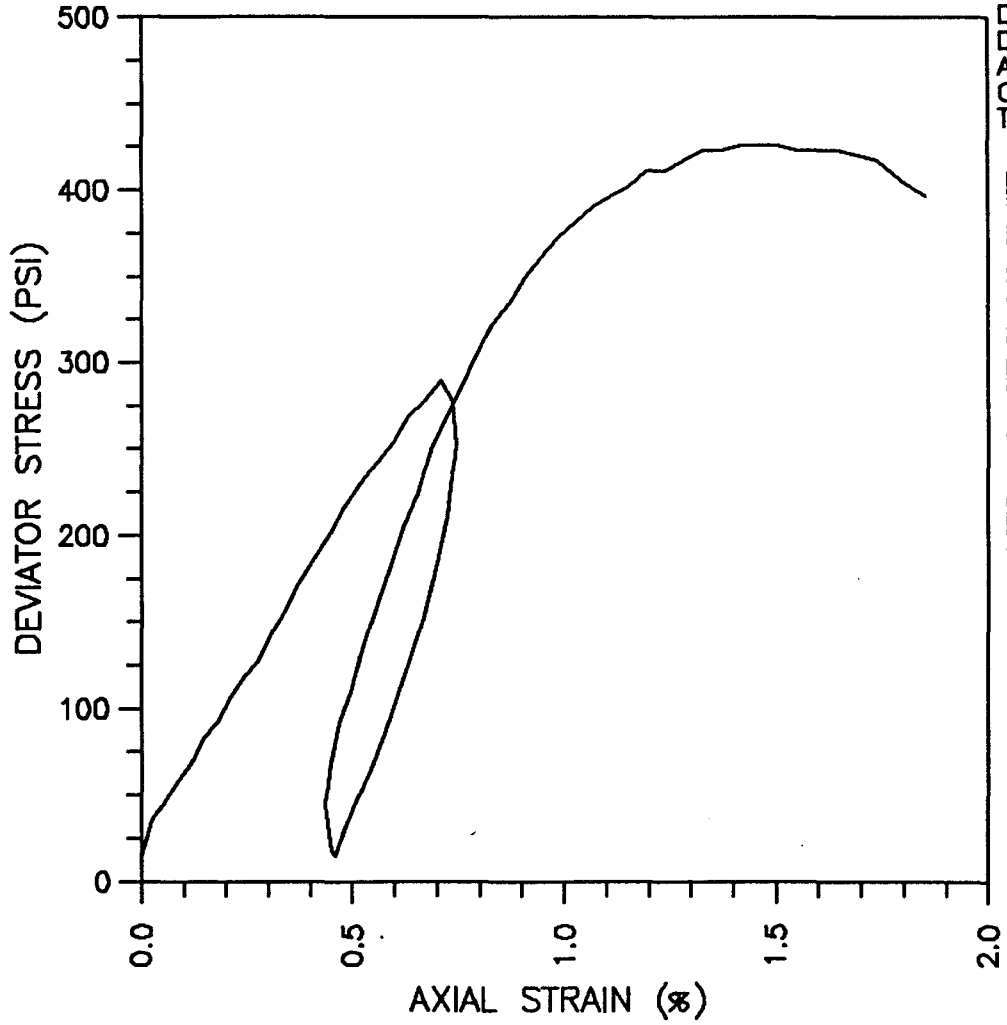
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: B2758
DEPTH (FT): 136.4
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.0
DRY UNIT WEIGHT (PCF): 112.9
DEG. OF SATURATION (%): 93.1
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

FILE: 27561384 DATE: 04-28-90 CAL: MCTS

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.467 x10E5 PSI

FAILURE MODE:
SHEAR PLANE AT 70
DEG. W/AXIAL SPLITTING

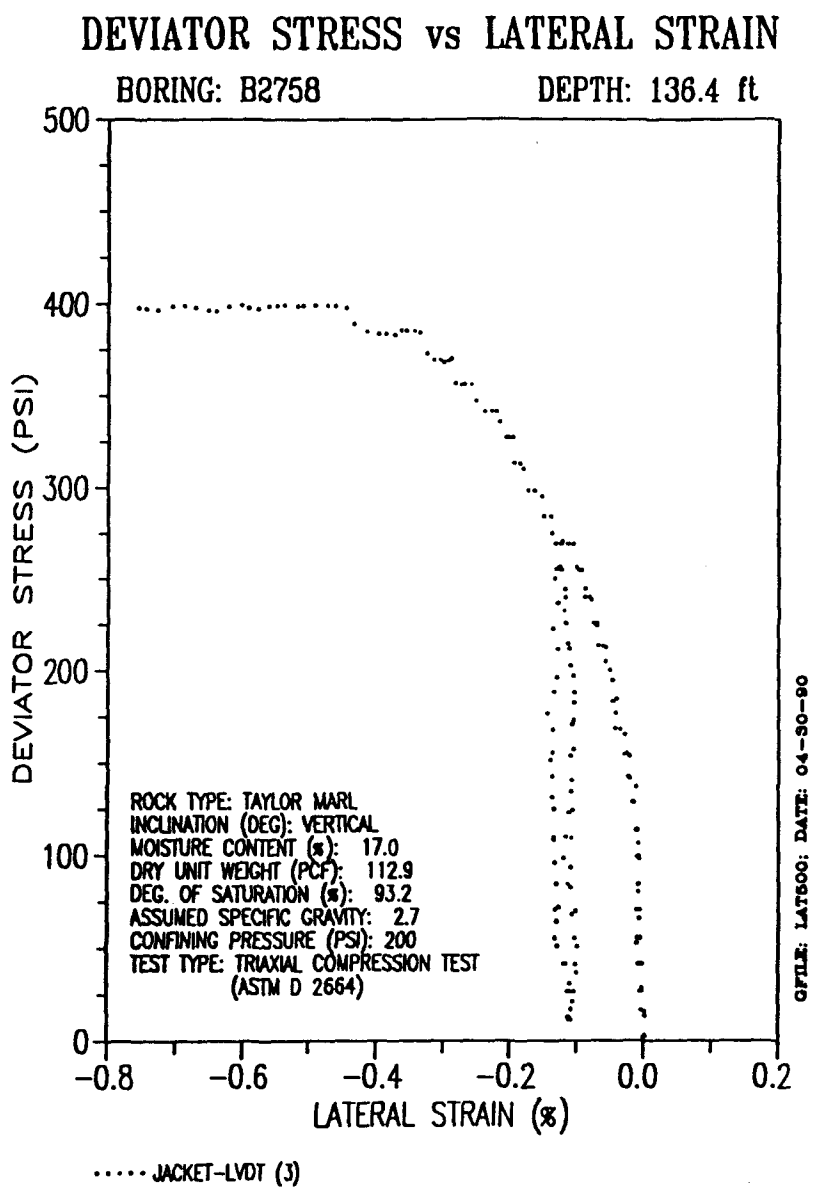
TEXAS SSC SITE

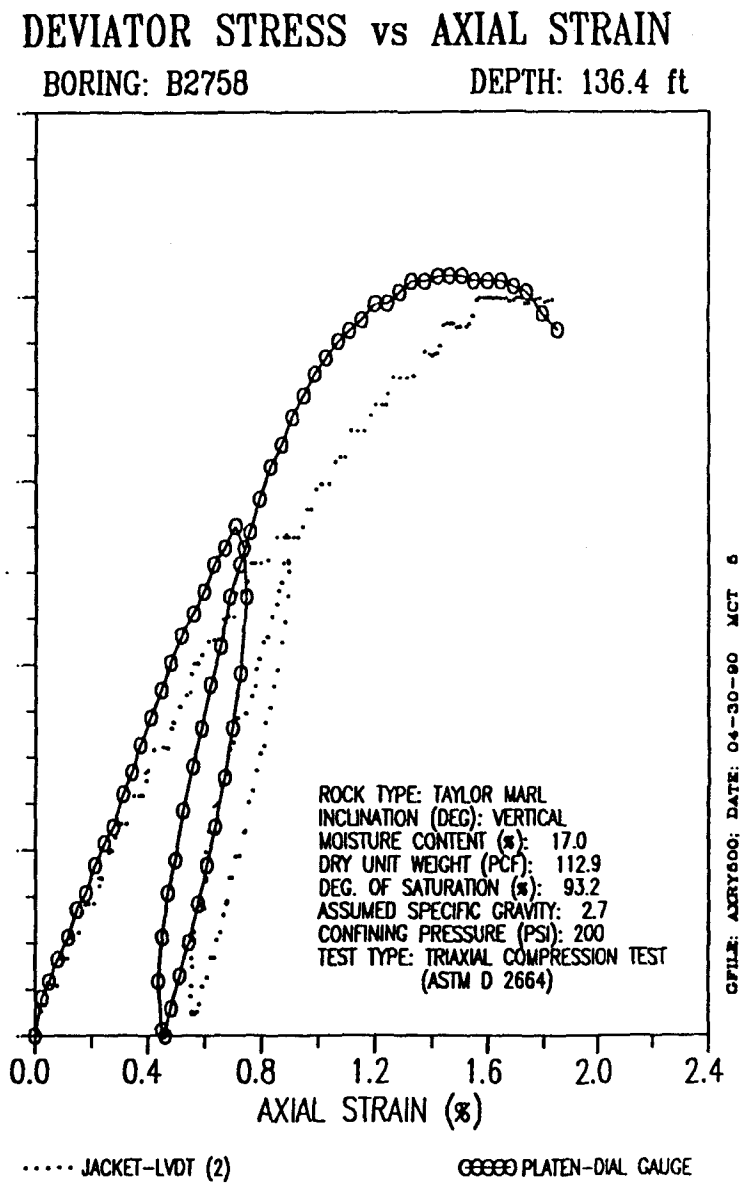
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

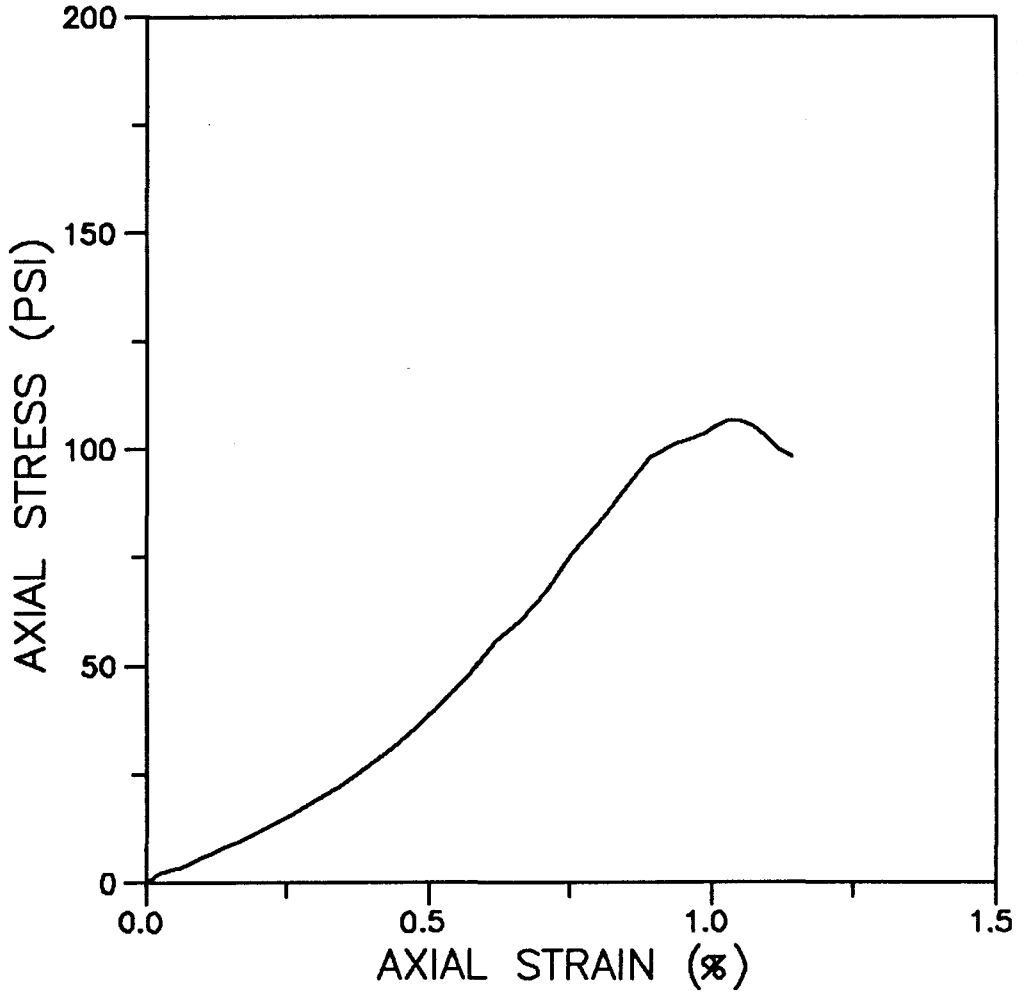
FIGURE





PRELIMINARY

BORING NO: B2758
DEPTH (FT): 146.8
TAYLOR MARL



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 17.8
DRY UNIT WEIGHT (PCF): 113.6
DEG. OF SATURATION (%): 99.5
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE:UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
1.53 x 10E4 PSI

FAILURE MODE:
COMBINATION

TEXAS SSC SITE

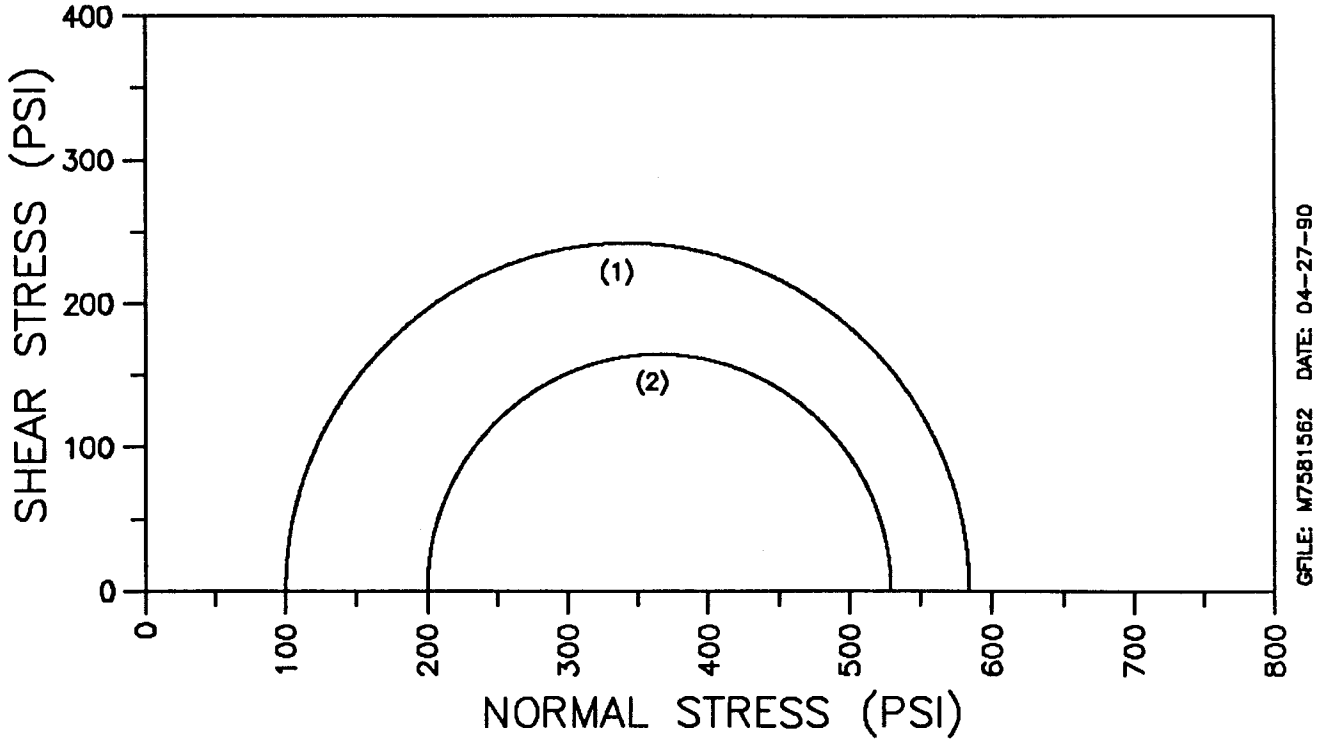
STRESS-STRAIN PLOT

SOUTHWESTERN LABORATORIES
DALLAS, TEXAS

JOB NO.: 89-192

FIGURE

BORING NO.: B2758
DEPTH RANGE (FT): 156.2–157.0
AUSTIN CHALK LIMESTONE



GFILE: M7581562 DATE: 04-27-90

SEE STRESS–STRAIN PLOTS
FOR INDIVIDUAL SAMPLE DATA

(1) DEPTH (FT): 156.2
(2) DEPTH (FT): 156.6

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

TEXAS SSC SITE

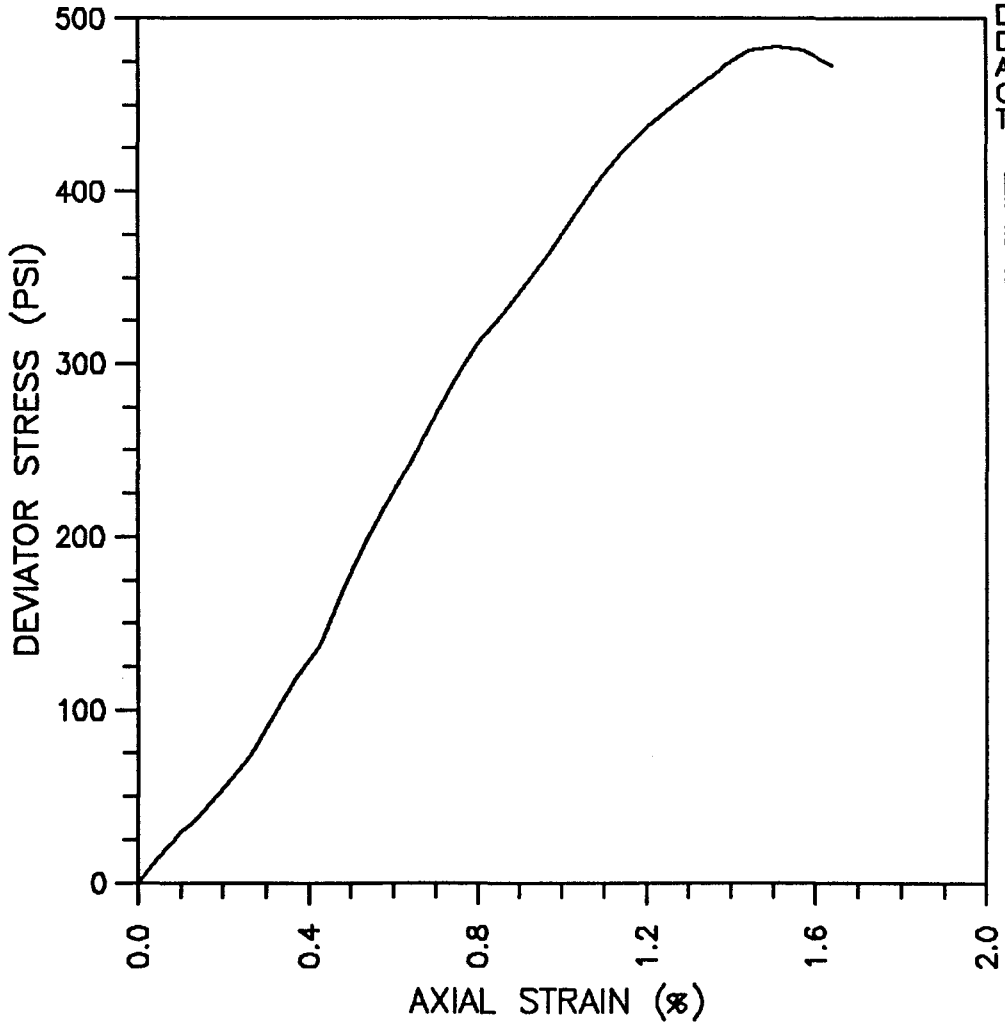
STRESS–STRAIN PLOT

MASON–JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS–ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: B2758
DEPTH (FT): 156.2
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 13.1
DRY UNIT WEIGHT (PCF): 124.0
DEG. OF SATURATION (%): 99.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 100
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

GFILE: 27561542 DATE: 04-28-00 CAL: MCTS

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.435 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

TEXAS SSC SITE

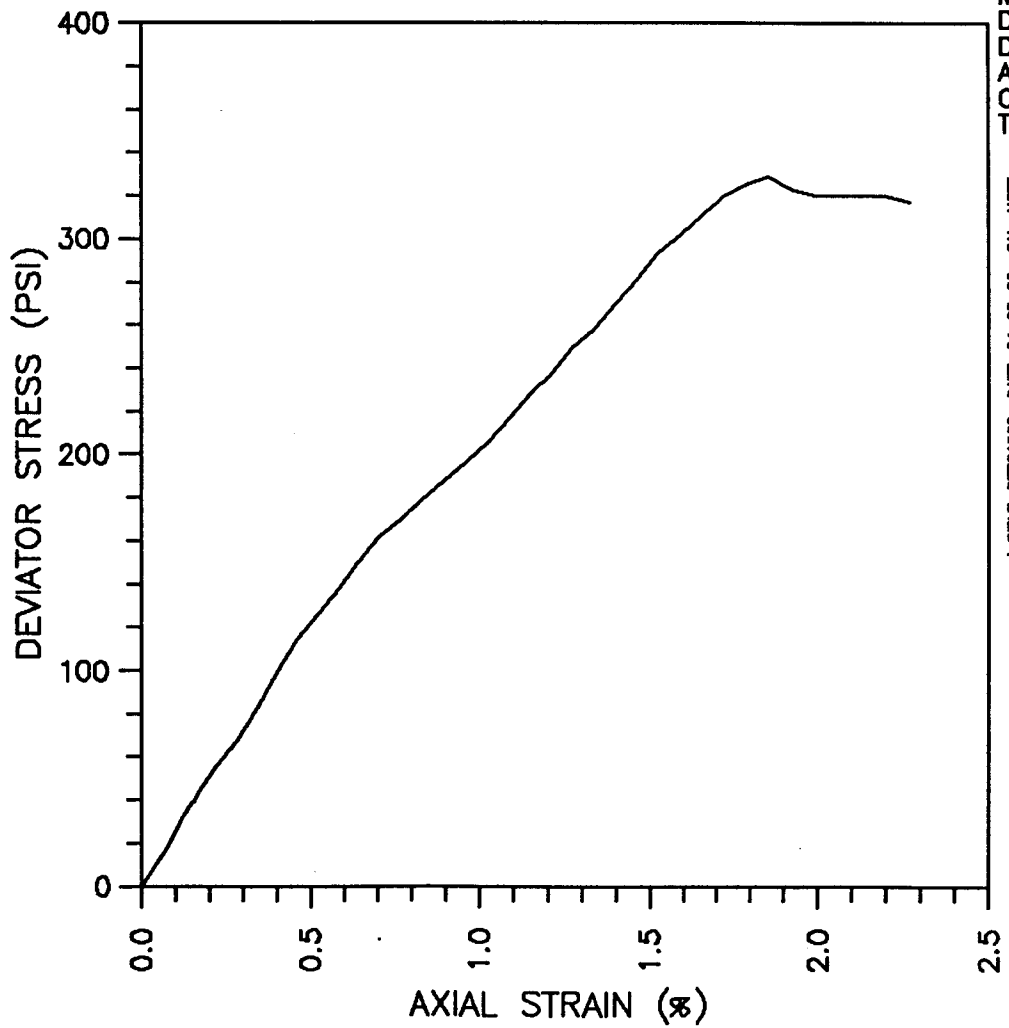
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES,INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

FIGURE

BORING NO.: B2758
DEPTH (FT): 156.6
AUSTIN CHALK LIMESTONE



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 14.7
DRY UNIT WEIGHT (PCF): 121.4
DEG. OF SATURATION (%): 102.2
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 200
TEST TYPE: TRIAXIAL COMPRESSION
(ASTM D 2664)

GTLE: 27561568 DATE: 04-28-00 CAL: MCT5

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
0.145 x10E5 PSI

FAILURE MODE:
AXIAL SPLITTING

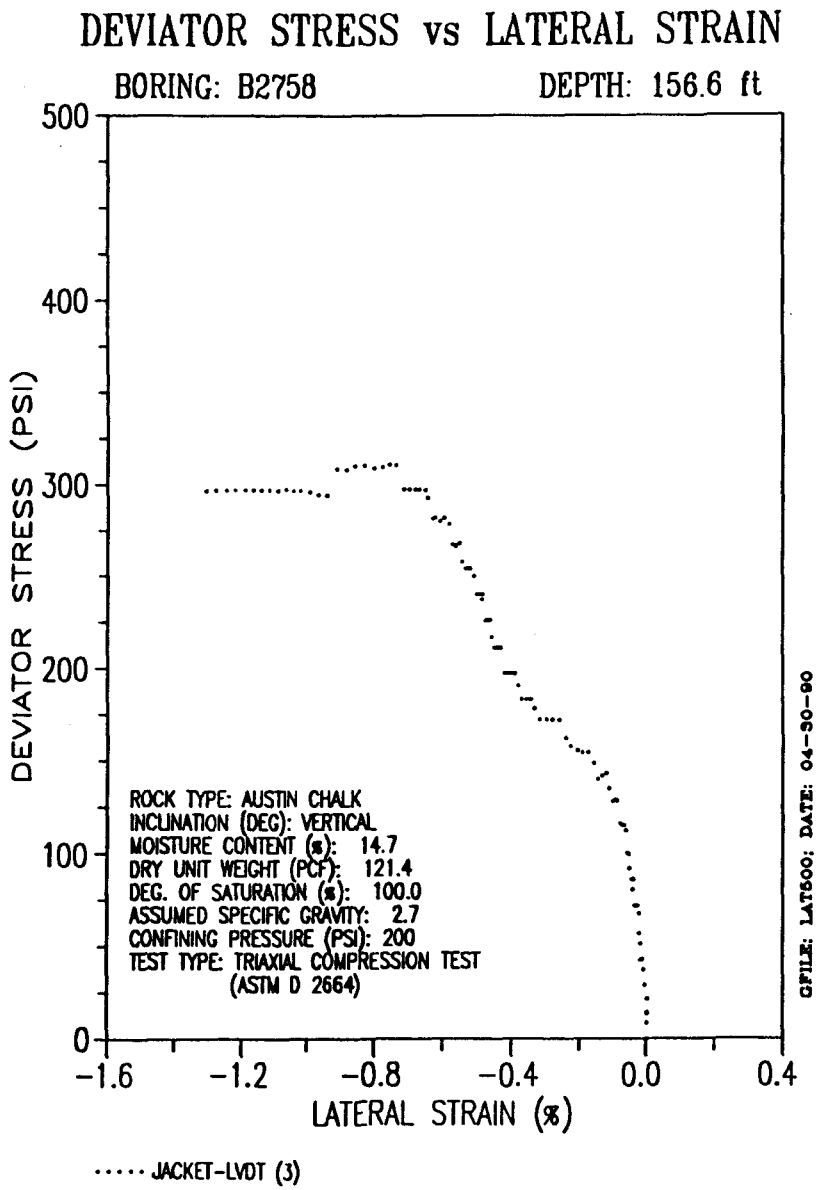
TEXAS SSC SITE

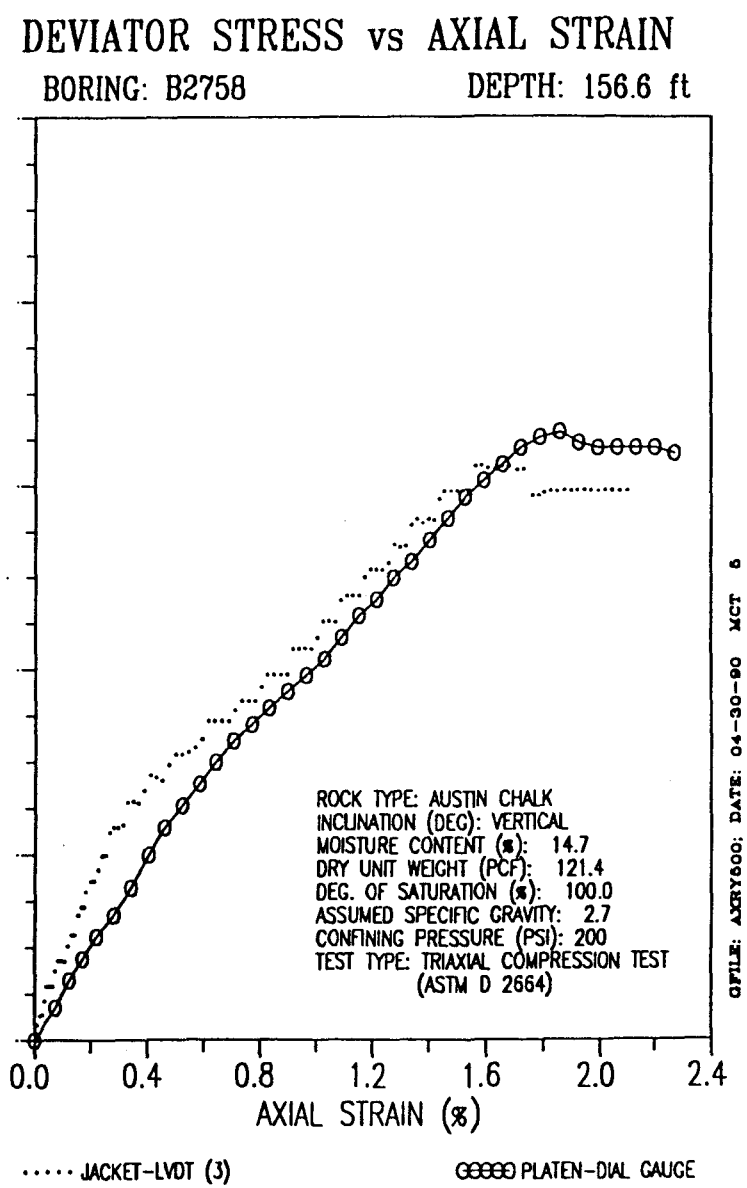
STRESS-STRAIN PLOT

MASON-JOHNSTON & ASSOCIATES, INC.
GEOLOGISTS-ENGINEERS

JOB NO.: 5530.17

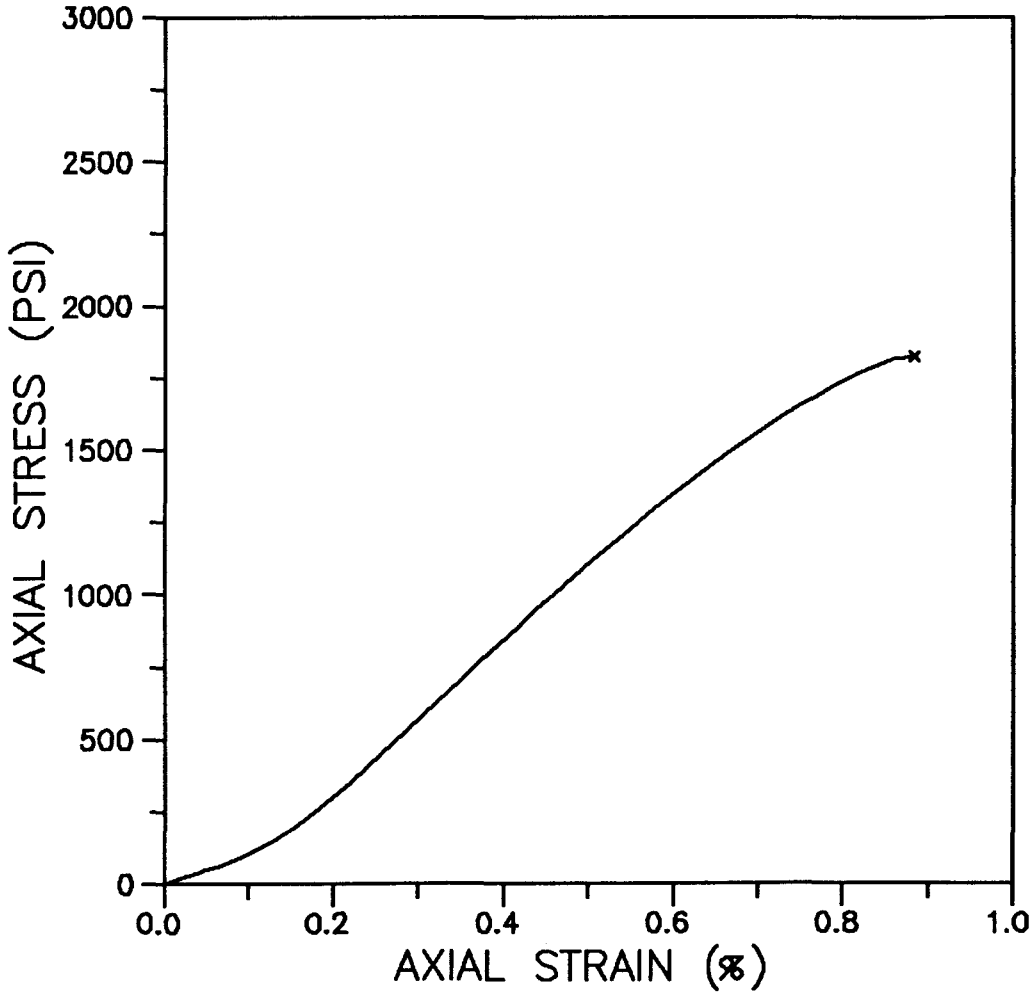
FIGURE





PRELIMINARY

BORING NO: B2758
DEPTH (FT): 159.3
AUSTIN CHALK



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 11.6
DRY UNIT WEIGHT (PCF): 130.0
DEG. OF SATURATION (%): 105.8
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE:UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
2.78 x 10E5 PSI

FAILURE MODE:
CONICAL

TEXAS SSC SITE

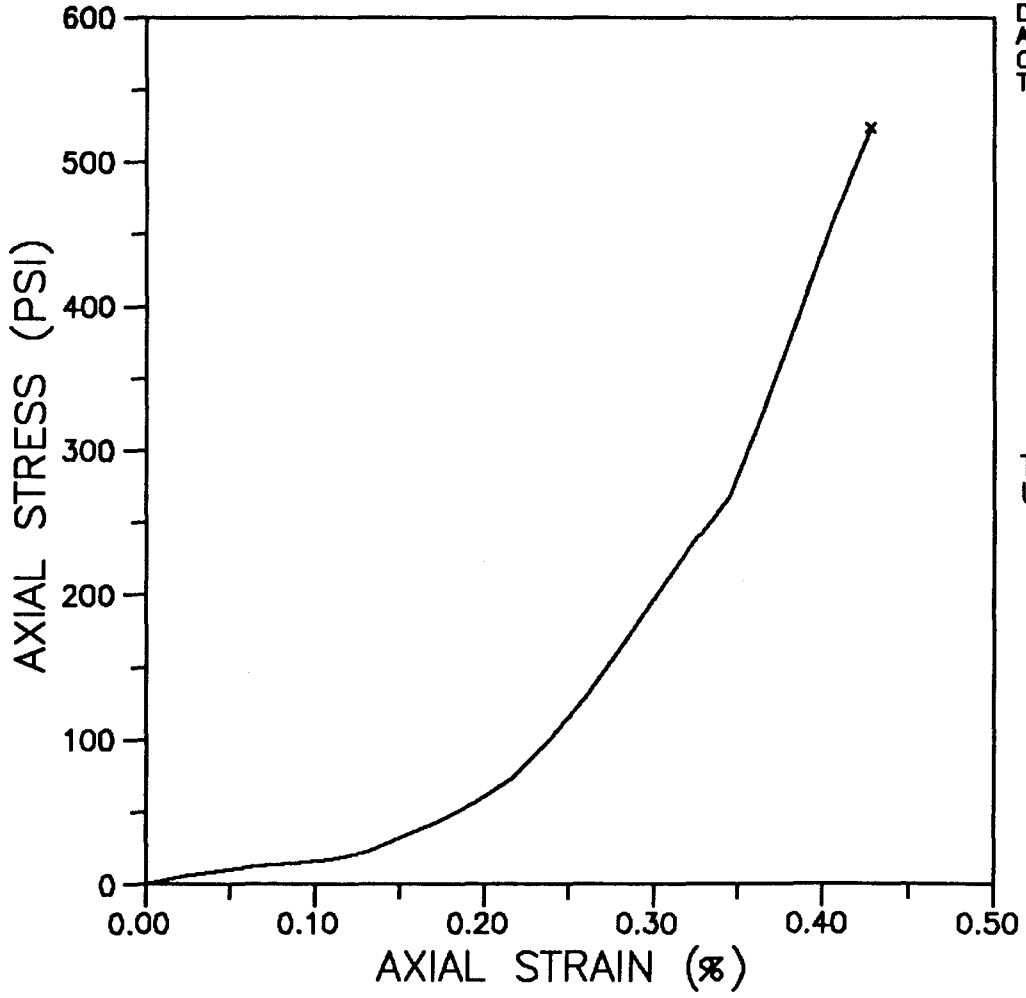
STRESS-STRAIN PLOT

SOUTHWESTERN LABORATORIES
DALLAS, TEXAS

JOB NO.: 89-192

FIGURE

BORING NO: B2758
DEPTH (FT): 170.5
AUSTIN CHALK



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 11.2
DRY UNIT WEIGHT (PCF): 129.8
DEG. OF SATURATION (%): 101.5
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE:UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
1.81 x 10E5 PSI

FAILURE MODE:
SHEAR PLANE AT 30 DEG

TEXAS SSC SITE

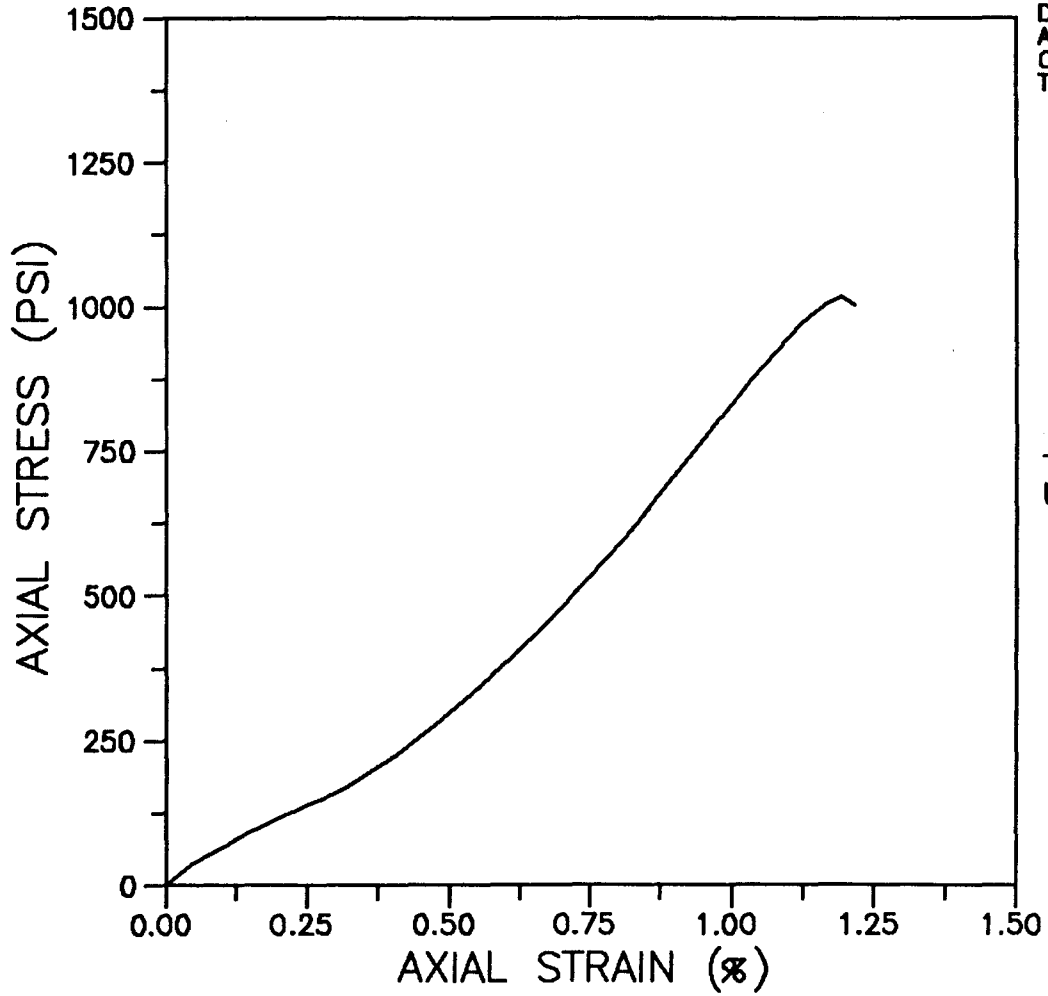
STRESS–STRAIN PLOT

SOUTHWESTERN LABORATORIES
DALLAS, TEXAS

JOB NO.: 89–192

FIGURE

BORING NO: B2758
DEPTH (FT): 175.8
AUSTIN CHALK



INCLINATION (DEG): VERTICAL
MOISTURE CONTENT (%): 13.1
DRY UNIT WEIGHT (PCF): 127.5
DEG. OF SATURATION (%): 110.0
ASSUMED SPECIFIC GRAVITY: 2.7
CONFINING PRESSURE (PSI): 0
TEST TYPE:UNCONFINED COMPRESSION
(ASTM D 2938)

TANGENT MODULUS AT 50%
ULTIMATE STRESS:
1.05 x 10E5 PSI

FAILURE MODE:
LONGITUDINAL (AXIAL)
SPLITTING

TEXAS SSC SITE

STRESS–STRAIN PLOT

SOUTHWESTERN LABORATORIES
DALLAS, TEXAS

JOB NO.: 89–192

FIGURE

APPENDIX E

PLUGGING REPORTS

SSC BOREHOLE PLUGGING REPORT

Project No. 87-888

Task No. 17

Boring No. B 802

Texas Coordination Location: N 204,473
E 2,220,525

Surface Elevation: 495.0 feet

Total Boring Depth: 233.0 feet

Date Drilled: 3/20-3/23/90

Date Plugged: 3/23/90

Time Completed: 6:00 p.m.

Remarks:

172 gallons of grout was used to completely cement boring from bottom to top. Water/cement ratio was approximately 7 gallons per sack.

Drilling geologist: Dale Brown
Coordinator: Shawn Wood
SwL Report No. 89-192

SSC BOREHOLE PLUGGING REPORT

Project No. 87-888

Task No. 17

Boring No. B 2758

Texas Coordination Location: N ≈ 274,675
E ≈ 2,247,175

Surface Elevation: ≈ 460 feet

Total Boring Depth: 192.0 feet

Date Drilled: 3/26-3/29/90

Date Plugged: 3/29/90

Time Completed: 5:00 p.m.

Remarks:

215 gallons of grout was used to completely cement boring from bottom to top. Water/cement ratio was approximately 7 gallons per sack.

Drilling geologist: Dale Brown
Coordinator: Shawn Wood
SwL Report No. 89-192