SSCL-SR-1061

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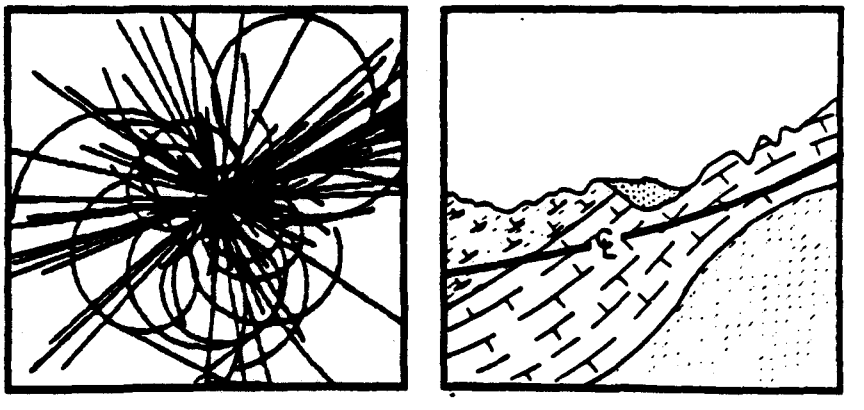
Project No. 87-888-0011

August 1989

GE-1

Data Report for Vibration Monitoring Hole VF1.7



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 (the present phase)
- Global data (planned)
- Structure-specific data (planned).

The primary purpose of the present footprint location phase is to quickly assess whether individual components of the collider footprint, or the entire footprint, need to be relocated because of geotechnical constraints. Accordingly, the following areas have been assessed:

- Areas on the western side of the footprint where the geologic structure brings the Eagle Ford Shale close to the depth of the tunnel and experimental halls, thus presenting potential constraints due to weak, deformable rock.
- Areas where the tunnel placement is shallow and/or there are nearby sources of vibration such as major highways and railroads that may represent a problem due to unacceptable vibrations at tunnel depth.
- Zones of potentially poor rock quality and high water inflow in the rock that should be avoided for the experimental hall excavations.

This is one in a series of data reports prepared for the footprint phase of geotechnical characterization at the SSC site. Each data report includes the results of both field and laboratory tests for a specific drilling and sampling site. Interpretations of these data will be covered in topical reports, including three planned reports, as follows:

- Train- , traffic-, and quarry-caused vibrations
- Geomechanical properties of the Eagle Ford Shale
- Structure and stratigraphy of the near-cluster.

Future planned program phases--global and structure-specific data collection--will concentrate on (1) evaluating ring areas where few geotechnical data are currently available and (2) conducting more detailed studies at the sites of the injector and experimental halls.

DATA REPORT

Site Designator: VF1.7

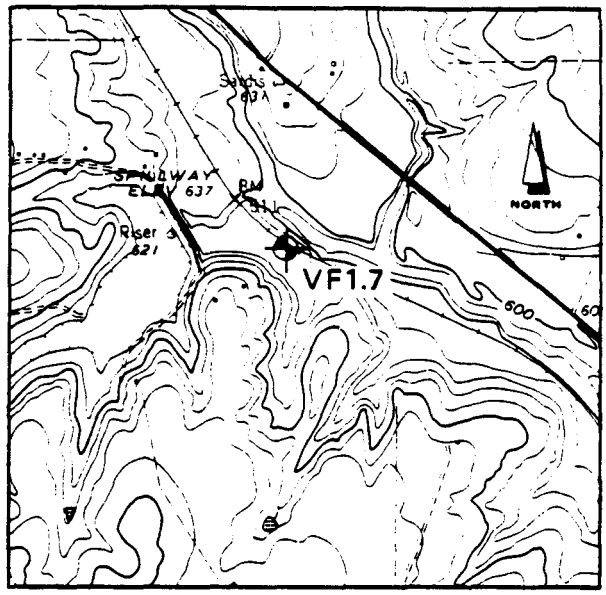
Objective: To drill and case a boring to be used for monitoring vibration at tunnel depth due to traffic on the railroad

Location: **North** 282,162 feet

East 2,177,122 feet

Surface Elevation 611.9 feet

VF1.7 is located on the northwestern side of the ring, west of Waxahachie, where the proposed collider tunnel passes beneath the Union Pacific railroad.



SCALE 1:24,000

1000 0 1000 2000 3000 FEET

CONTOUR INTERVAL 10 FEET

Scope and Schedule:

Rotary Wash Boring	May 25, 1989
Wire-line Logging	May 25, 1989; repeated June 9, 1989
Casing Installed	May 25, 1989
Plugging and Abandonment	(pending)

Conditions Encountered:

Total Hole Depth 69.0 feet

Soil 0 to 21.0 feet

Austin Chalk 21.0 to 69.0 feet
(see Lithologic Log, Appendix A)

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

Spontaneous Potential
Normal Resistivity (short)
Guarded Resistivity (long)
Natural Gamma
Compensated Density (caliper)
Sonic Velocity (full wave); run both prior to setting casing, and after cementing casing (to test the cement bond)

Hole Status: Casing cemented-in, but not yet plugged for abandonment.
(See as-built drawing/cementing report, Appendix C)

APPENDIX A

LITHOLOGIC LOG

LOG OF BORING

BORING NO: VF1.7 PG 1 OF 2

PROJECT: TEXAS SSC SITE

CLIENT: The Earth Technology Corporation

TASK NO.: 11

LOCATION: N 282,162 feet
E 2,177,122 feet

GROUND EL: 611.9 feet

DATE: 5/25/89 TYPE: Air/Water Rotary CASED TO: N/A 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

Water encountered at 14.5'

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT ROD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	DESCRIPTION OF STRATUM
		S1	0.0	1.5	72	-	7	7	-	2.0 CLAY, stiff to very stiff, calcareous nodules, tan to light brown (fill)
										CLAY, very stiff, silty, mottled, brown and gray
5		S2	4.0	5.5	89	-	7	9	-	5.0
										CLAY, very stiff, silty, jointed, mottled, tan and gray
10		S3	9.0	10.5	71	-	10	12	-	
15		S4	14.0	15.5	100	-	5	6	-	
20		S5	19.0	20.5	87	-	4	7	-	21.0
										22.5 LIMESTONE (Austin Chalk), severely weathered, occasional clay layers, tan
25										LIMESTONE (Austin Chalk), fresh, occasional thin shaly limestone layers, light gray to dark gray
30										
35										
40										

DRILLING GEOLOGIST S. Wood ASSISTANT N/A

LOG OF BORING

BORING NO: VF1.7 PG 2 OF 2

PROJECT: TEXAS SSC SITE

CLIENT: The Earth Technology Corporation

LOCATION: N 282,162 feet
E 2,177,122 feet

TASK NO.: 11

GROUND EL: 611.9 feet

DATE: 5/25/89 TYPE: Air/Water Rotary CASED TO: N/A CONTRACTOR: SwL (89-192)

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE TOP	DEPTH RANGE BOT.	PERCENT REC.	PERCENT ROD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	SAMPLE LEGEND / DESCRIPTION OF STRATUM	WATER INFORMATION
										S= SPLIT SPOON T= 2" THIN WALL TUBE U= 3" THIN WALL TUBE C= NX ROCK CORE	(see page 1 of 2)
45										LIMESTONE (Austin Chalk), fresh, occasional thin shaly limestone layers, light gray to dark gray	
50											
55											
60											
65											
										69.0	
70										Bottom of Exploration at 69.0'	
75										NOTES: 1. Grouted in 4" diameter PVC casing with protective cover 2. Plugged PVC casing with cement on	
80											

DRILLING GEOLOGIST S. Wood ASSISTANT N/A

APPENDIX B

WIRE-LINE LOGS

WIRE-LINE LOGGING PARAMETERS

Hole No. VF1.7 **Log Measured From:** Ground Level

Drilling Parameters
Depth 70 feet
Bit Diameter 6.75 inches

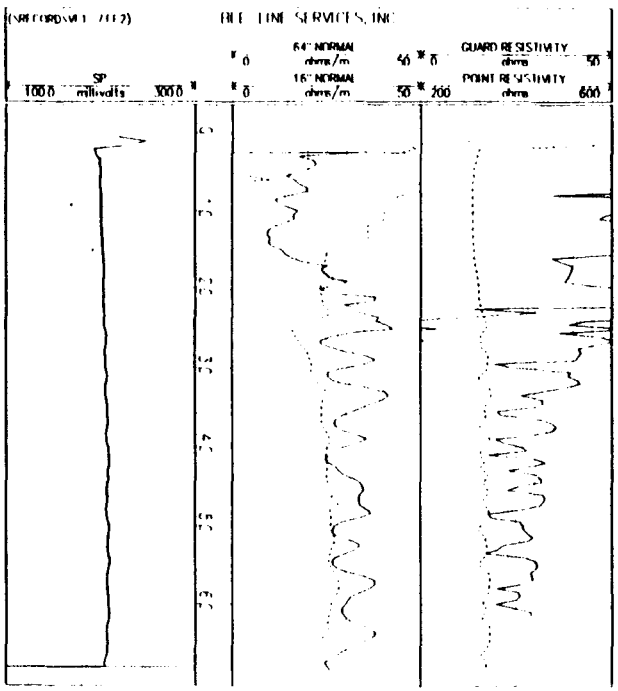
Logging Parameters	Electrical Log	Gamma Log	Sonic Log	Sonic Log*
Date	May 25, 1989	May 25, 1989	May 25, 1989	June 9, 1989
Bottom Log Interval	68.5 feet	67 feet	62.6 feet	61.1 feet
Top Log Interval	surface	surface	surface	surface
Type of Fluid in Hole	boring fluid	boring fluid	boring fluid	water
Time Since Circulation Stop	1 hour	1 hour	1 hour	--
Probe Type/S.N.	ALP-4979	XAP-4383	CLP-4877A	CLP-4877A
Module Type/S.N.	ALM-4979	XAM-4383	CLP-4877A	CLM-4877A
Logging Speed	15 feet/min.	16 feet/min.	7 feet/min.	8 feet/min.
Sample Interval	0.5 feet	0.5 feet	0.1 feet	0.5 feet

* Run after setting and cementing casing

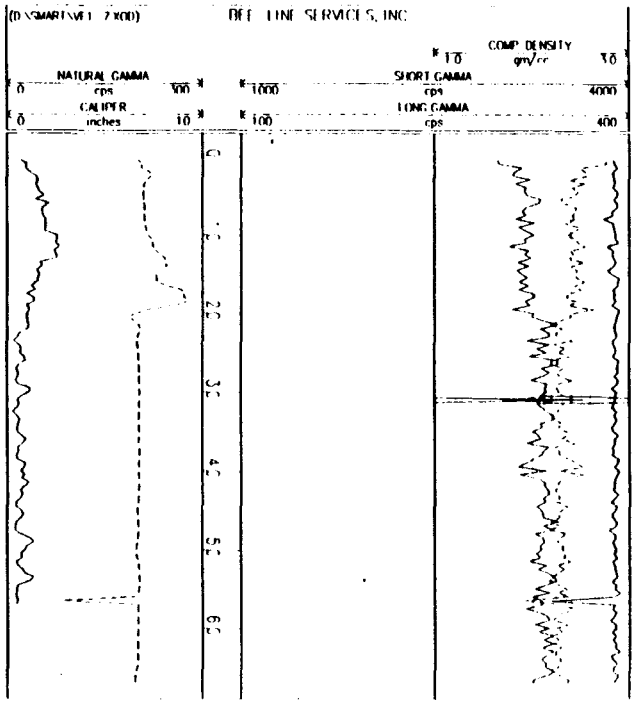
Logged by: BEE-LINE SERVICES, INC.
P.O. Box 2096
Corsicana, TX 75151

VF 1.7 Wire-line logs run May 25, 1989. Surface elevation 611.9 feet.

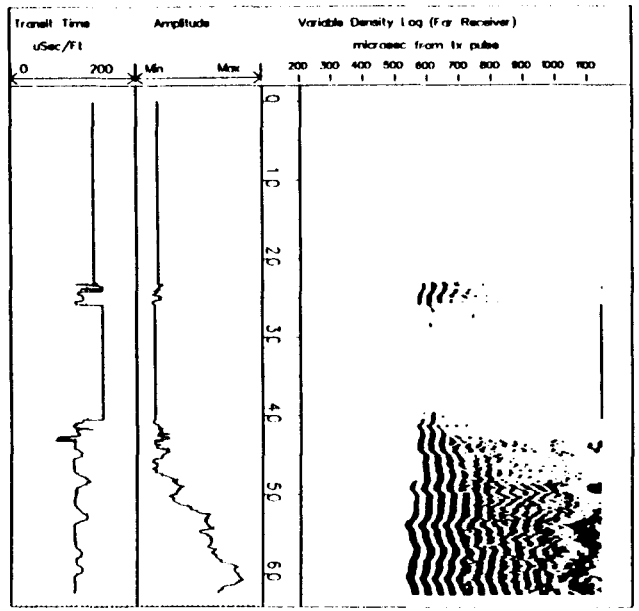
ELECTRICAL LOG



GAMMA LOG

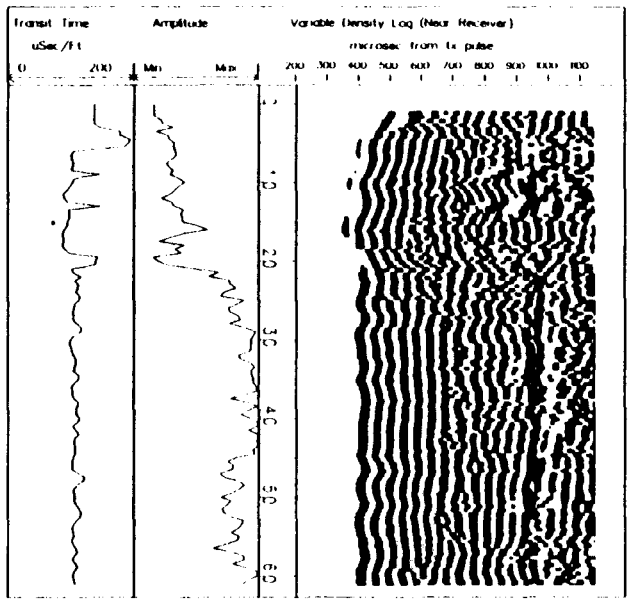


SONIC LOG



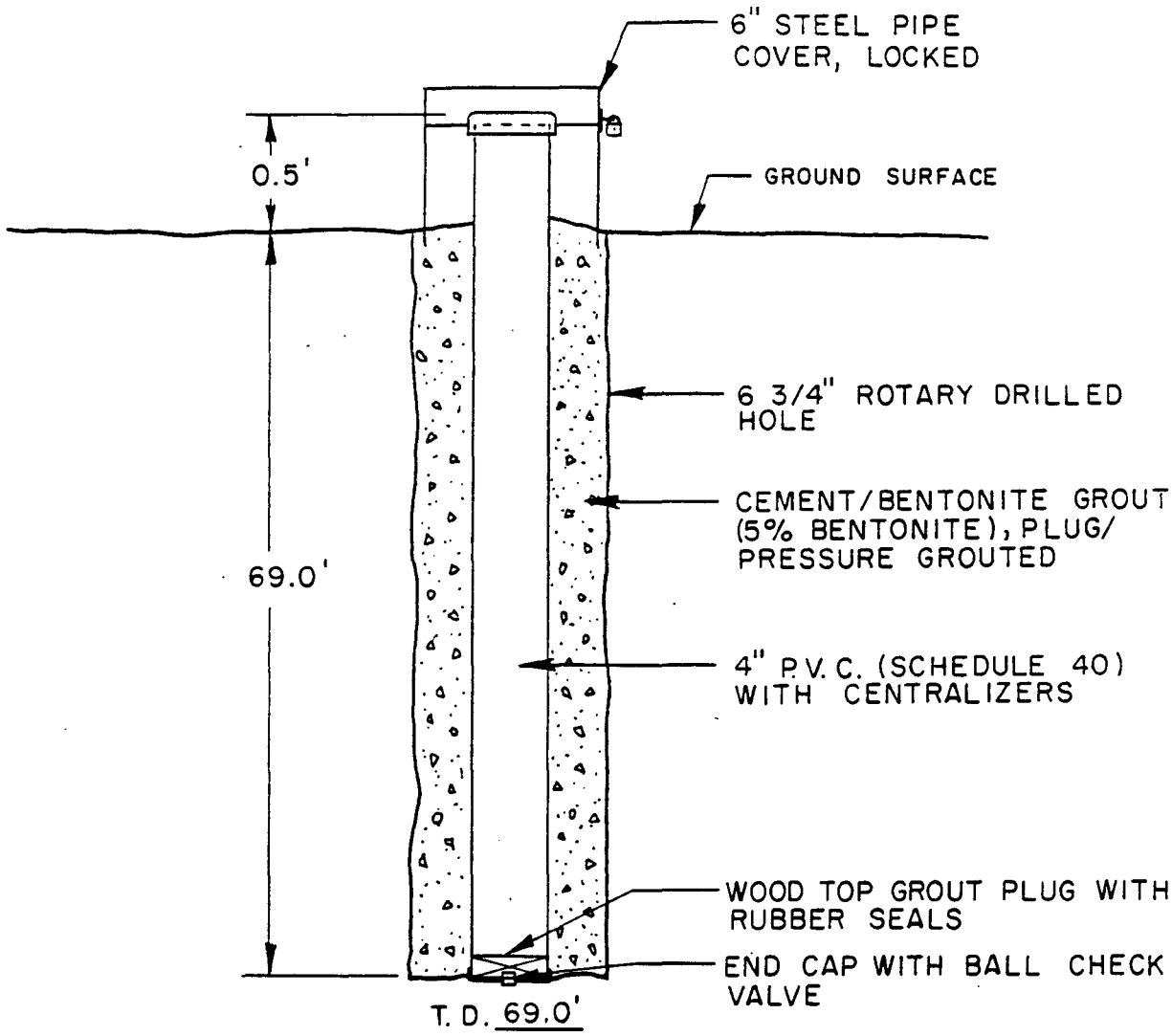
VF 1.7 Wire-line log run June 9, 1989 (The sonic log was re-run on June 9 after the casing was cemented in to test the cement bond). Surface elevation 611.9 feet.

SONIC LOG



APPENDIX C

AS-BUILT DRAWING AND BOREHOLE PLUGGING REPORT



BORING NO. VF 1.7

AS-BUILT
CASING INSTALLATION
DIAGRAM

SWL 89-192(R)

SSC BOREHOLE PLUGGING REPORT

TETC Project No. 87-888-0011

Task No. 11

Boring No. VF 1.7

Texas Coordination Location: N. 282,162 feet
E. 2,177,122 feet

Surface Elevation: 611.9 feet

Total Boring Depth: 69.0'

Date Drilled: 5-24-89

Date Plugged: (Pending)

Time Completed:

Remarks:

Drilling Geologist: Shawn D. Wood
SwL Coordinator: Bruce Bailey
SwL Report No. 89-192