OHM Remediation Services Corp.
A Member of The IT Group

February 18, 1999

Ms. Bozier H. Demaree, Code 02R.BD
Contracting Officer
Naval Facilities Engineering Command
Southwest Division
1213 Pacific Highway
San Diego, CA 91332-5187

Attention: Ms. Lynn Hornecker, 56MC.LMH

Subject: ***Cone Penetration Testing (CPT) Soil Gas Logs for Phase I and Phase II Soil Gas Sampling Points at IRP Site 24 at Marine Corps Air Station, El Toro, California. Contract N68711-93-D-1459, Delivery Order 059, DCN SW 6360***

Dear Ms. Hornecker:

Attached are the CPT Logs for the Phase I and II soil gas sampling performed by OHM and its subcontractor at IRP Site 24 of MCAS El Toro, California.

Following Table 1 presents list of Phase I and Phase II soil gas points, location, and comments.

TABLE - 1 Soil Gas Sampling Points

SR No.	Soil Gas Point	Location	Comments
	Phase I Soil Gas Points		
1	SG - 1	Near 24SVE 138	**No CPT Log, only soil gas sampling**
2	SG - 2	Near 24SVE 144	CPT Log
3	SG - 3	Near 24SVE 154	**No CPT Log, only soil gas sampling**
4	SG - 68	Near 24SVE 68	CPT Log
5	SG - 24	Near 24SVE 24	CPT Log
6	SG - 26	Near 24SVE 26	CPT Log
7	SG - 47	Near 24SVE 47	CPT Log
8	SG - 37	Near 24SVE 37	**No CPT Log, only soil gas sampling**
9	SG - 109	Near 24SVE 109	CPT Log
10	SG - 106	Near 24SVE 106	**No CPT Log, only soil gas sampling**
11	SG - 82	Near 24SVE 82	CPT Log
12	SG - 83	Near 24SVE 83	CPT Log
13	SG - 136	Near 24SVE 136	CPT Log
14	SG - 138	Near 24SVE 138	CPT Log
	Phase II Soil Gas Points		
15	SG - 15	Near 24SVE 15	CPT Log
16	SG - 19	Near 24SVE 19	CPT Log
17	SG - 31	Near 24SVE 314	CPT Log
18	SG - 23	Near 24SVE 23	CPT Log
19	SG - 63	Near 24 SVE 63	CPT Log
20	SG - 92	Near 24 SVE 92	CPT Log

3347 Michelson Drive, Suite 200 ● Irvine, California 92612-1692 ● 949.261.6441 ● Fax: 949.474.8309

S.R No	Soil Gas Points	Location	Comments
21	SG - 133	Near 24SVE 133	CPT Log
22	SG - 127	Near 24SVE 127	CPT Log
23	SG - 120	Near 24SVE 120	CPT Log
24	SG - 116A	Near 24SVE 116	CPT Log
25	SG - 137A	Near 24SVE 137	CPT Log
26	SG - 148A	Near 24SVE 148	CPT Log

Should you have any questions or comments, please feel free to call the undersigned at (949)-660-5446.

Sincerely,
OHM Remediation Services Corporation

William Sedlak, P.E.
Sr. Project Manager

Attachments:
Phase I CPT Soil Gas Logs
Phase II CPT Soil Gas Logs

Copies to:

Dave DeMars, SW DIV (2 Copies)
Crispin Wanyoike, Earth Tech (1 Copy)
Project File, (1 Copy)

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

OHM TRANSMITTAL/DELIVERABLE RECEIPT

CONTRACT N68711-93-D-1459 **DOCUMENT CONTROL NO: SW6360**

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Bozier H. Demaree, Code 02R.BD
Building 131
1220 Pacific Highway
San Diego, California 92132-5101

Date: 19-Feb-99

D.O.: 59

Location: MCAS EL TORO

FROM: James Franklin FOR
Stewart Bornhoft, Program Manager

Edwin G. Bond, Contracts Manager

DESCRIPTION OF ENCLOSURE: *Cone Penetration Testing (CPT) Soil Gas Logs for Phase I and Phase II, Soil Gas Sampling Points at IRP Site 24, dated February 18, 1999*

TYPE: Contract Deliverable ( ) ($) D. O. Deliverable (X) (Tech) Request for Change ( ) Other ( )

VERSION: N/A **REVISION:** 0

ADMIN RECORD: Yes ( ) No (X) Category ( ) Confidential ( )

SCHEDULED DELIVERY DATE: 19-Feb-99 **ACTUAL DELIVERY DATE:** 19-Feb-99

NUMBER OF COPIES SUBMITTED TO THE NAVY: 1/O, 4/C, 5/E
[AS REQUIRED/DIRECTED BY THE (SOW)]

COPIES TO:

SWDIV	OHM	OTHER
Name, Code	Name, Location	Name, Company, Location
L. Holloway, 4EN.LLH (1C/1E)	File (1C/1E)	C. Wanyoike, El Toro (1E)
L. Hornecker, 5BME.LH (1C/2E)	Chron (1C)	
D. Demars, 542.DD (1C/1E)	W. Sedlak, Irv (1C/1E)	
G. Steinway, 5B02.GS (1C)	D. Rawal, Irv (1C/1E)	

Date/Time Received: _____ / _____

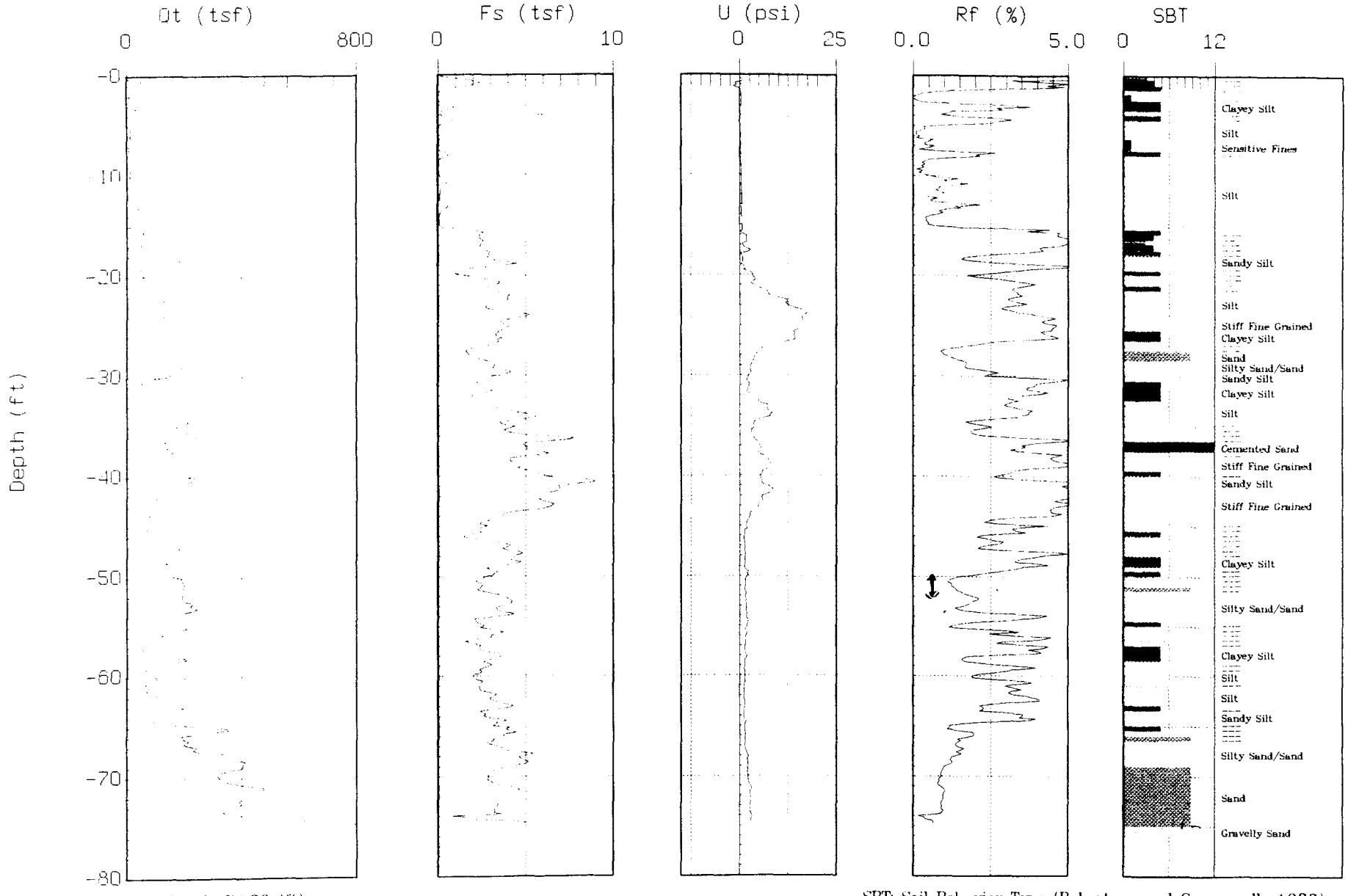
Doc Class: D-03

Phase I CPT Logs

GREGG

CHM REMEDIATION

Geologist: A.SIDDIQUI
Date : 12:01:98 09:36



Max. Depth: 74.80 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

FUGRO GEOSCIENCES, INC.

6105 Rookin
Houston, TX 77074
Phone : 713-778-5580
Fax : 713-778-5501

February 15, 1999
Report Number 0303-0272

IT/OHM Corporation
3347 Michelson Drive
Suite 200
Irvine, California 92612-1692

Attention: Mr. Adnan Sidiqui

REPORT FOR
CONE PENETRATION TESTING
AND RELATED SERVICES
MCAS EL TORO, CALIFORNIA
JOB 918233
DO 59; PO 102007

Dear Mr. Sidiqui:

Please find enclosed herewith the final results of the cone penetration tests conducted at the above referenced location.

For your information, the soil stratigraphy was identified using Campanella and Robertson's Simplified Soil Behavior Chart. Please note that because of the empirical nature of the soil behavior chart, the soil identification should be verified locally.

Fugro Geosciences appreciates the opportunity to be of service to your organization. If you should have any questions, or if we can be of further assistance, please do not hesitate to contact us. We look forward to working with you in the future.

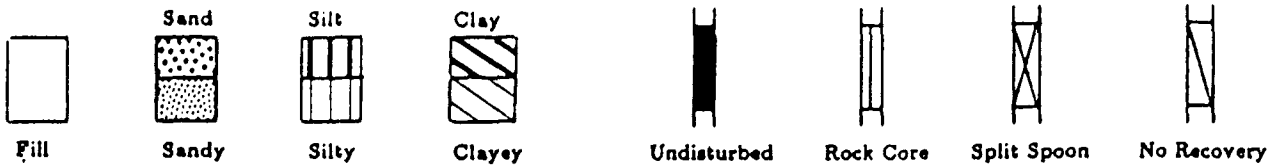
Very truly yours,
FUGRO GEOSCIENCES, INC.

Recep Yilmaz
President

RY/JLN/mw

1 Diskette Enclosed

Key to Soil Classification and Symbols



Predominant type shown heavy

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (Major portion Retained on No. 200 Sieve)

Includes (1) clean gravels & sand described as fine, medium or course, depending on distribution of grain sizes (2) silty or clayey gravels & sands & (3) fine grained low plasticity soils (PI < 10) such as sandy silts. Condition is rated according to relative density, as determined by lab tests or estimated from resistance to sampler penetration.

Descriptive Term	Penetration Resistance*	Relative Density
Loose	0-10	0 to 40%
Medium Dense	10-30	40 to 70%
Dense	30-50	70 to 90%
Very Dense	Over 50	90 to 100%

*Blows/Ft., 140# hammer, 30" drop

FINE GRAINED SOILS (Major Portion Passing No. 200 Sieve)

Includes (1) inorganic & organic silts & clays, (2) sandy, gravelly or silty clays, & (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings or by unconfined compression tests for soils with PI $\geq$ 10.

Descriptive Term	Cohesive Shear Strength Tons/Sq. Ft.
Very Soft	Less Than 0.125
Soft	0.125 to 0.25
Firm	0.25 to 0.50
Stiff	0.50 to 1.00
Very Stiff	1.00 to 2.00
Hard	2.00 and Higher

Note: Slickensided and fissured clay may have lower unconfined compressive strengths than shown above because of planes of weakness or shrinkage cracks; consistency ratings of such soils are based on hand penetrometer readings.

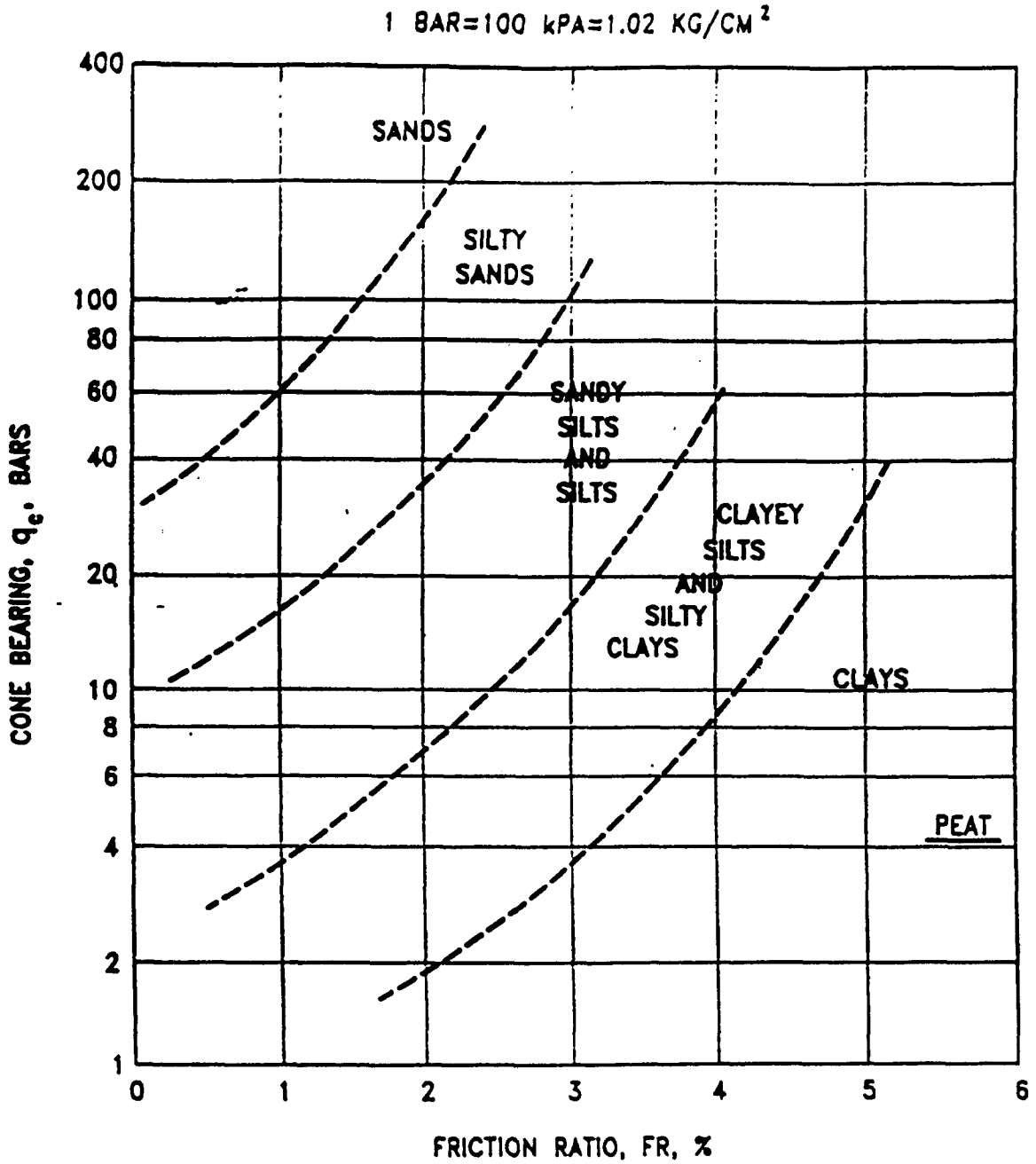
TERMS CHARACTERIZING SOIL STRUCTURE

Parting:	paper thin in size
Seam:	1/8"-3" thick
Layer:	greater than 3"
Fissured:	containing shrinkage cracks, frequently filled with fine sand or silt, usually more or less vertical
Sensitive:	pertaining to cohesive soils that are subject to appreciable loss of strength when remolded
Interbedded:	composed of alternate layers of different soil types
Laminated:	composed of thin layers of varying color and texture
Calcareous:	containing appreciable quantities of calcium carbonate
Well Graded:	having wide range in grain sizes and substantial amounts of all intermediate particle sizes
Poorly Graded:	predominately of one grain size, or having a range of sizes with some intermediate size missing
Flocculated:	pertaining to cohesive soils that exhibit a loose knit or flakey structure

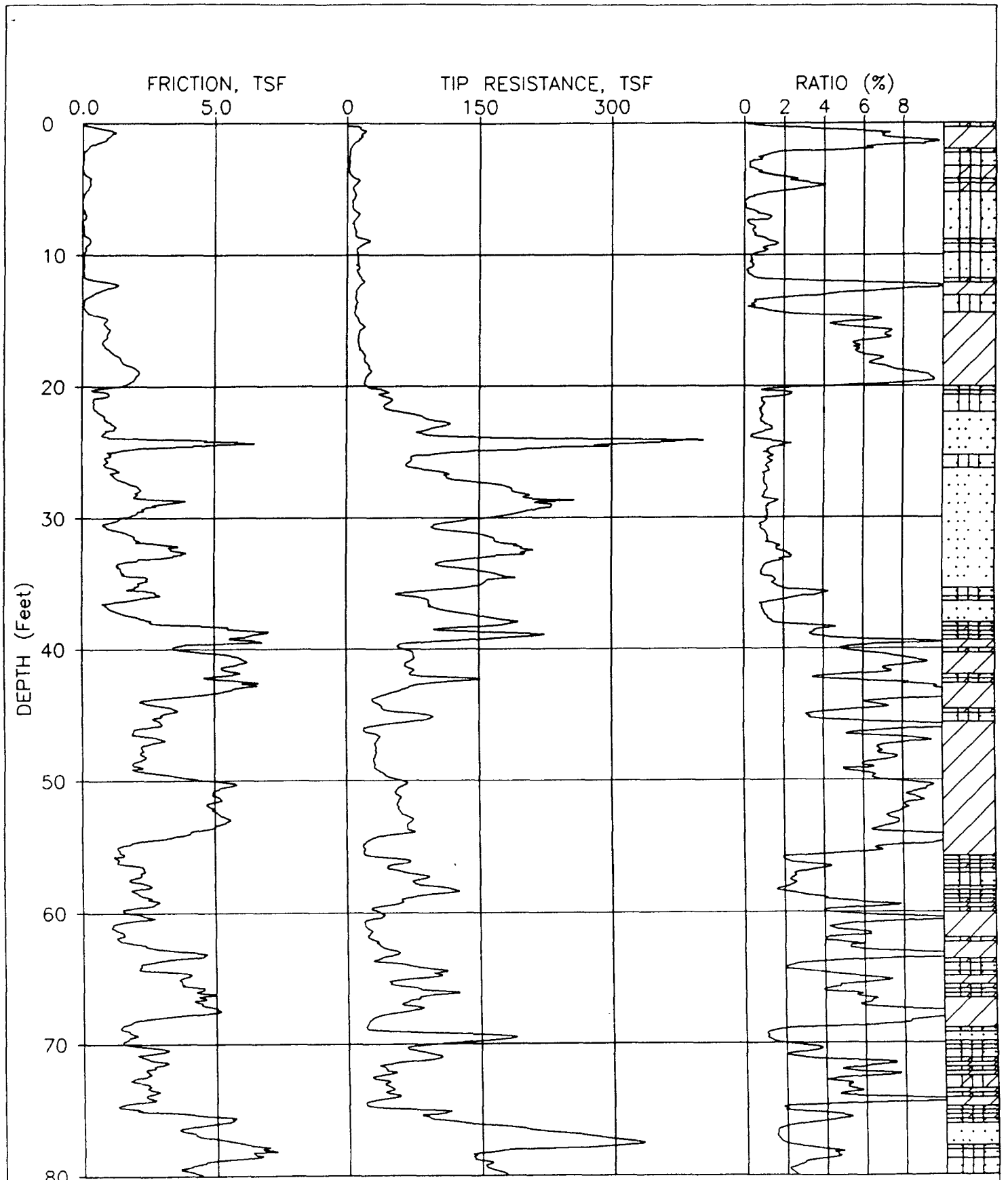
Slickensided: having inclined planes of weakness that are slick and glossy in appearance.

Degree of Slickensided Development

Slightly Slickensided:	slickensides present at intervals of 1'-2', soil does not easily break along these planes
Moderately Slickensided:	slickensides spaced at intervals of 1'-2', soil breaks easily along these planes
Extremely Slickensided:	continuous and interconnected slickensides spaced at intervals of 4"-12", soil breaks along the slickensides into pieces 3"-6" in size
Intensely Slickensided:	slickensides spaced at intervals of less than 4", continuous in all directions; soil breaks down along planes into nodules 1/4"-2" in size



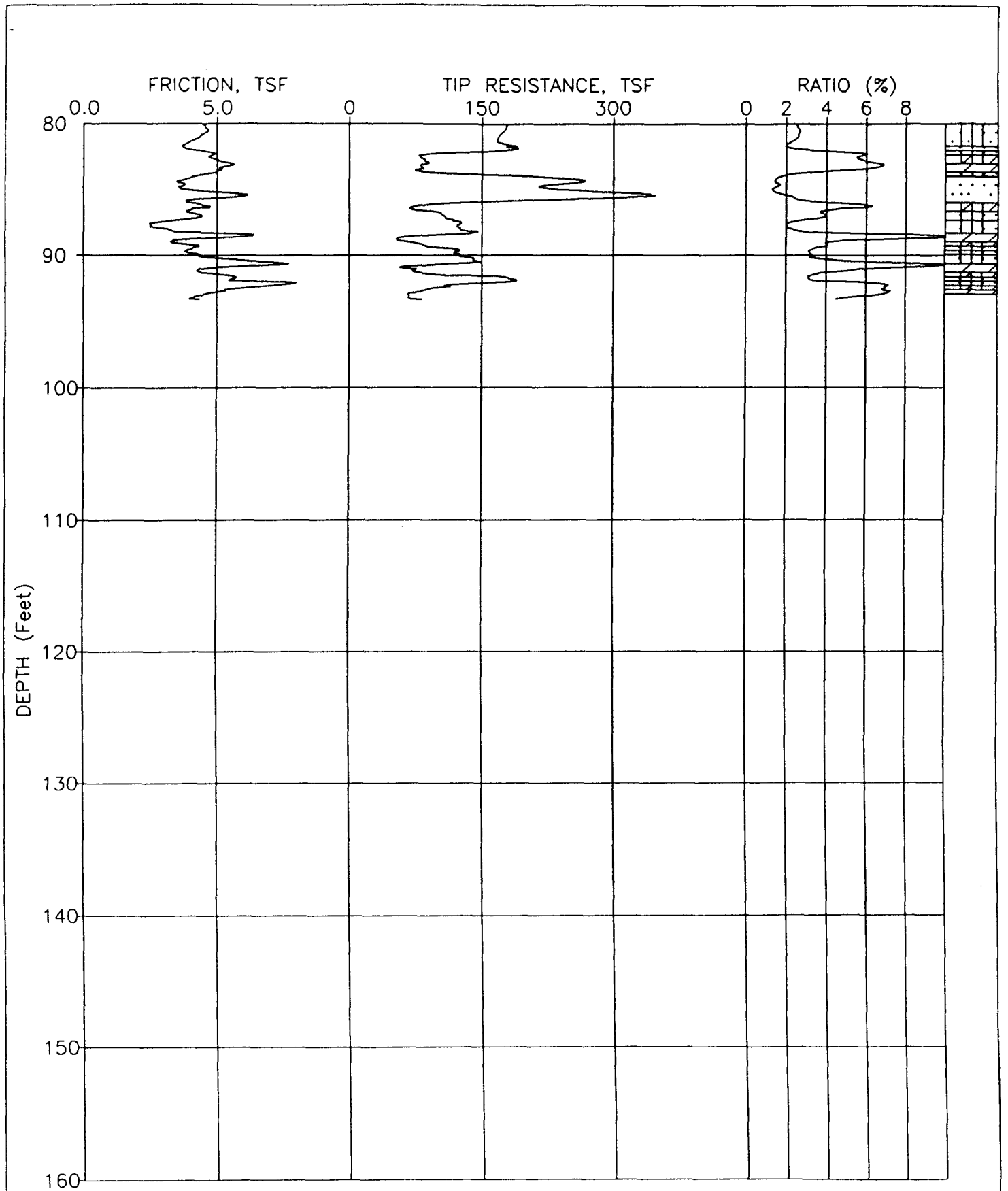
CAMPANELLA AND ROBERTSON CLASSIFICATION CHART (1983)



JOB NUMBER: 99-0272 CPT NUMBER: SG24 DATE: 01-21-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 1 OF 2

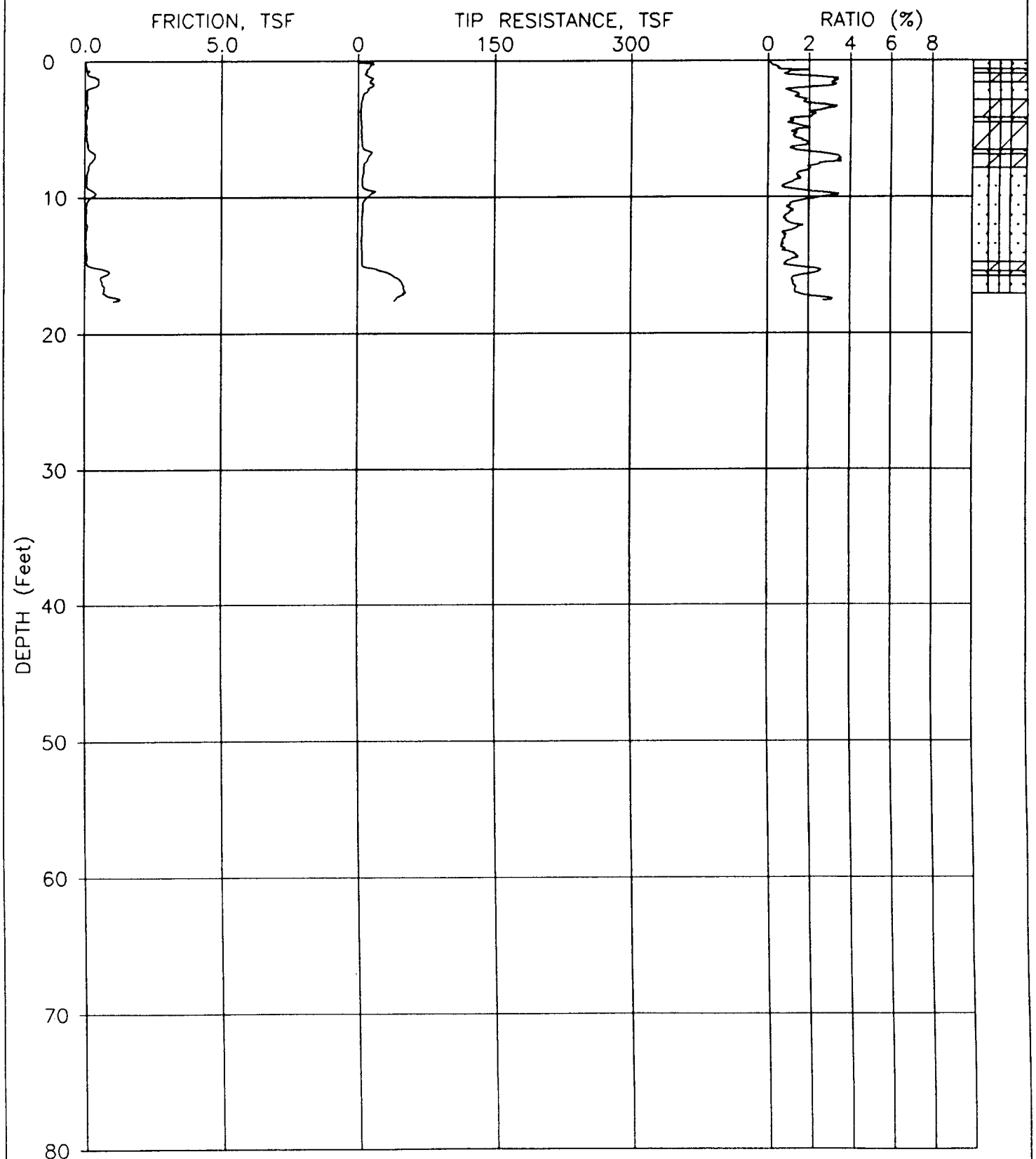
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG24 DATE: 01-21-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 2 OF 2

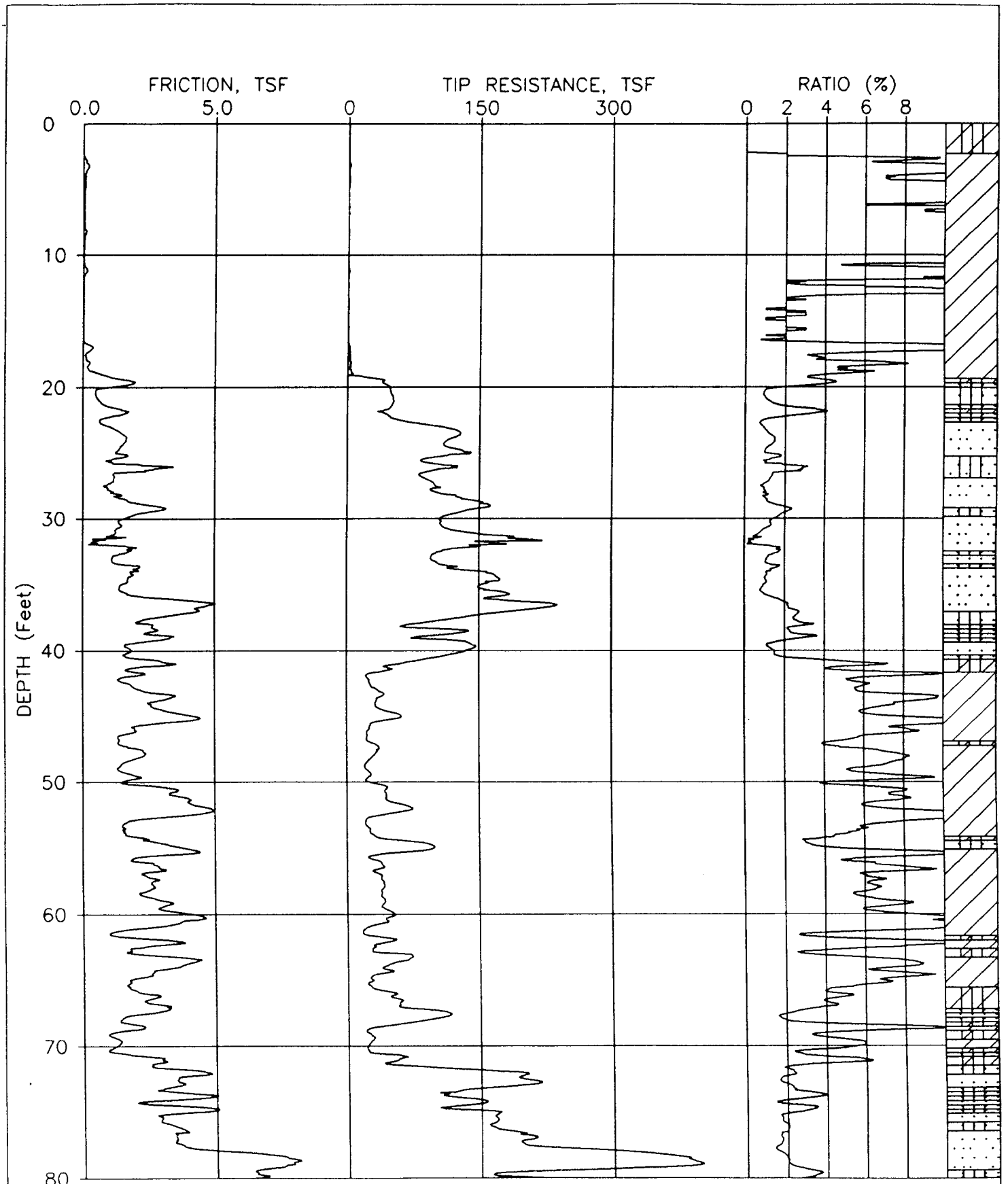
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: 26 DATE: 01-19-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 1 OF 1

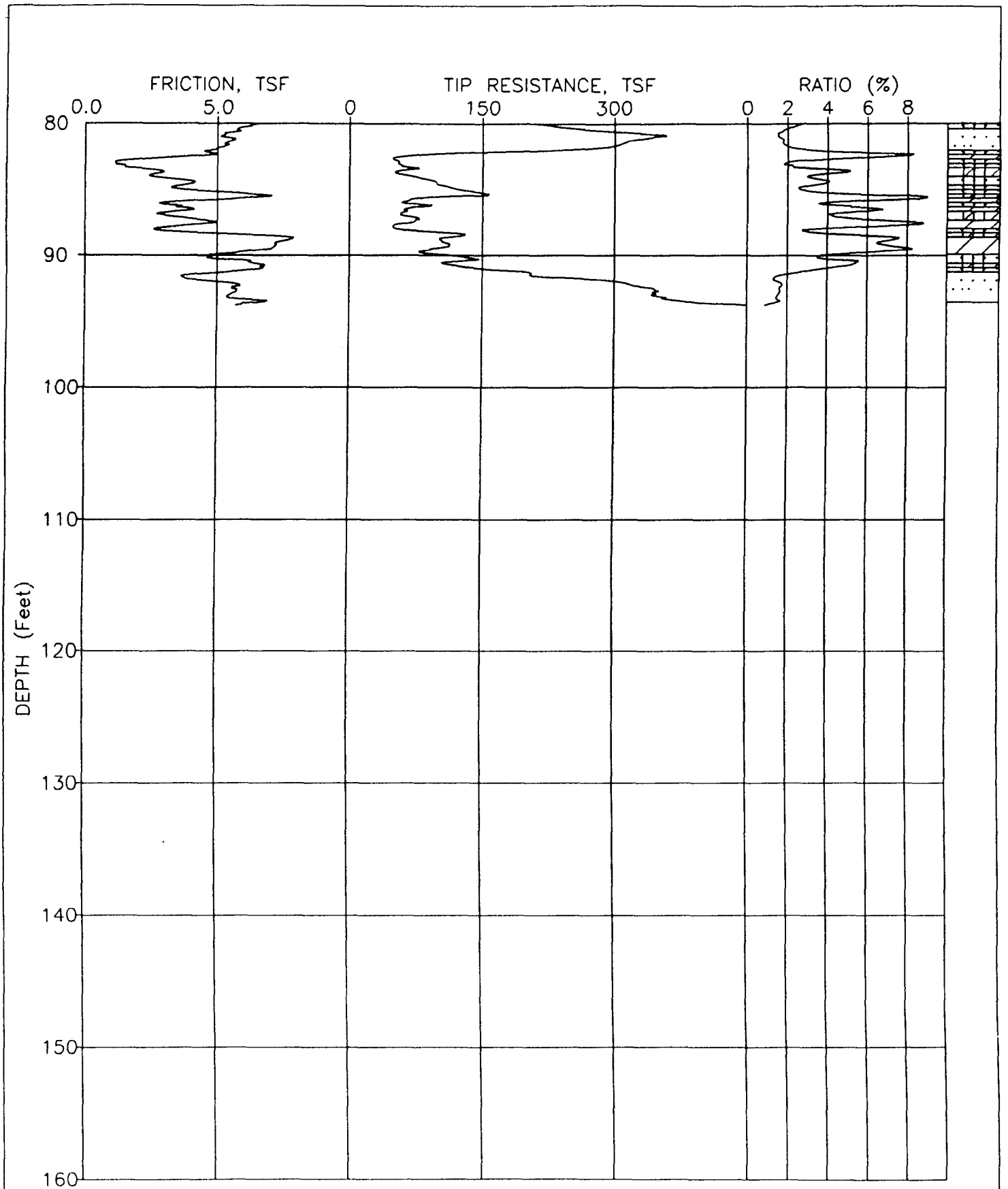
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: 26A DATE: 01-19-1999

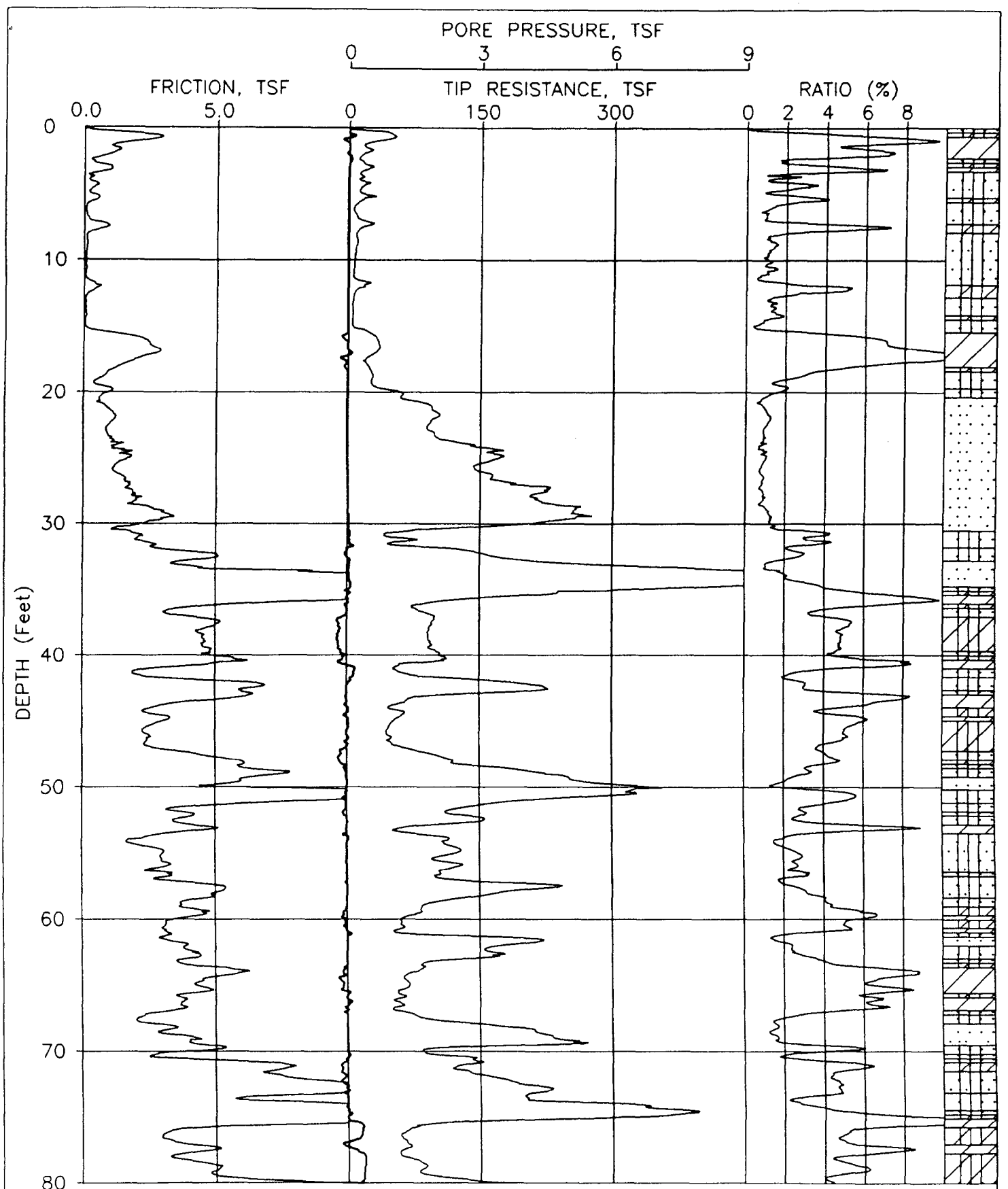
ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: 26A DATE: 01-19-1999
ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 2 OF 2

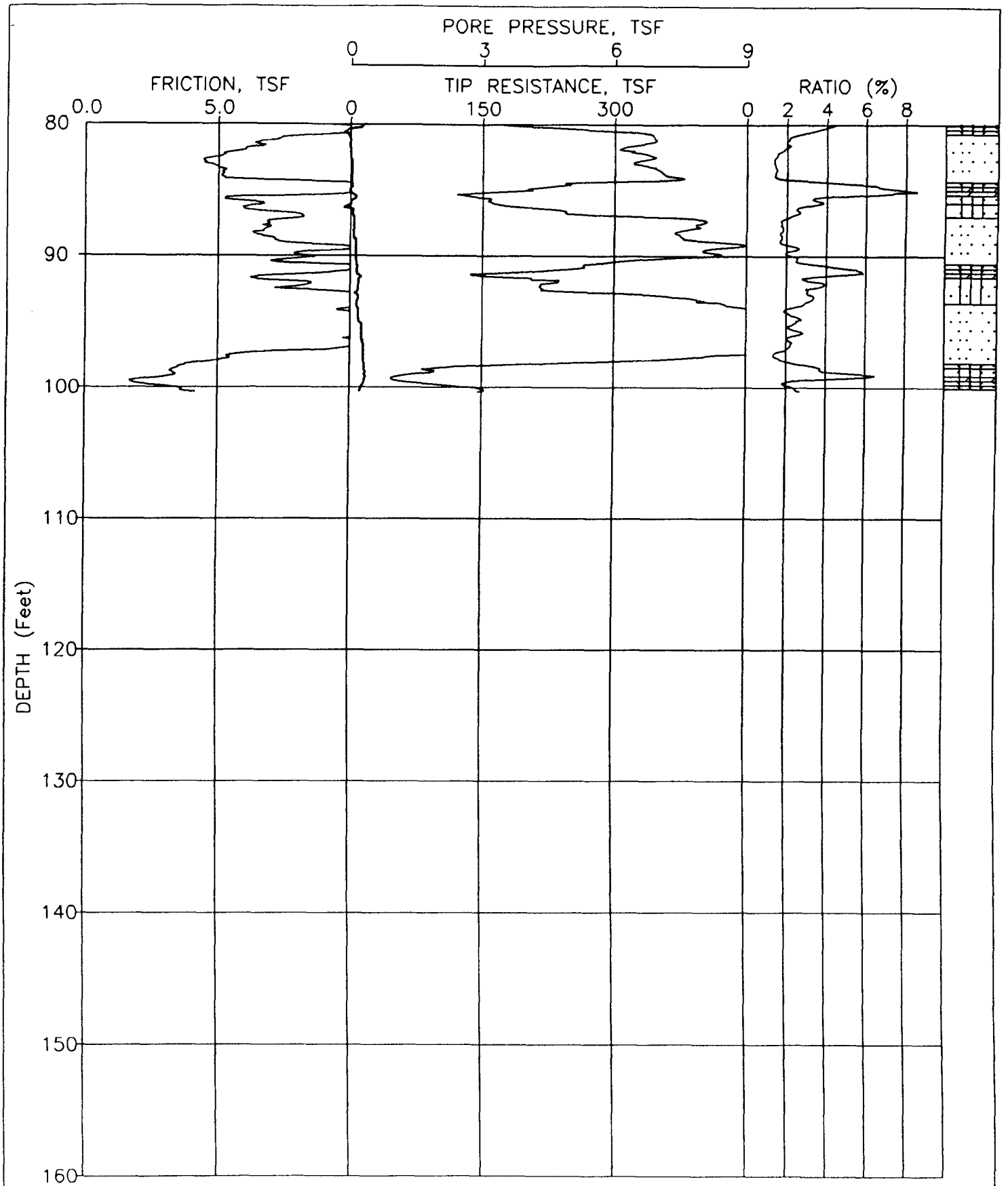
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG47 DATE: 01-26-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2

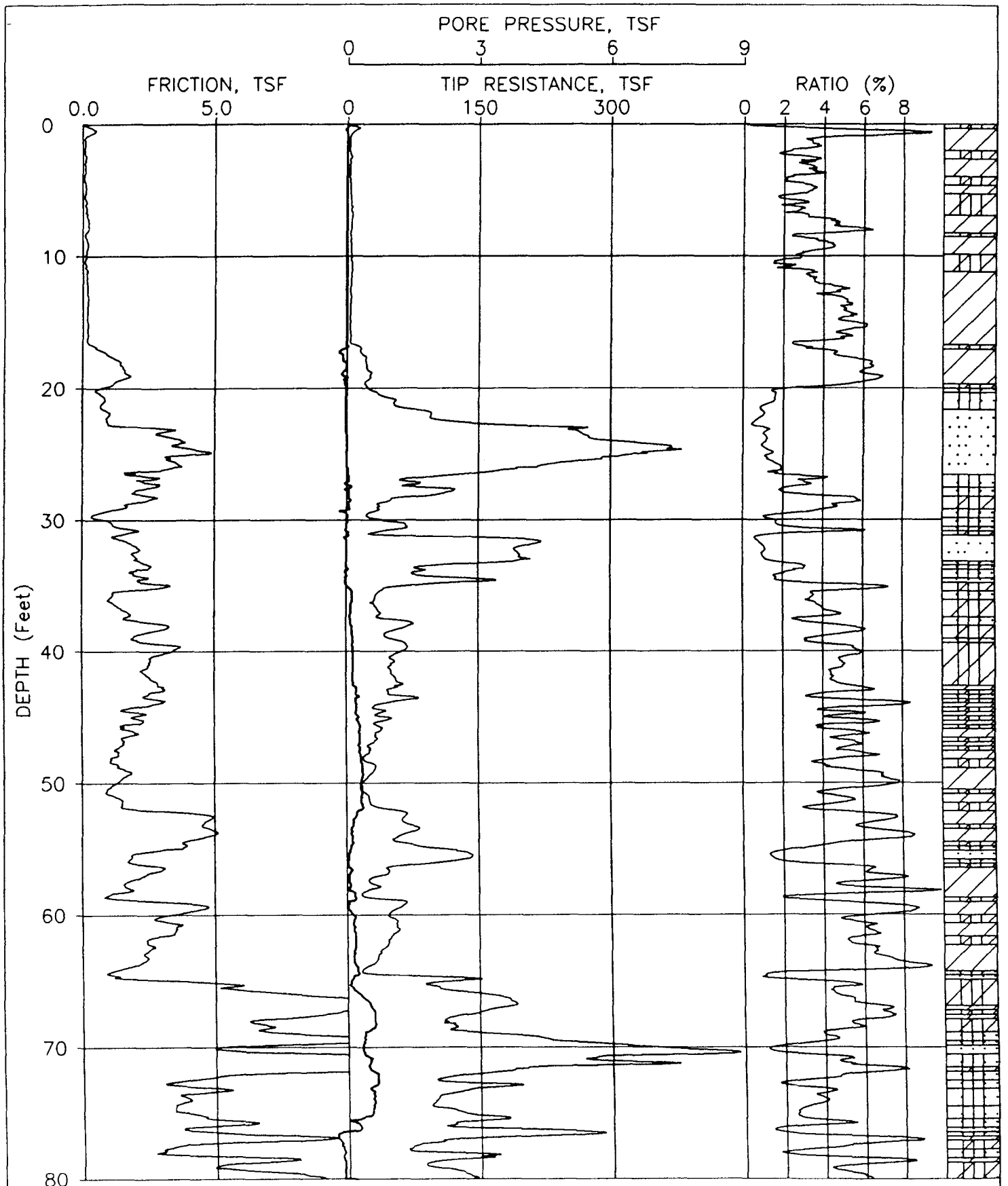
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG47 DATE: 01-26-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

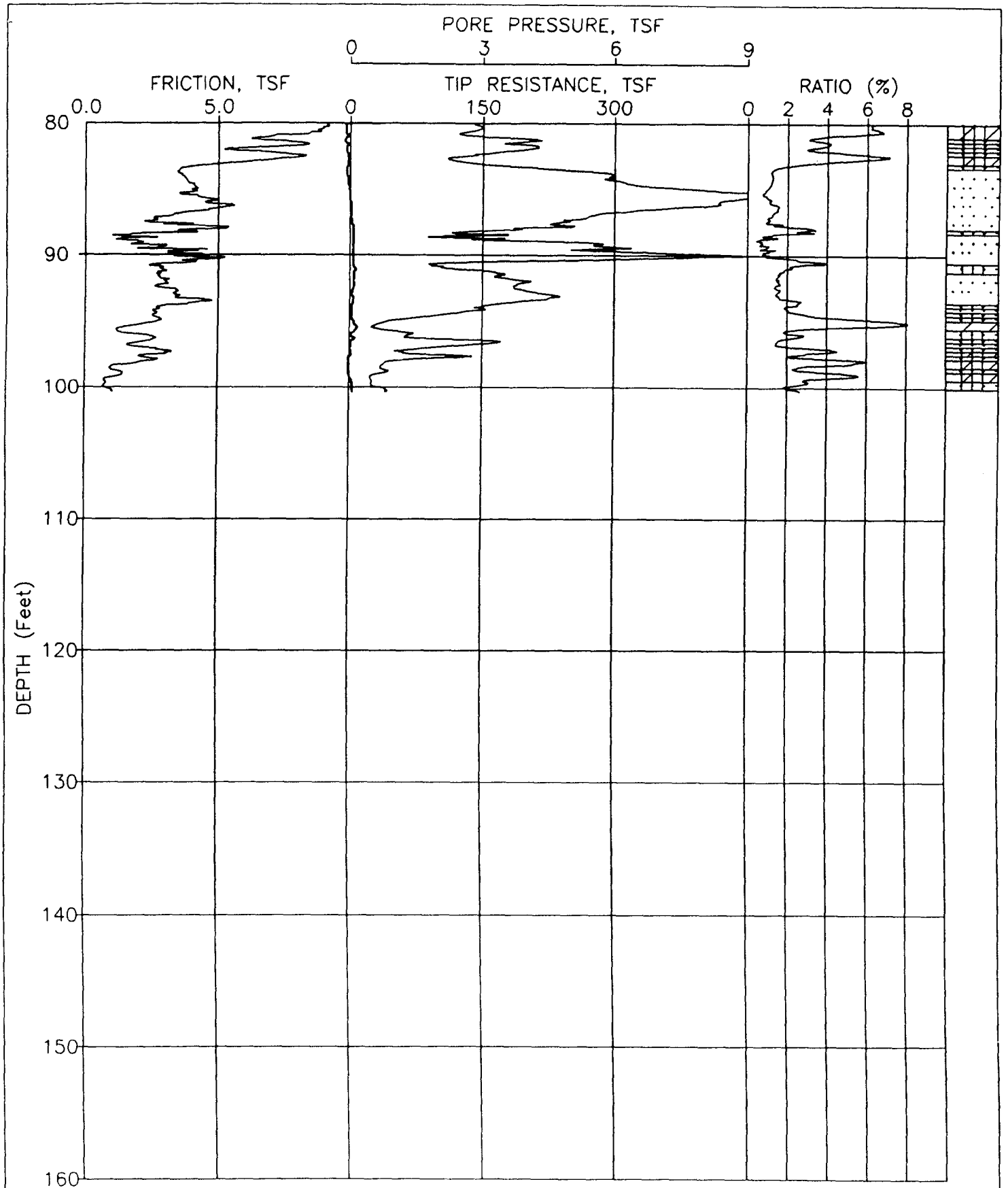
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG68 DATE: 01-22-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2

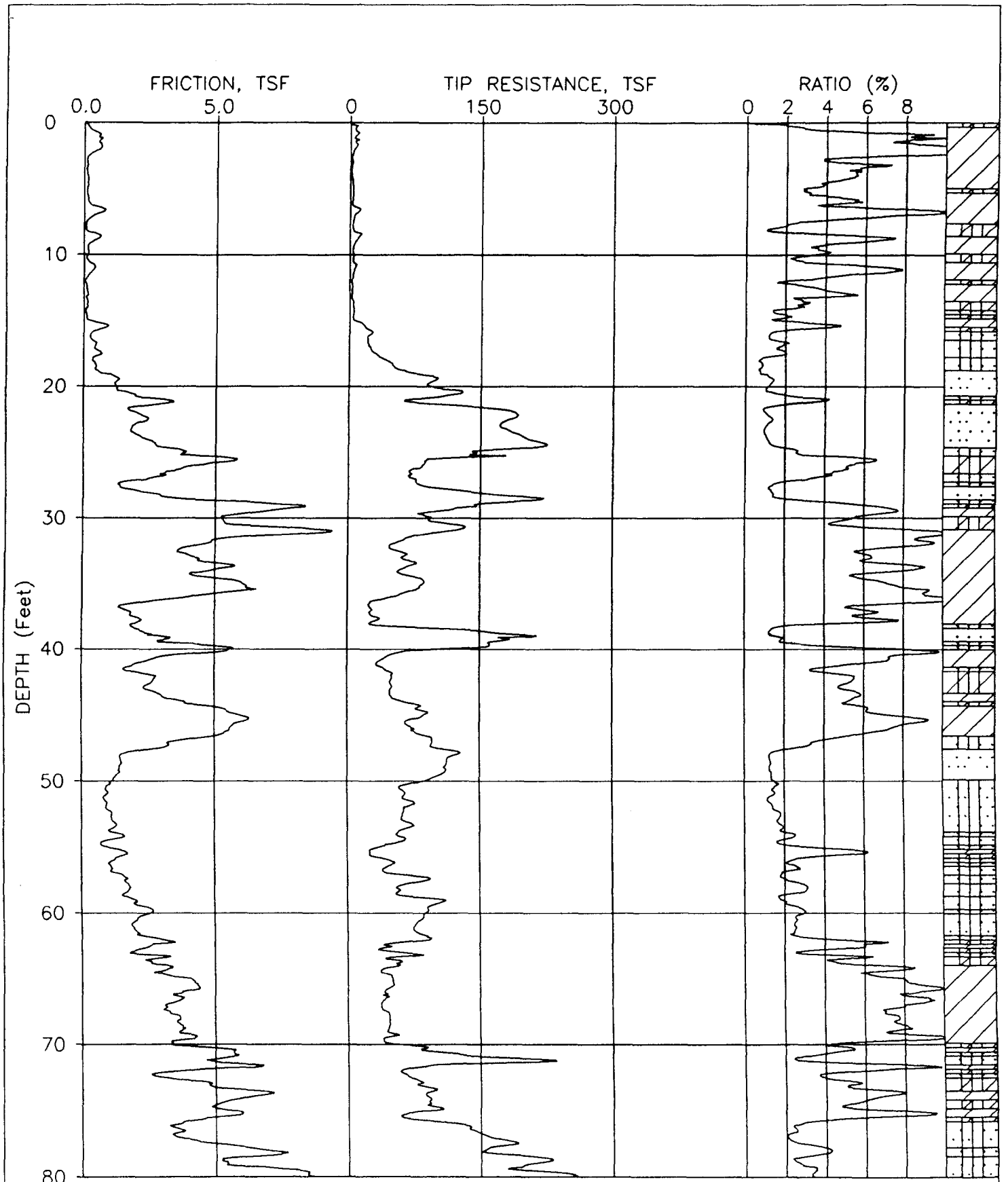
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG68 DATE: 01-22-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

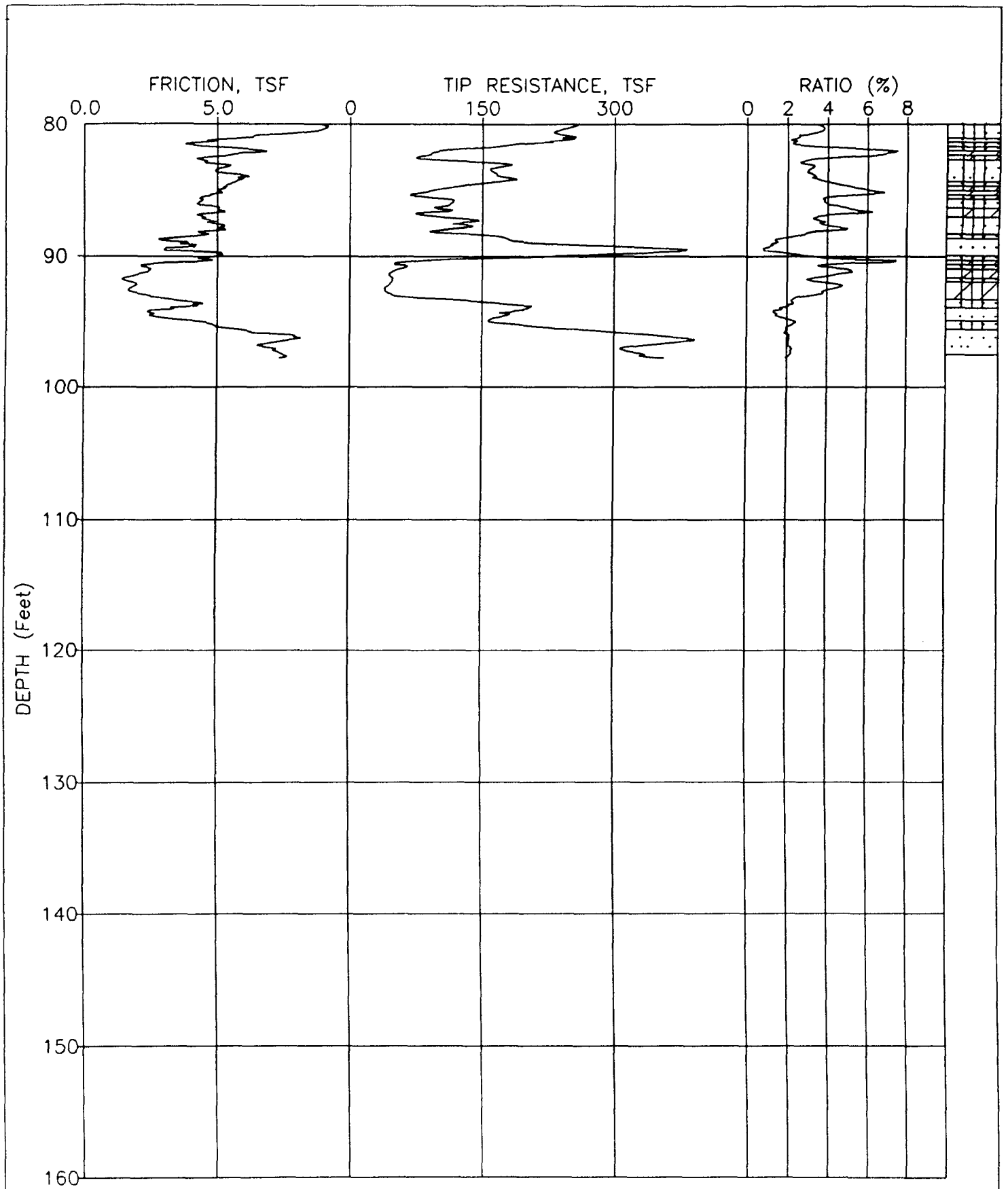
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG82 DATE: 01-21-1999

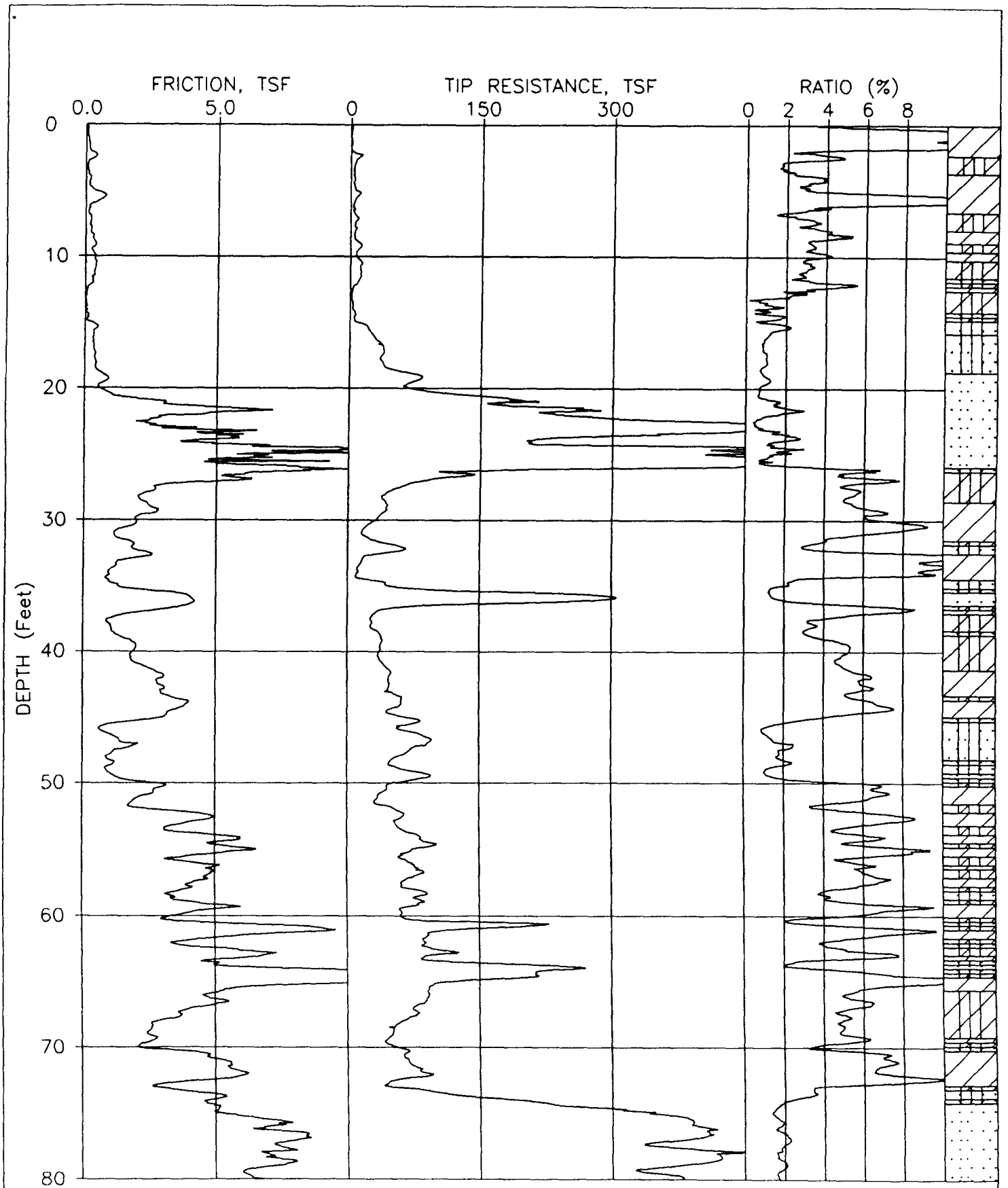
ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



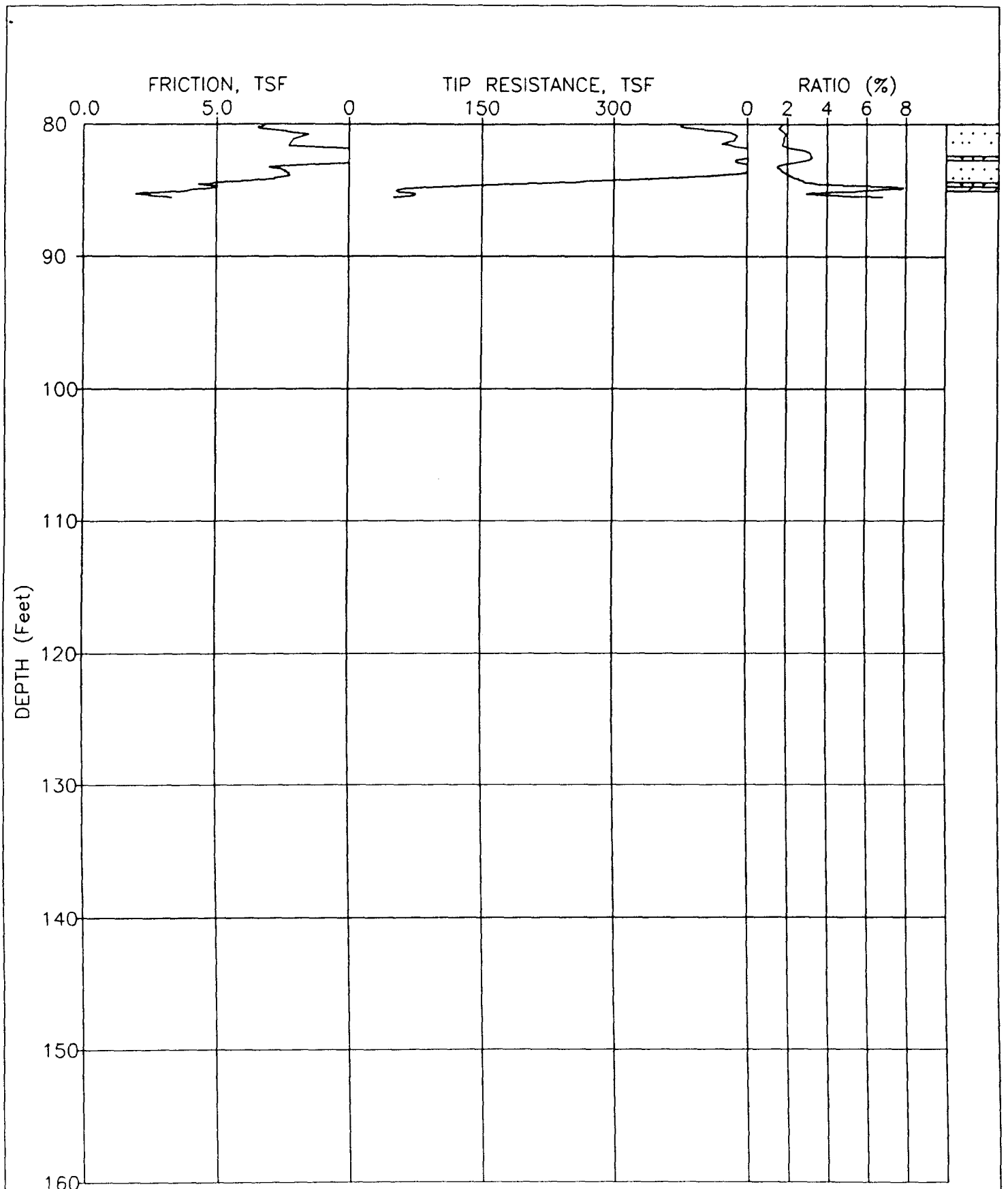
JOB NUMBER: 99-0272 CPT NUMBER: SG82 DATE: 01-21-1999
ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC



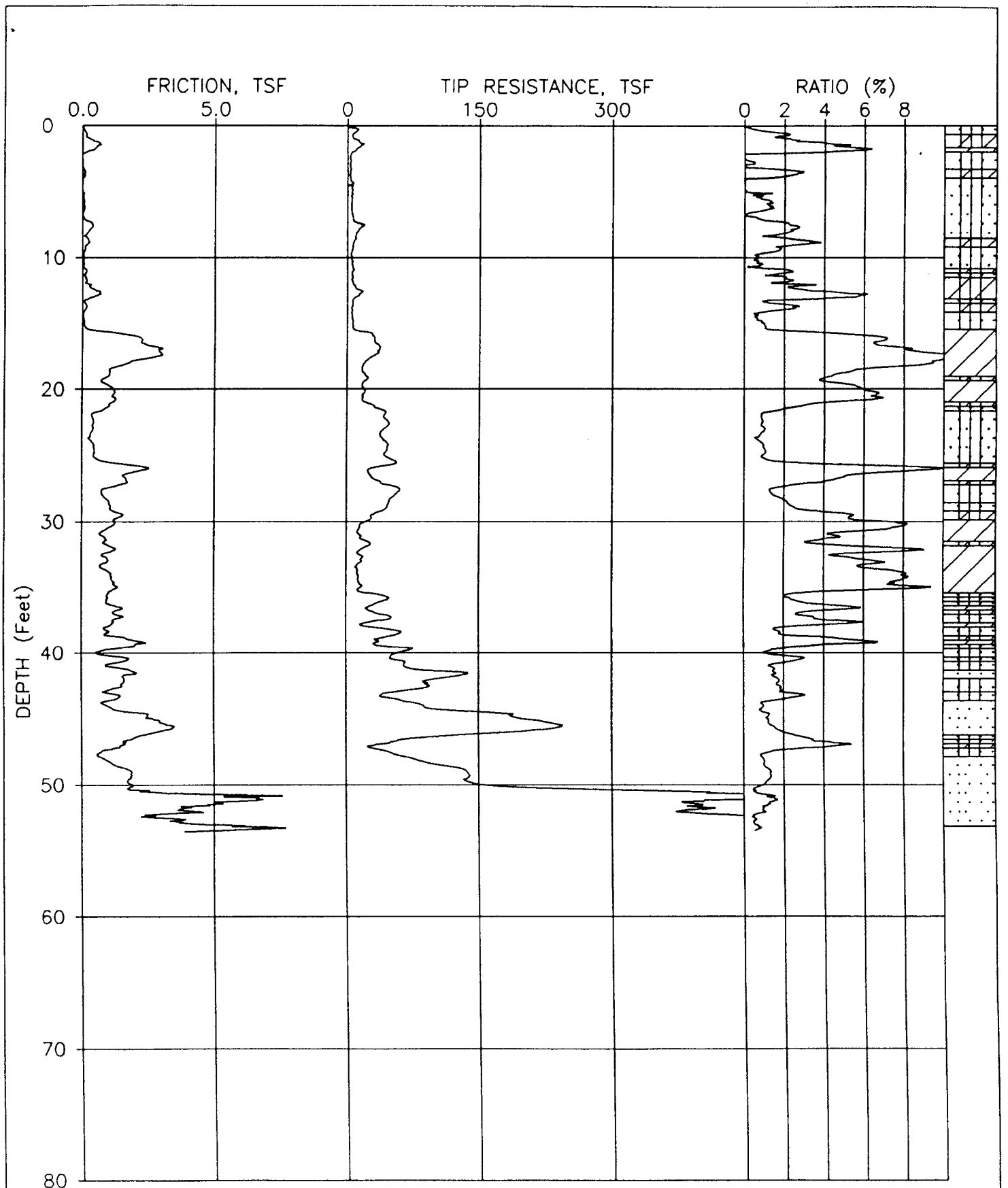
JOB NUMBER: 99-0272 CPT NUMBER: C83 DATE: 01-20-1999
ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: C83 DATE: 01-20-1999
ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 2 OF 2

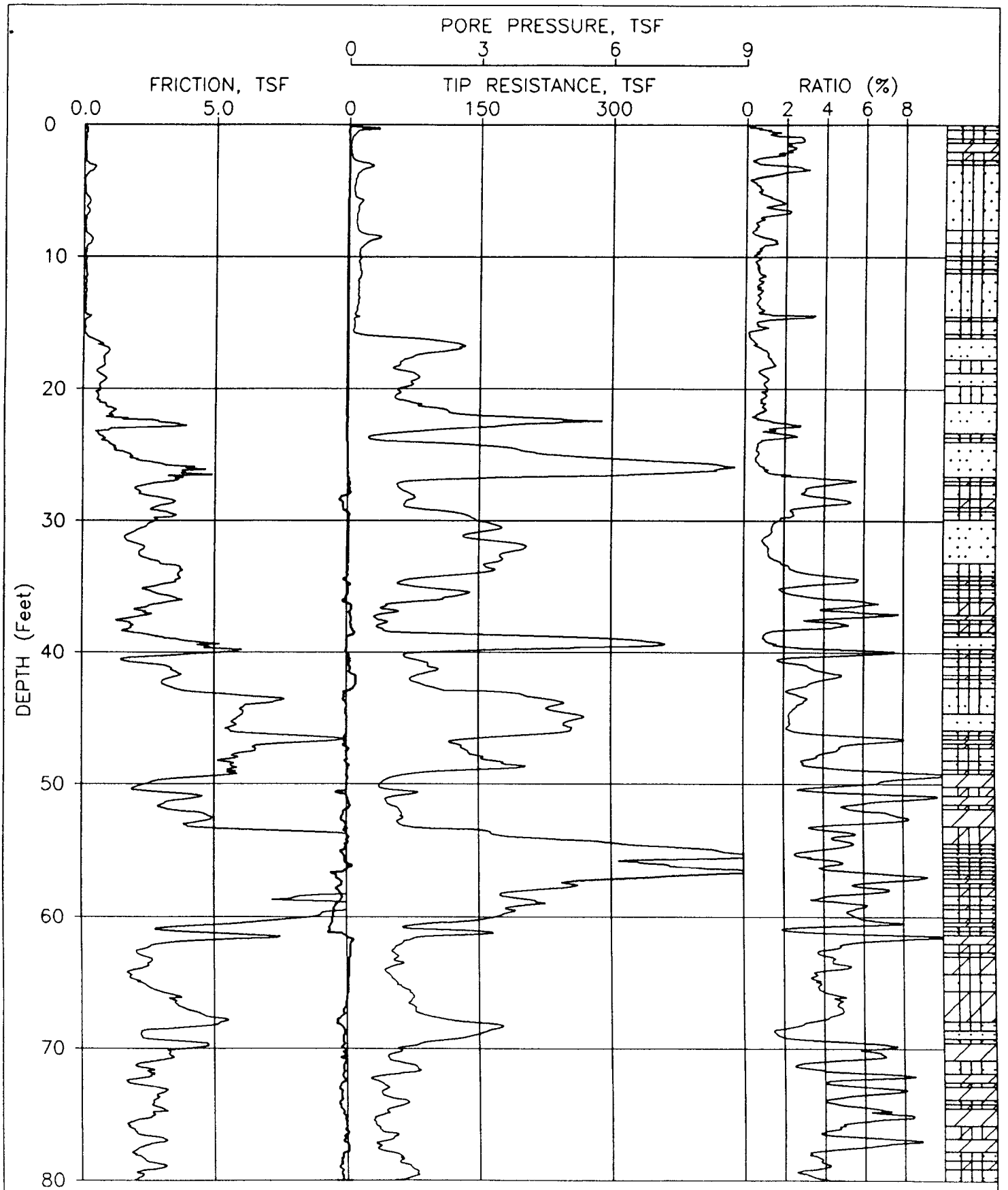
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: 109 DATE: 01-19-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEV866 PLATE: 1 OF 1

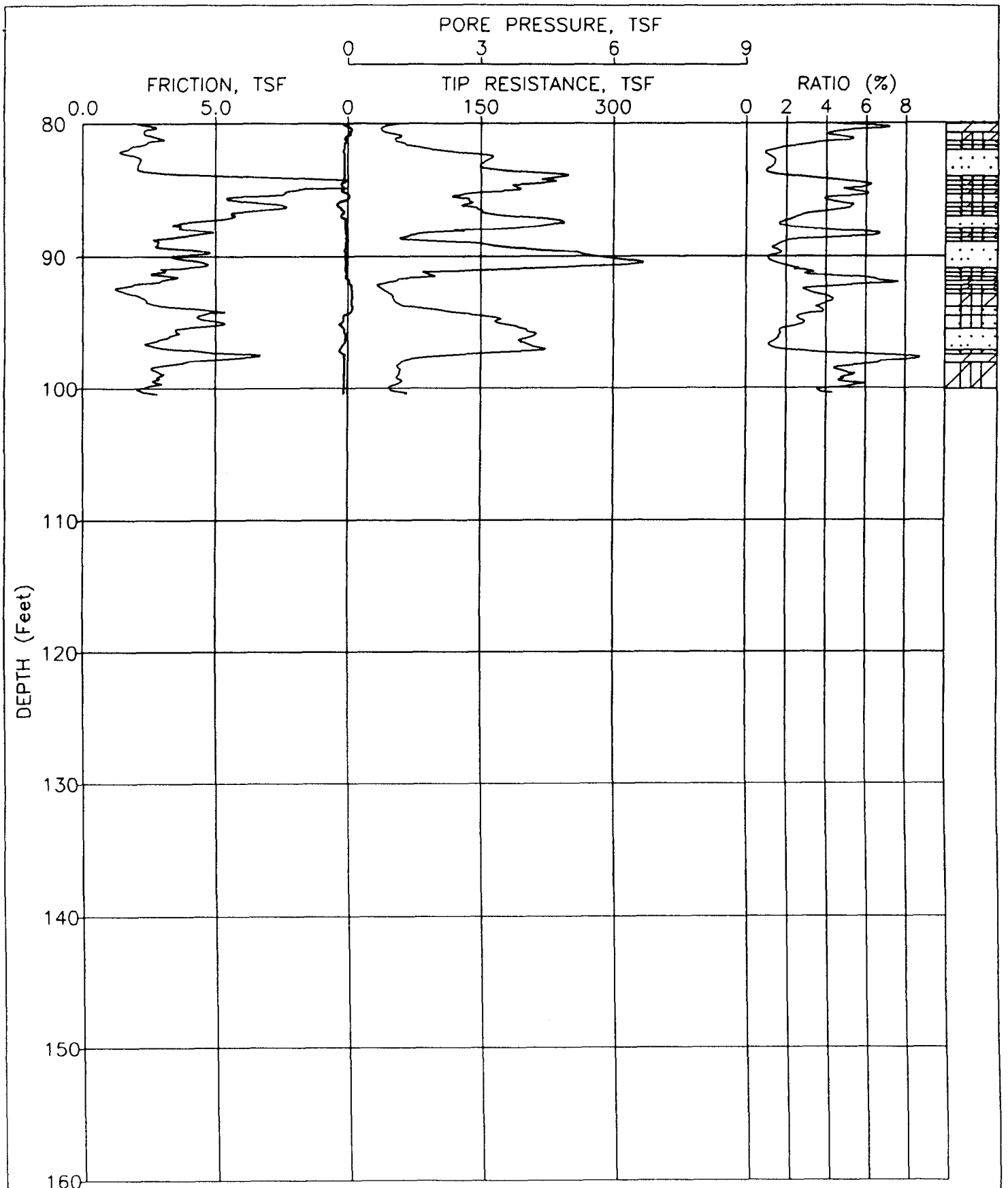
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG136 DATE: 01-26-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2

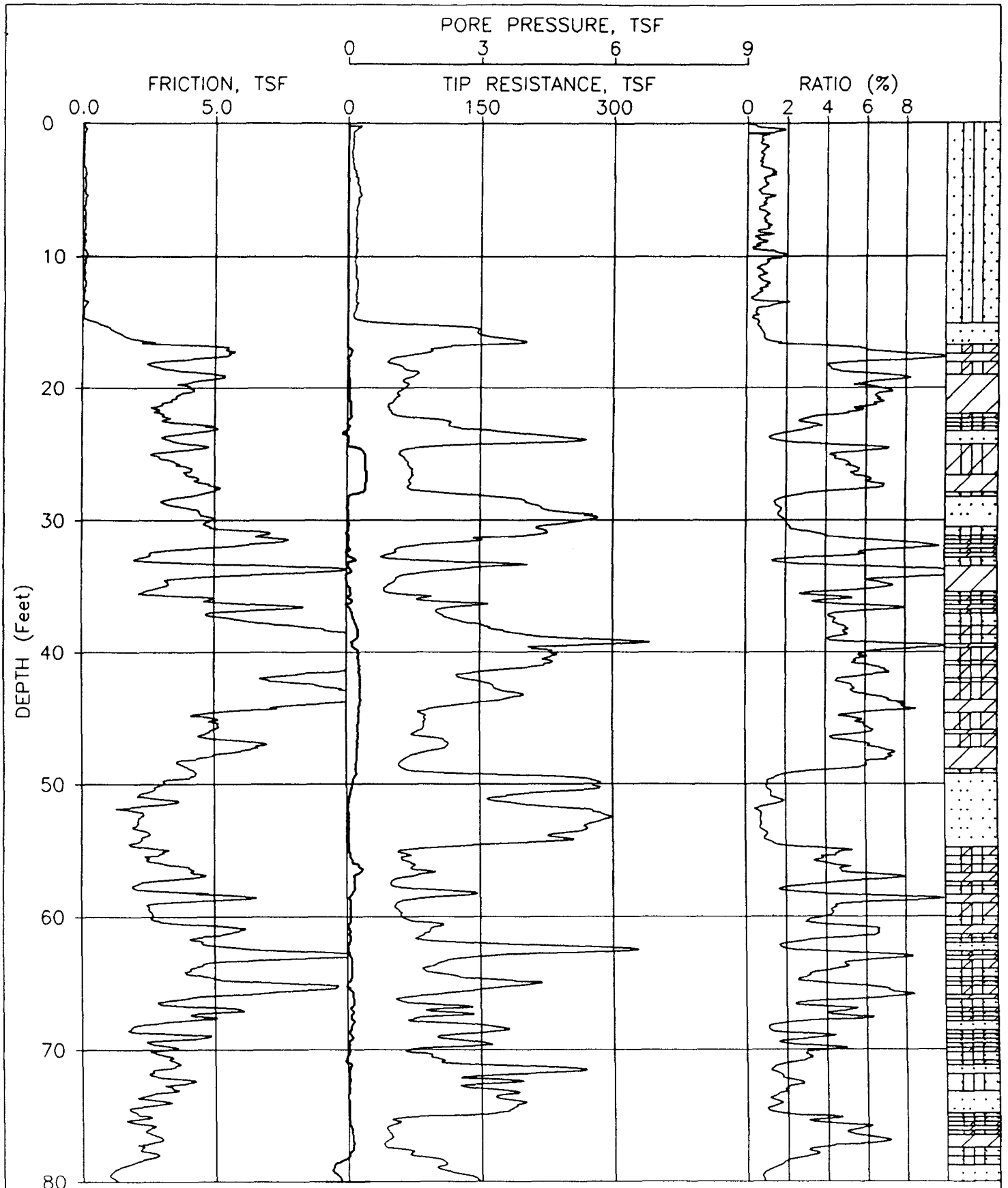
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG136 DATE: 01-26-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

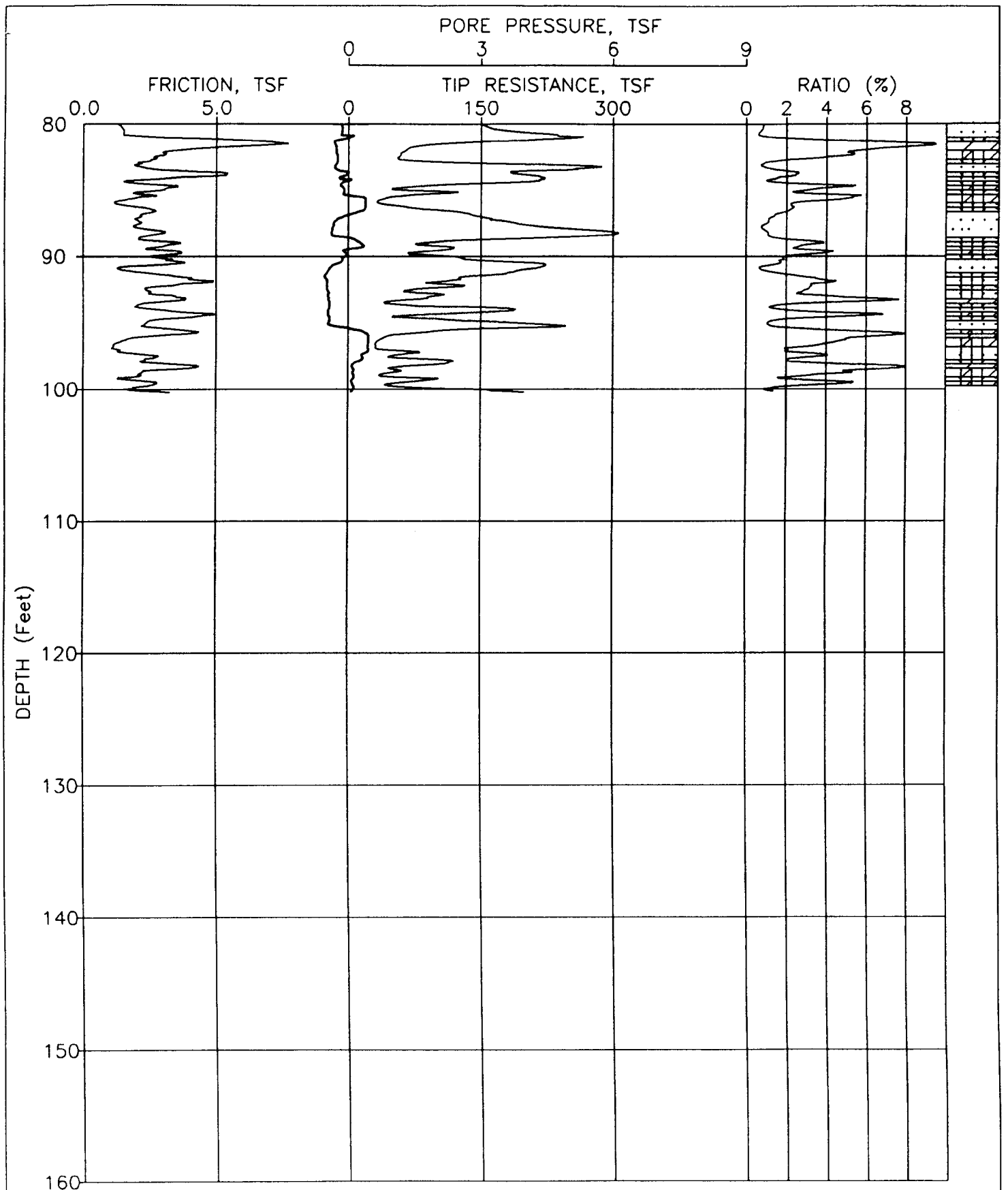
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG138 DATE: 01-21-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC

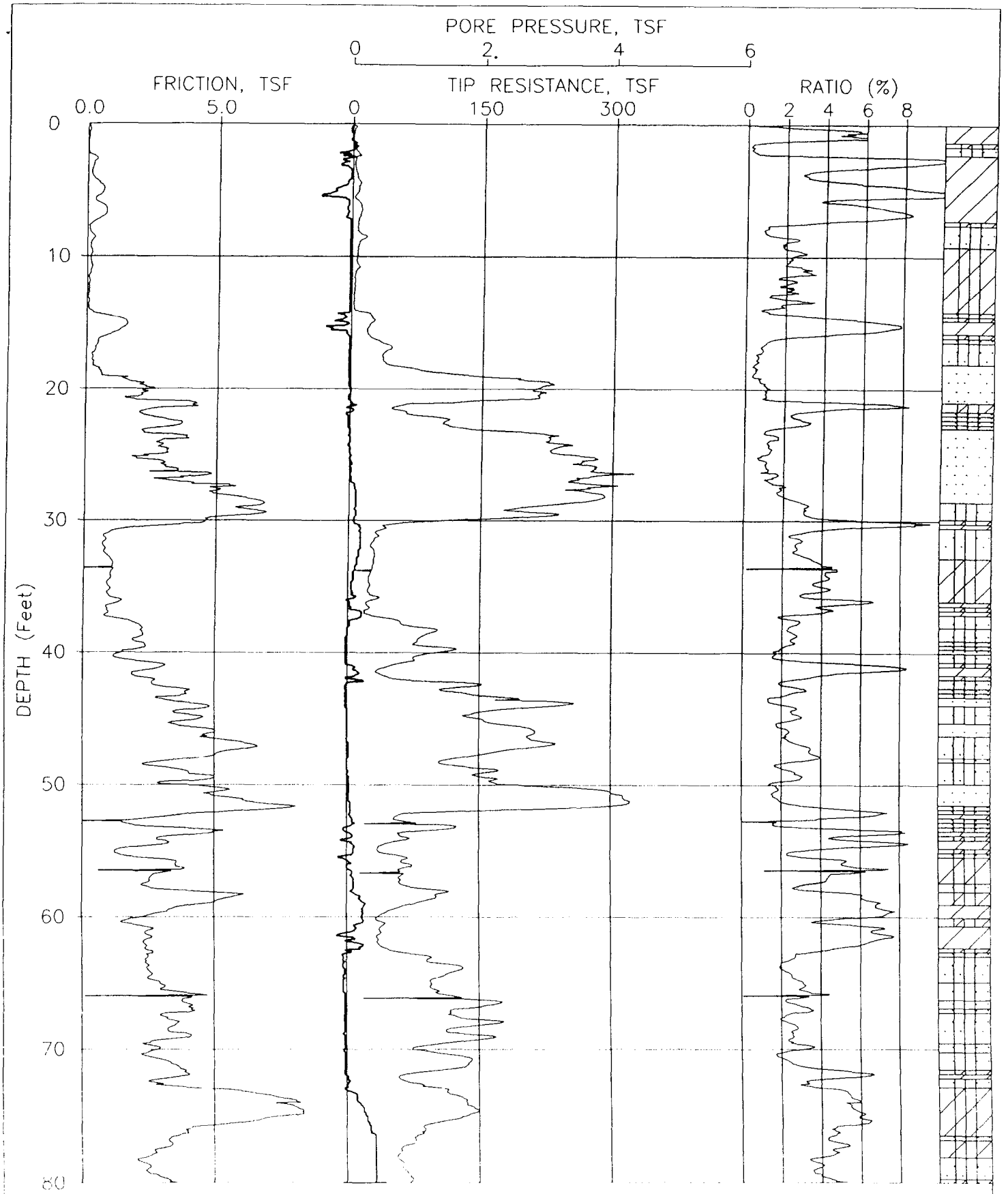


JOB NUMBER: 99-0272 CPT NUMBER: SG138 DATE: 01-21-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC

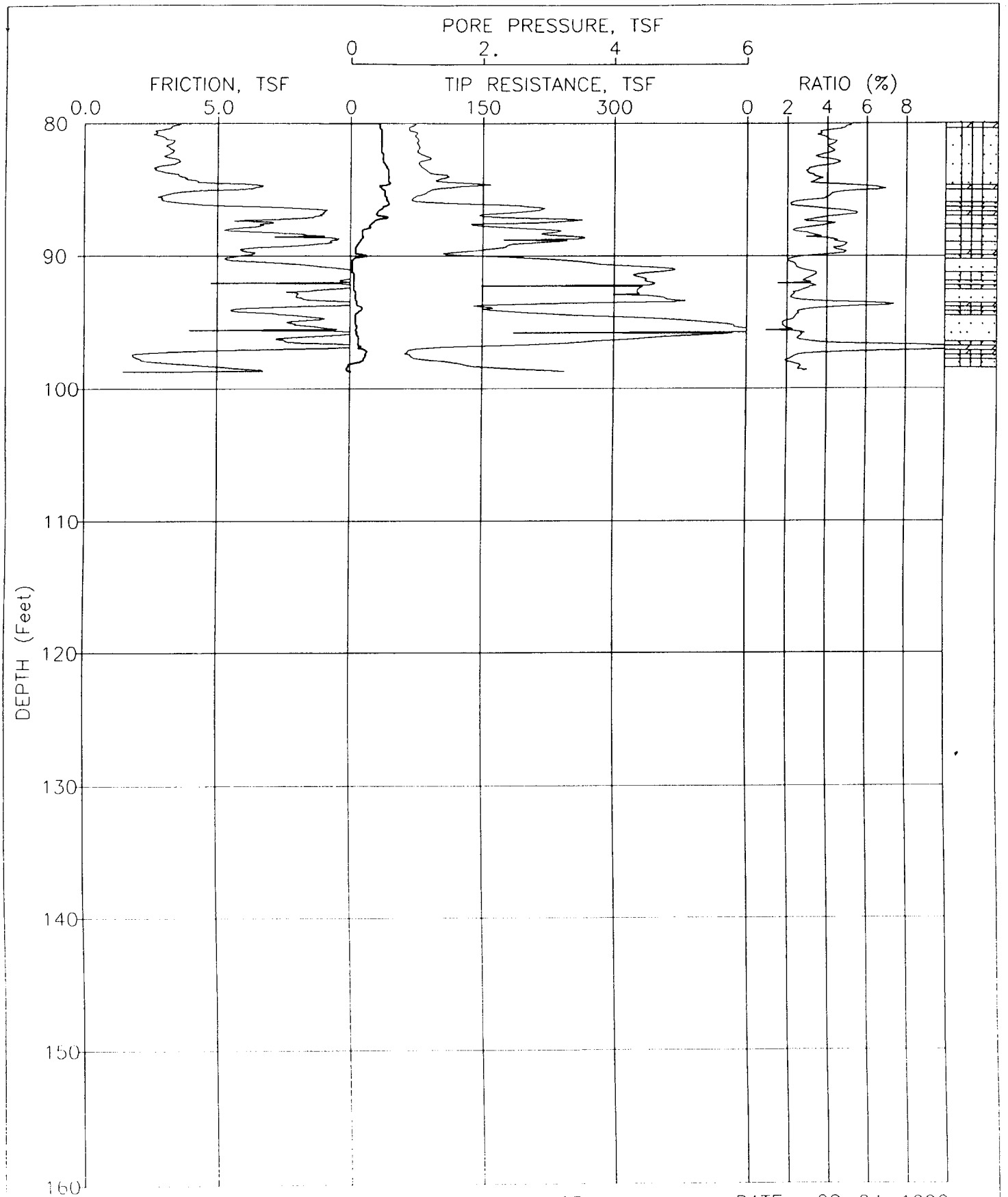
Phase II CPT Logs



JOB NUMBER 99-0272 CPT NUMBER: SG31 DATE: 02-04-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKFW835 PLATE: 1 OF 2

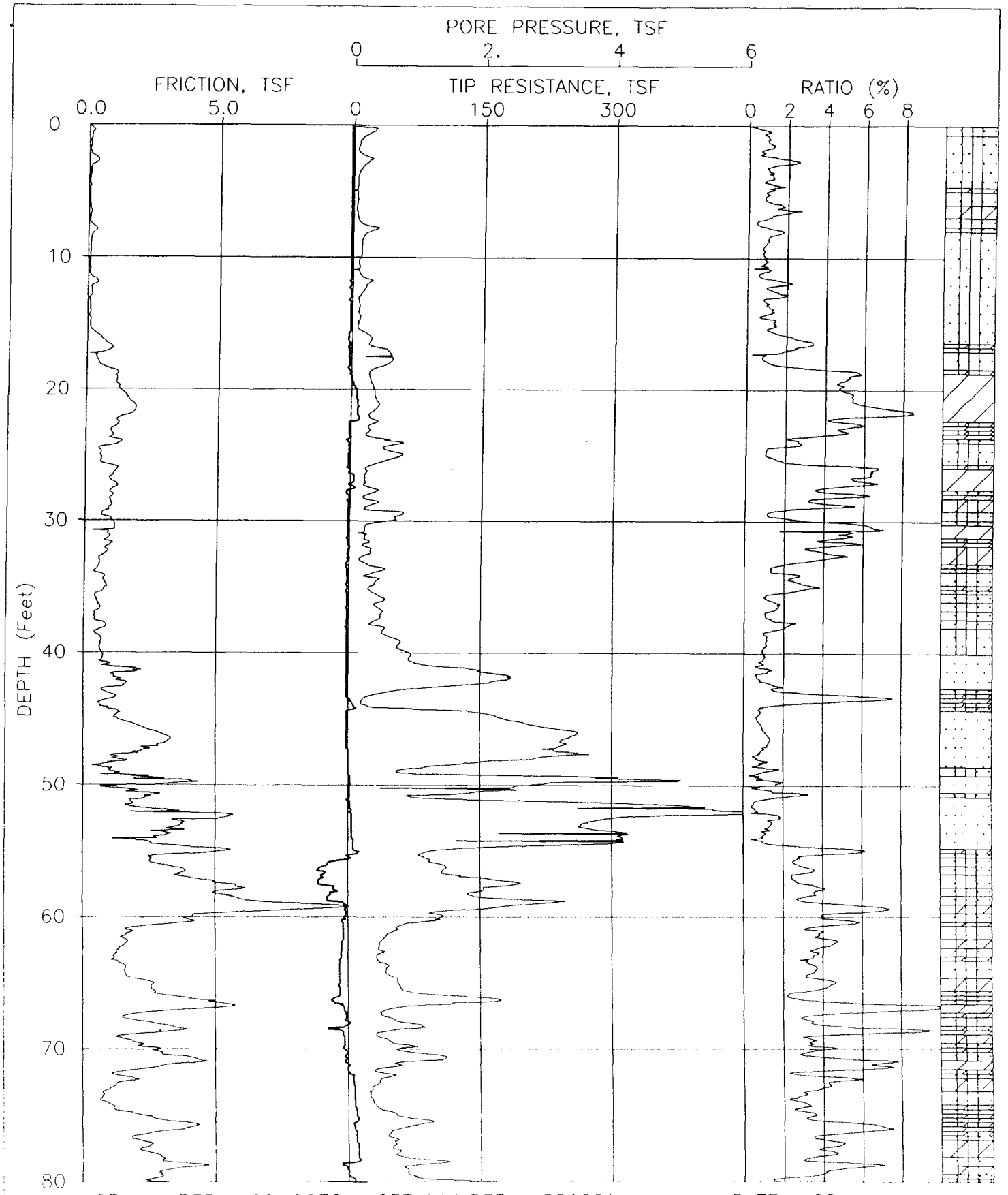
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG31 DATE: 02-04-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

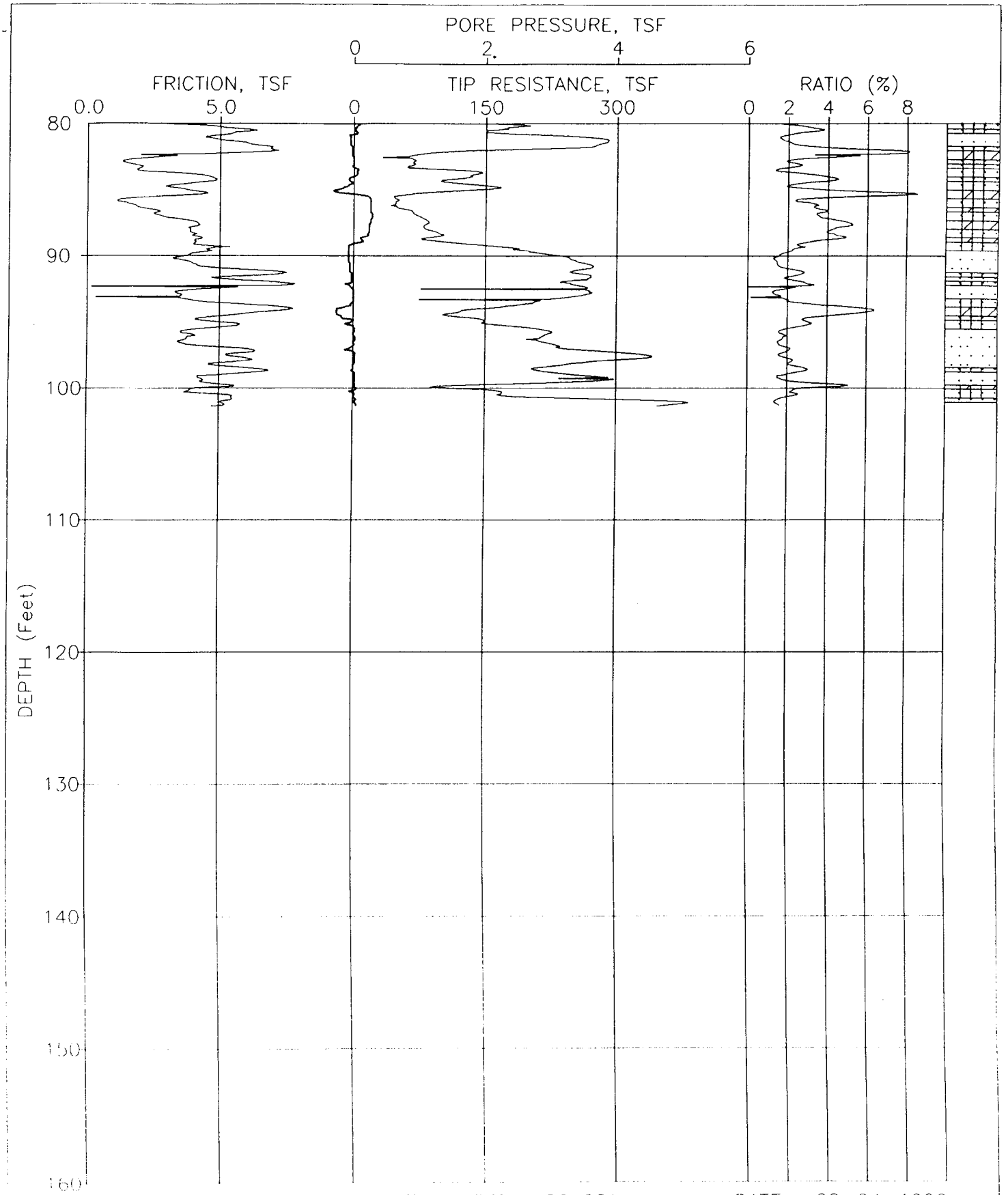
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG120A DATE: 02-04-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2

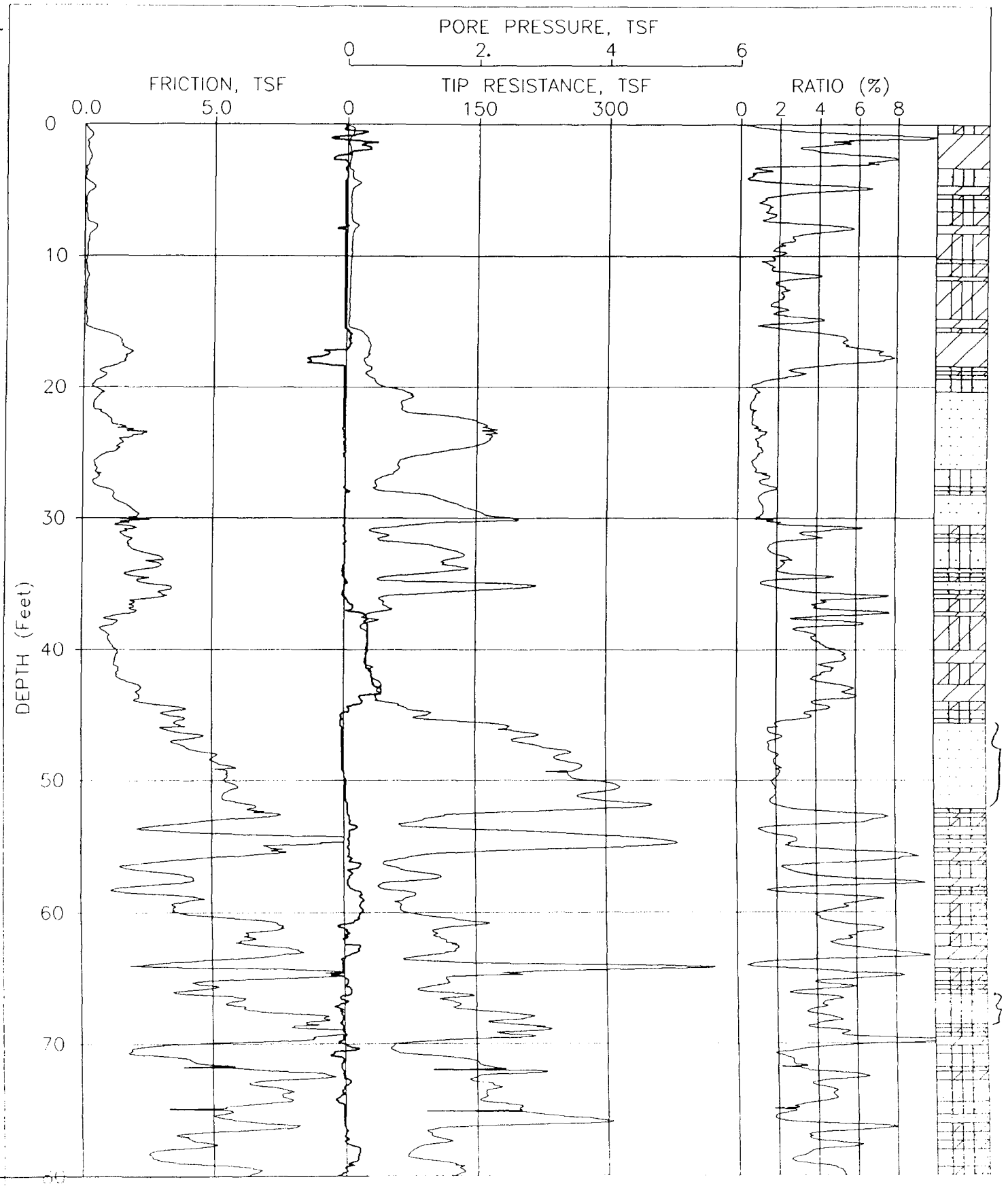
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG120A DATE: 02-04-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

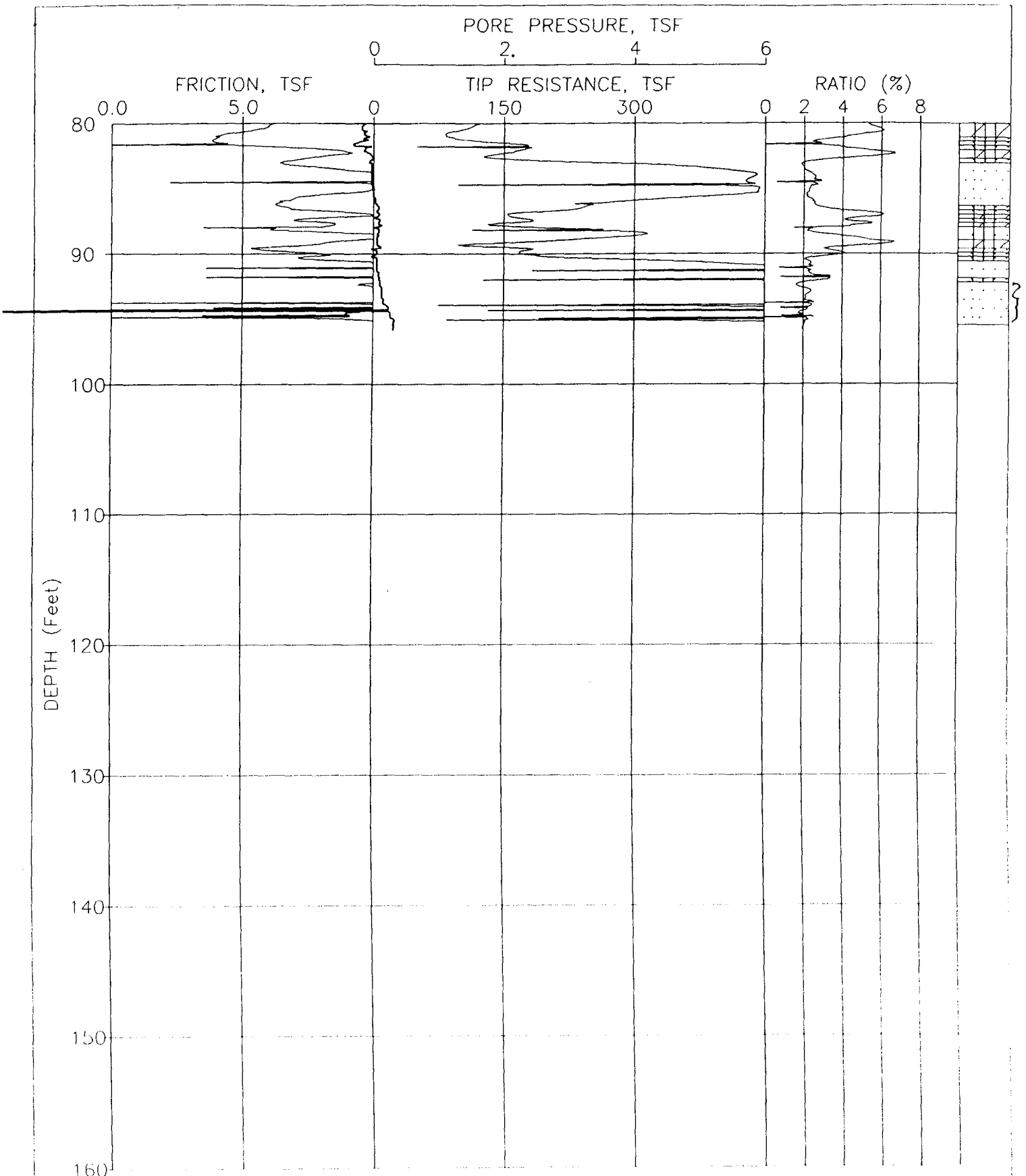
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: S323 DATE: 02-05-1999

ELEVATION: 0.00 CONE NUMBER: ET.5CKEW835 PLATE: 1 OF 2

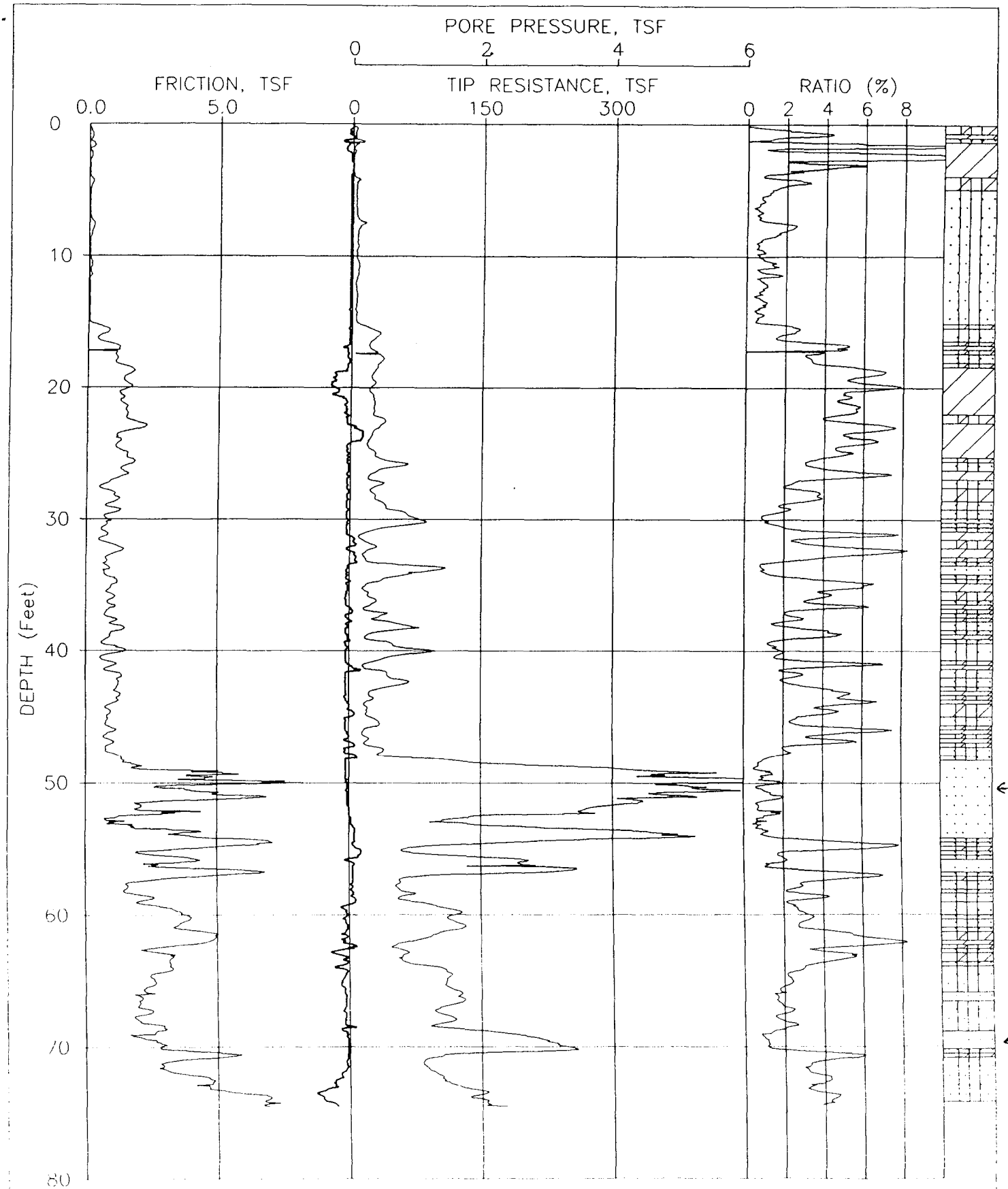
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG23 DATE: 02-05-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

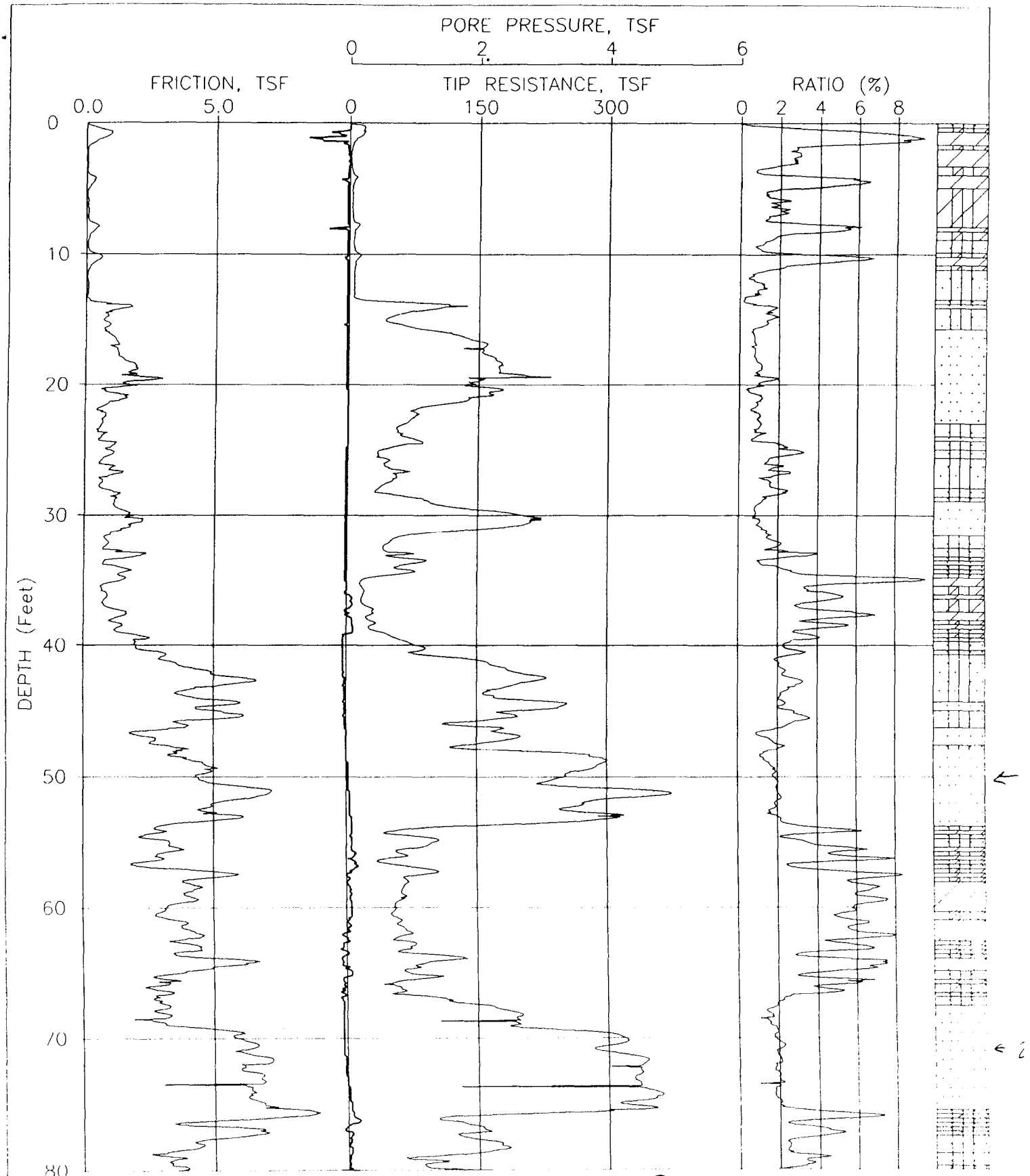
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG127 DATE: 02-08-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 1

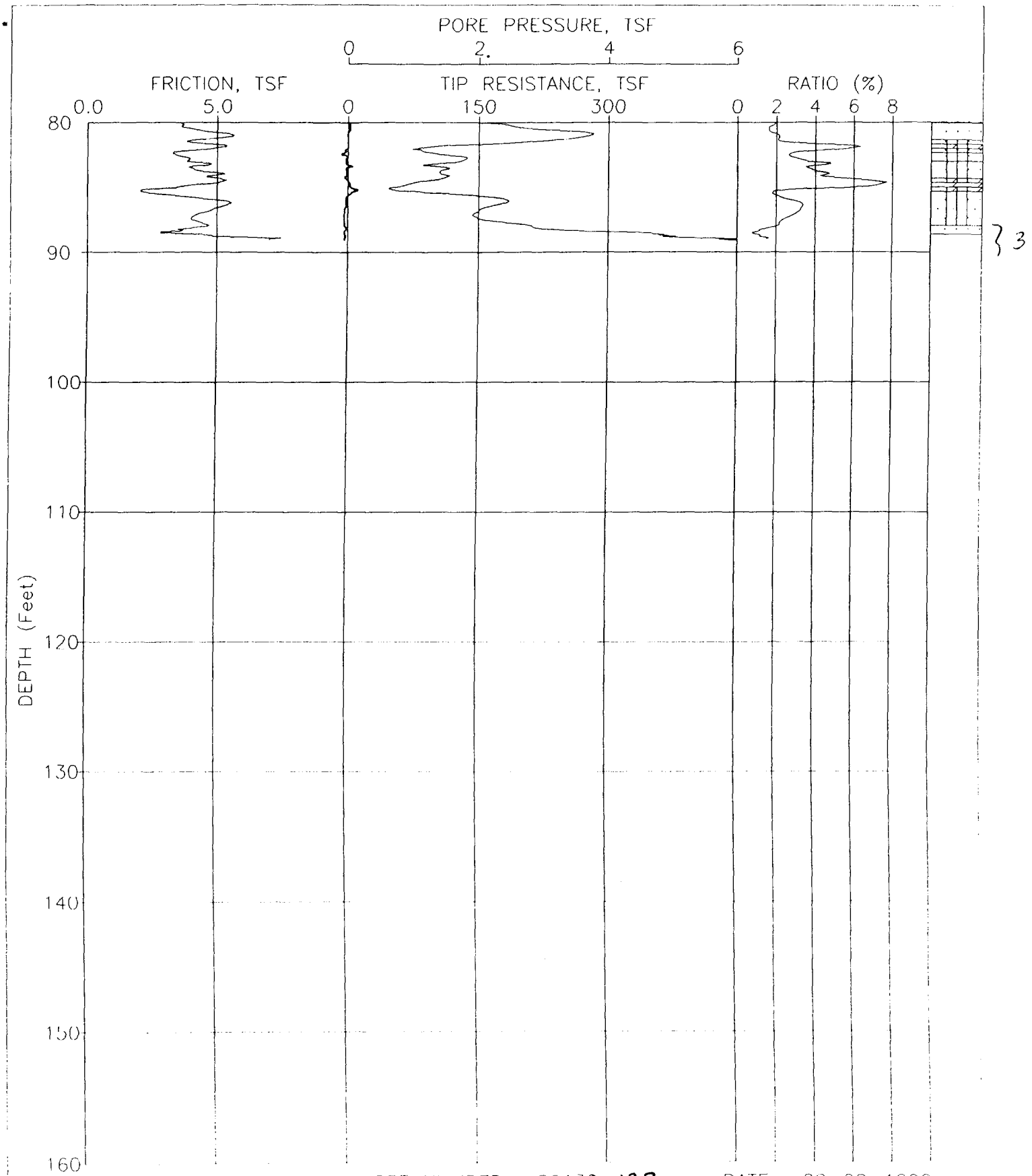
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG ~~30~~ 133 DATE: 02-08-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2

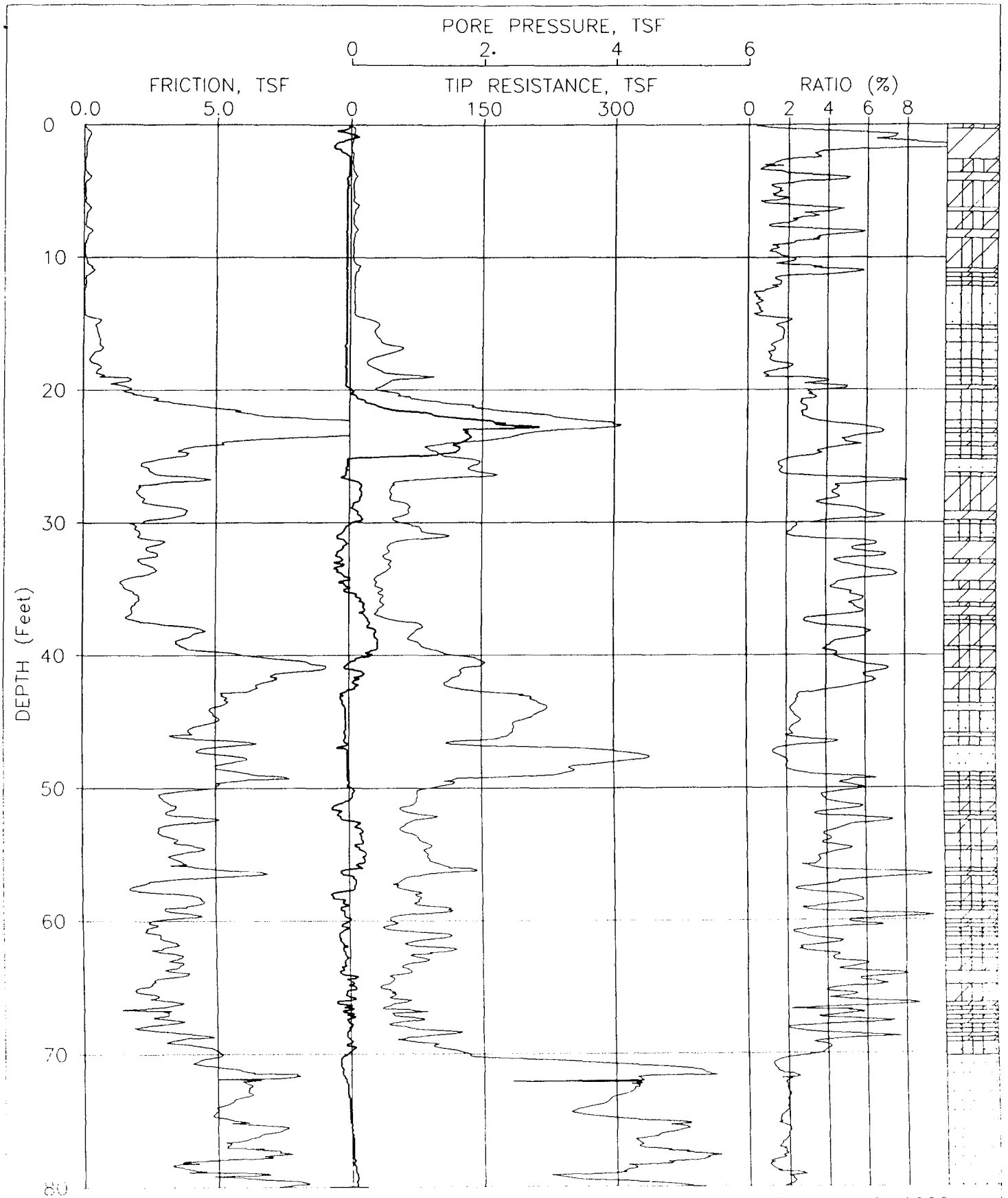
FUGRO GEOSCIENCES, INC



JOB NUMBER: 99-0272 CPT NUMBER: SG1~~32~~ 133 DATE: 02-08-1999

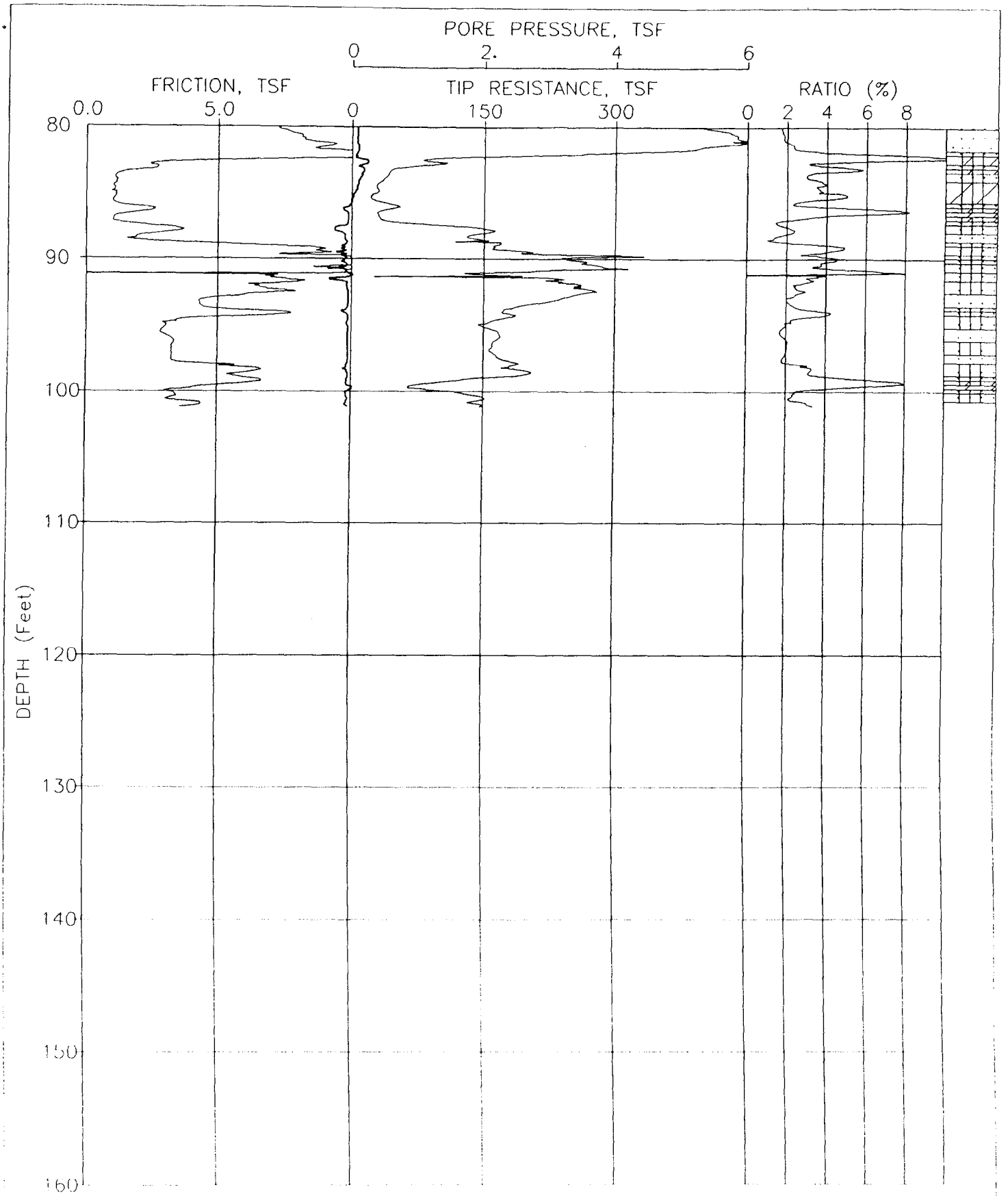
ELEVATION: 0.00 CONE NUMBER: E7 SCKEW835 PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG92 DATE: 02-09-1999

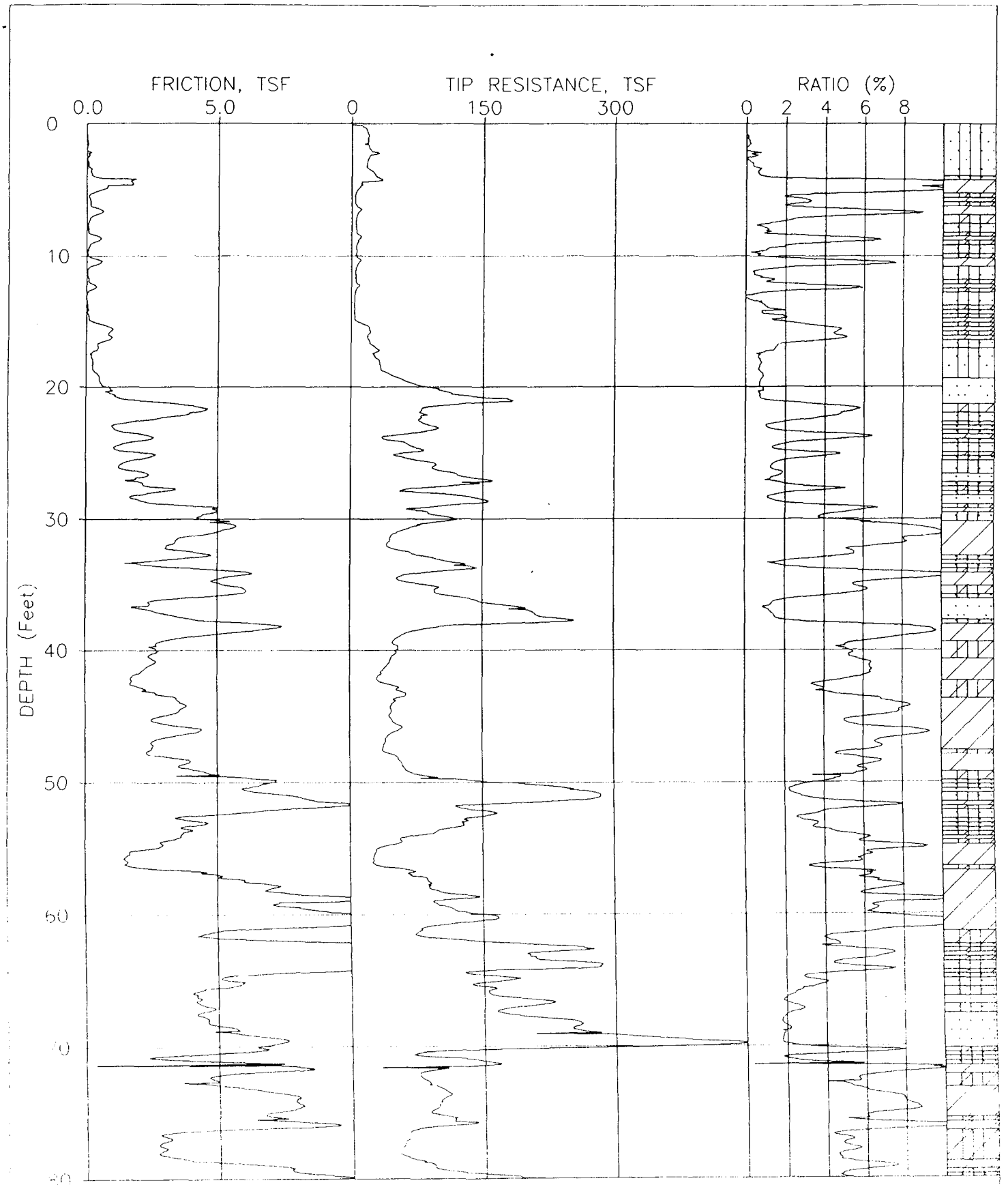
ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2



JOB NUMBER: 99-0272 CPT NUMBER: SG92 DATE: 02-09-1999

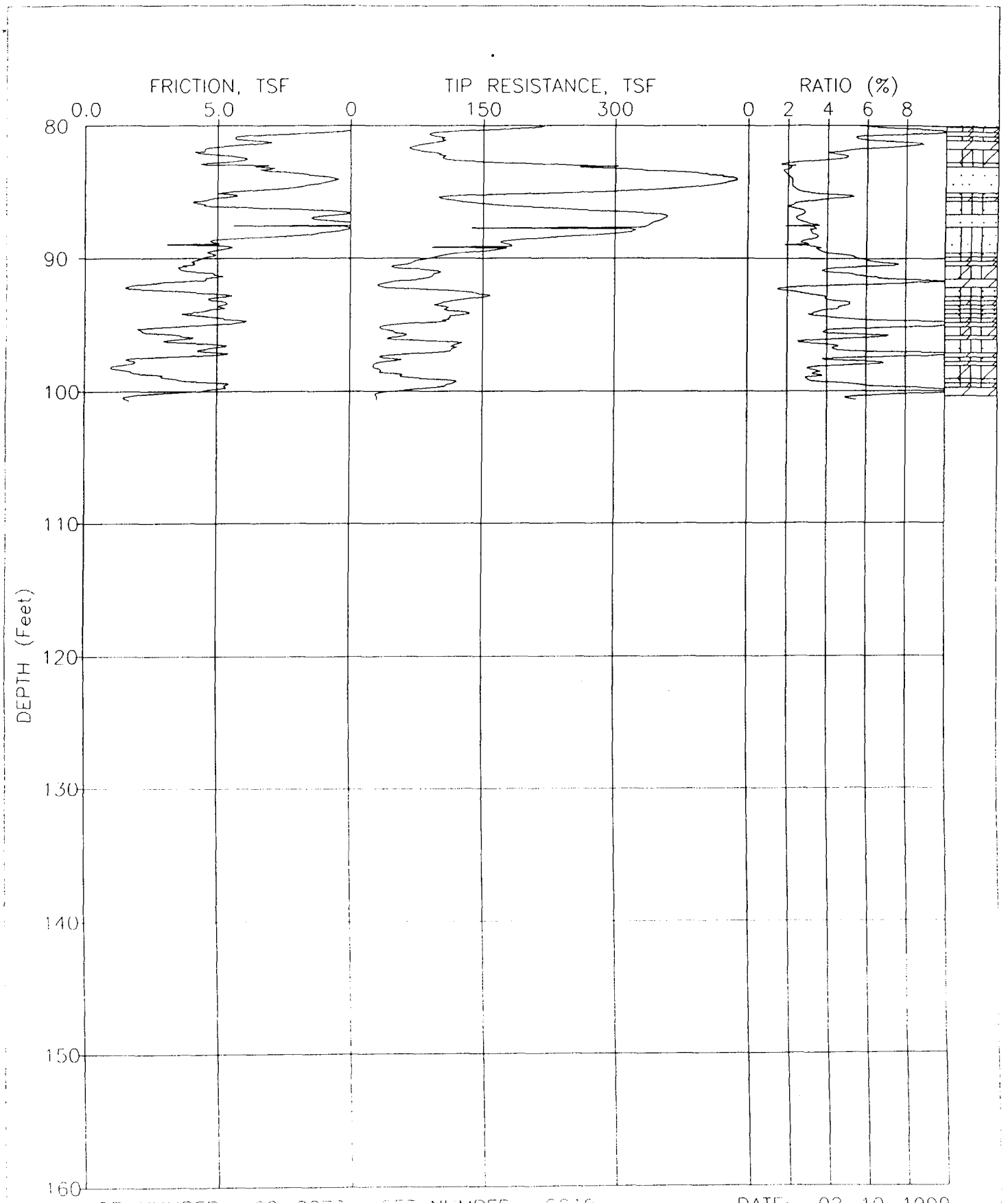
ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC



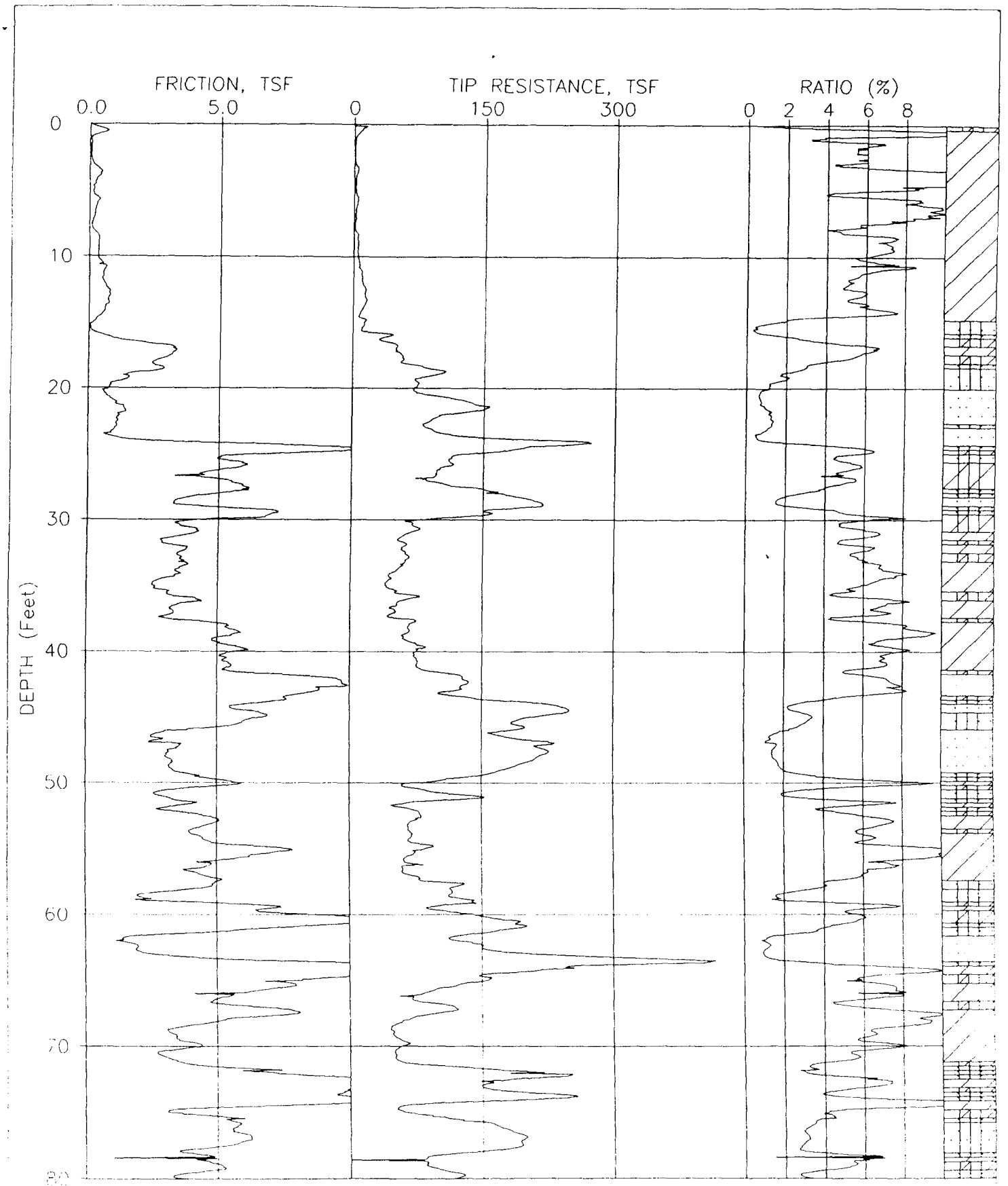
JOB NUMBER: 99-0272 CPT NUMBER: SG19 DATE: 02-10-1999

ELEVATION: 100 CONE NUMBER: F2 SCKFV866 PLATE: 1 OF 2



JOB NUMBER: 99-02 TEST NUMBER: SS19 DATE: 02-10-1999

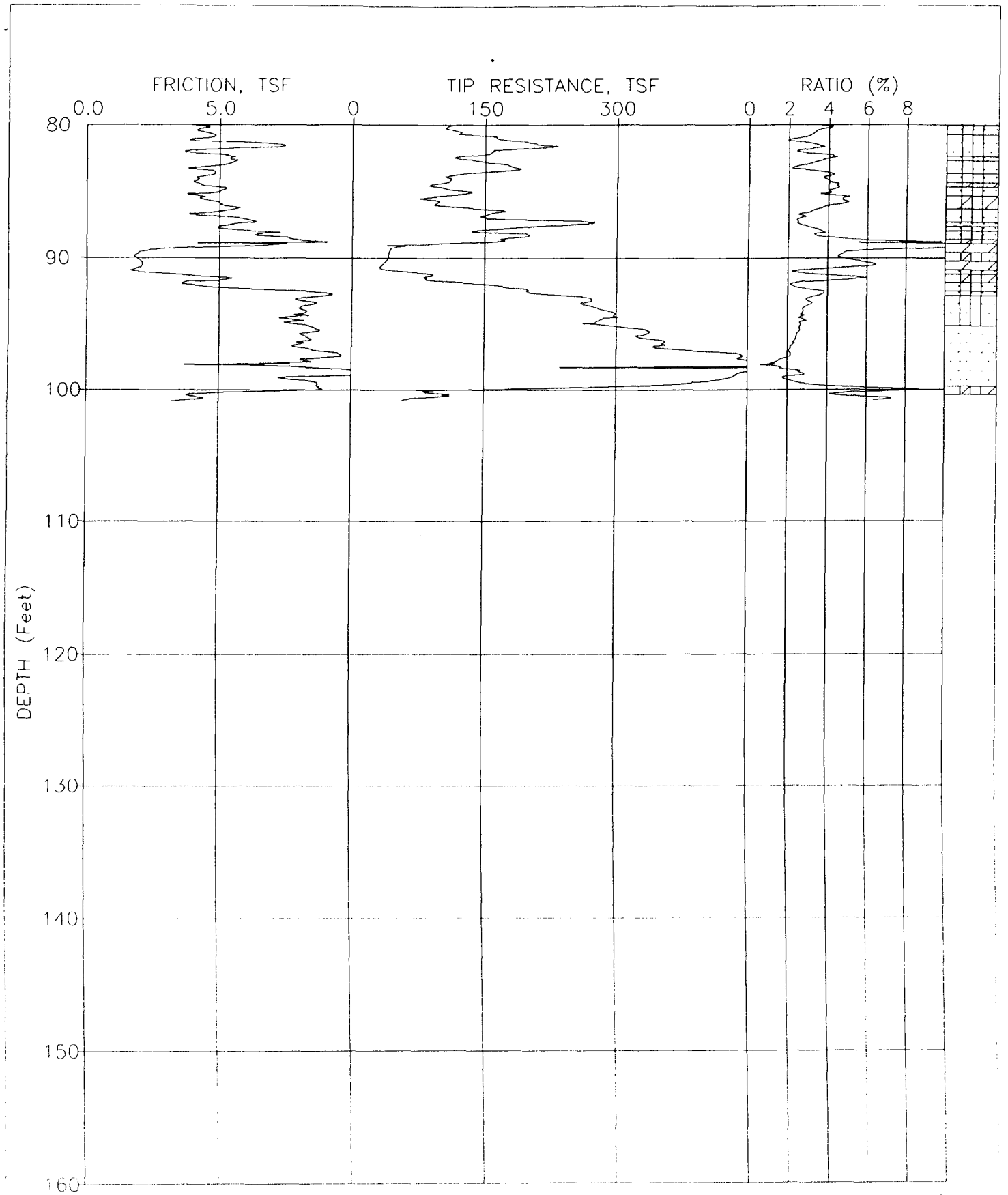
ELEVATION: 0.00 FILE NUMBER: ETSCKEV866 PLATE: 2 OF 2



JOB NUMBER: 99-0272 CPT NUMBER: SG63 DATE: 02-11-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKFV845 PLATE: 1 OF 2

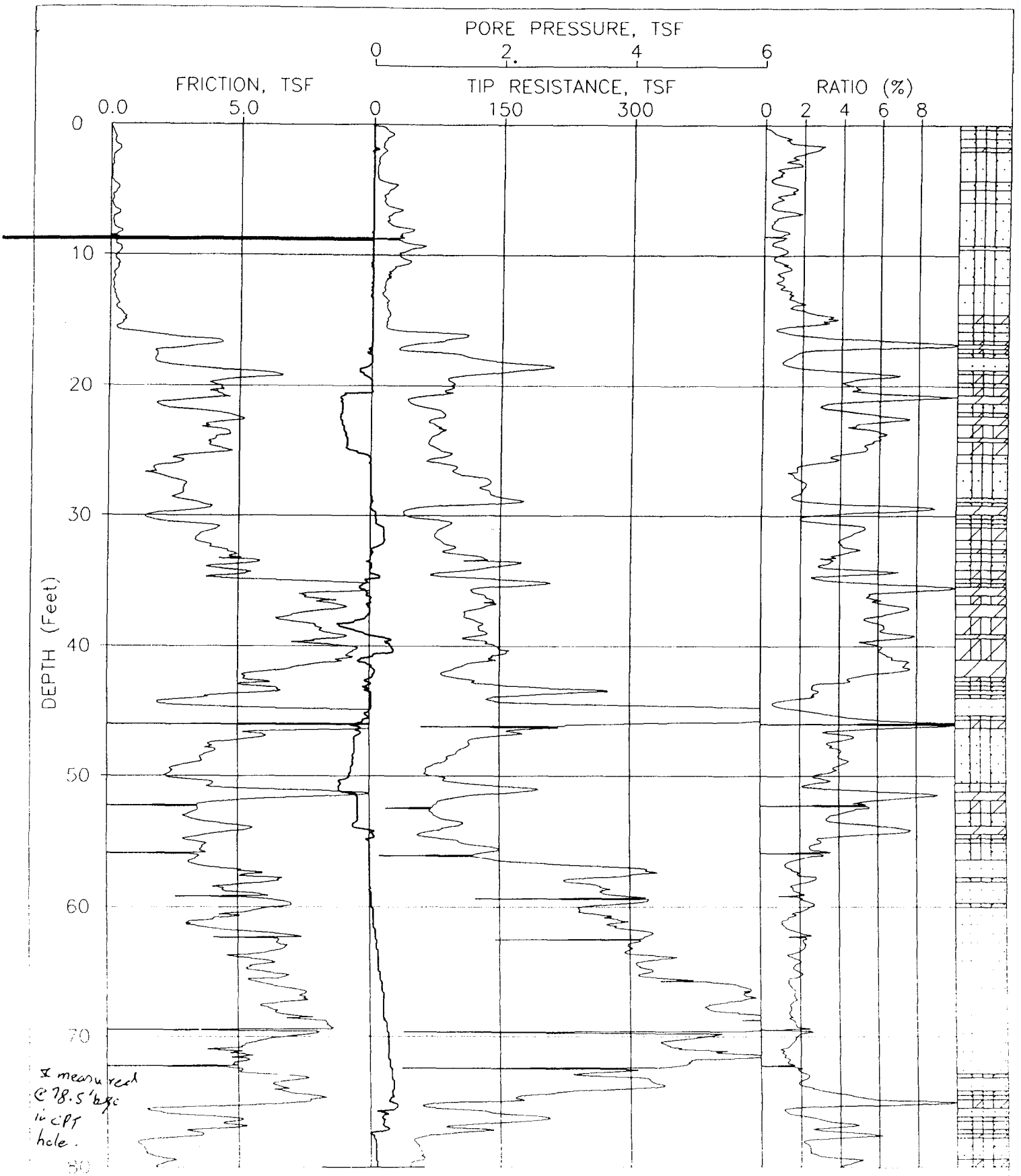
FUGRO GEOSCIENCES, INC.



JOB NUMBER: 99-0272 CPT NUMBER: SG63 DATE: 02-11-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKFV845 PLATE: 2 OF 2

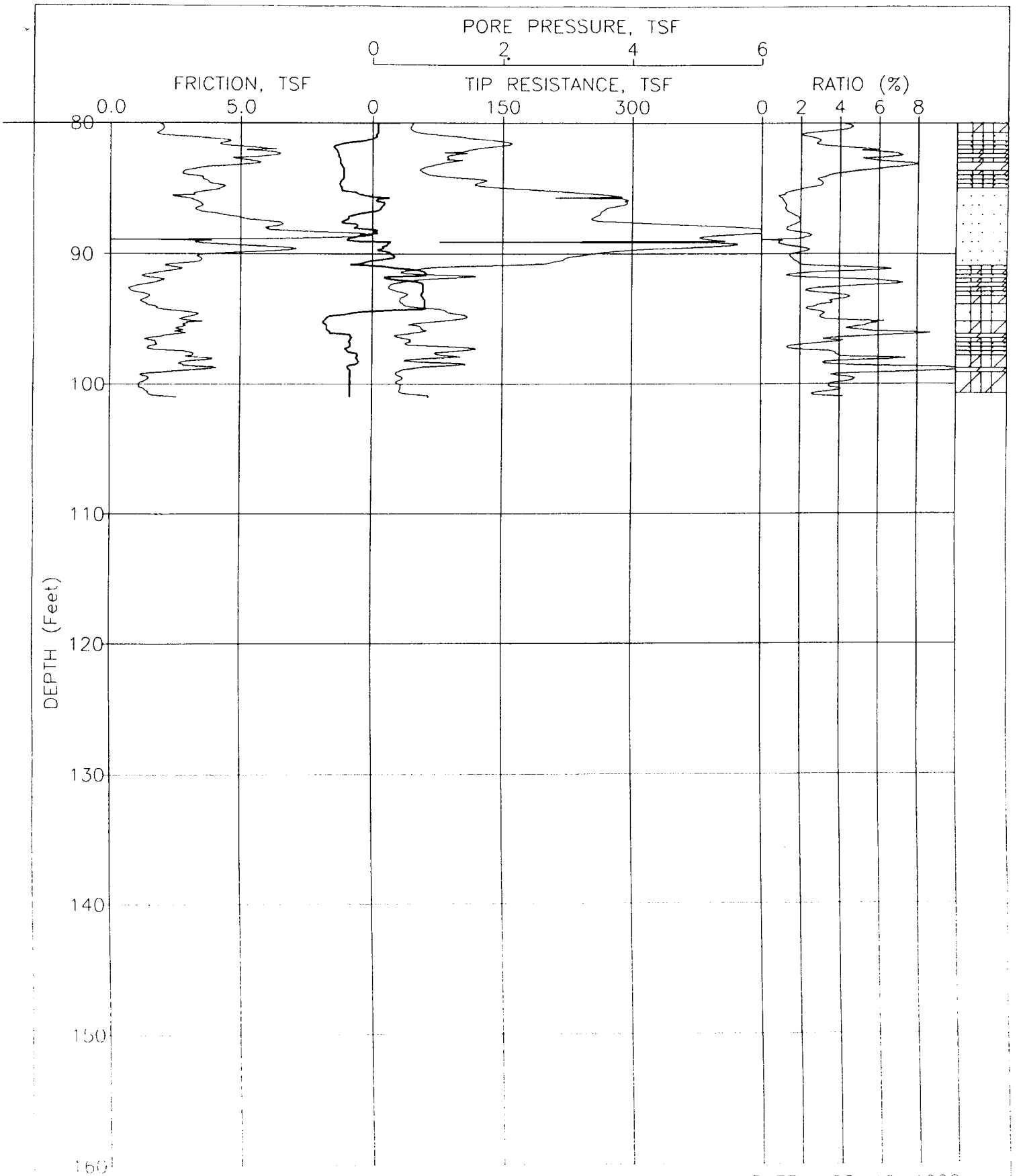
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0072 CPT NUMBER SG148A DATE 02-12-1999

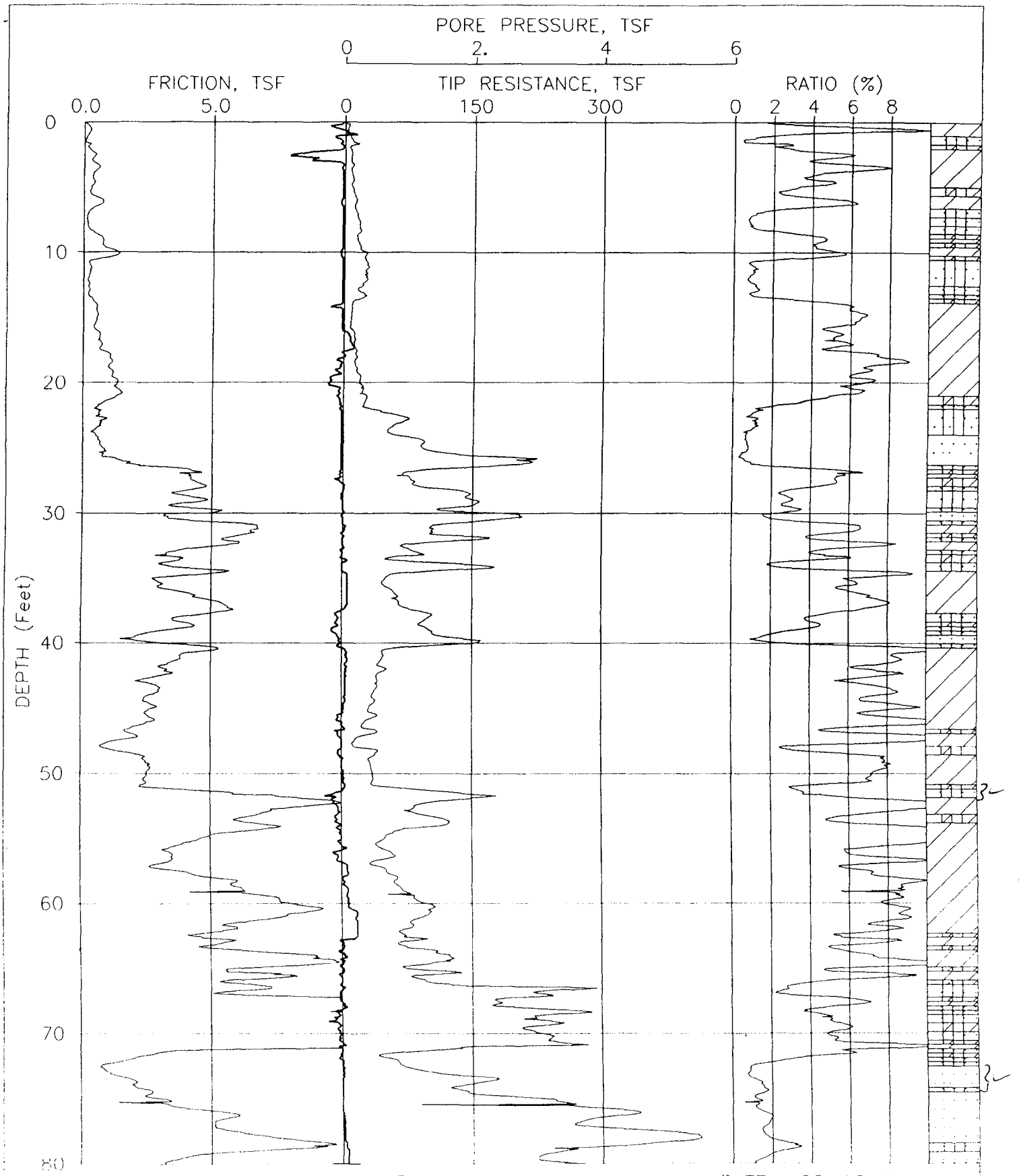
ELEVATION: 0.00 CONE NUMBER: F7 5CKEW835 PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG148A DATE: 02-12-1999

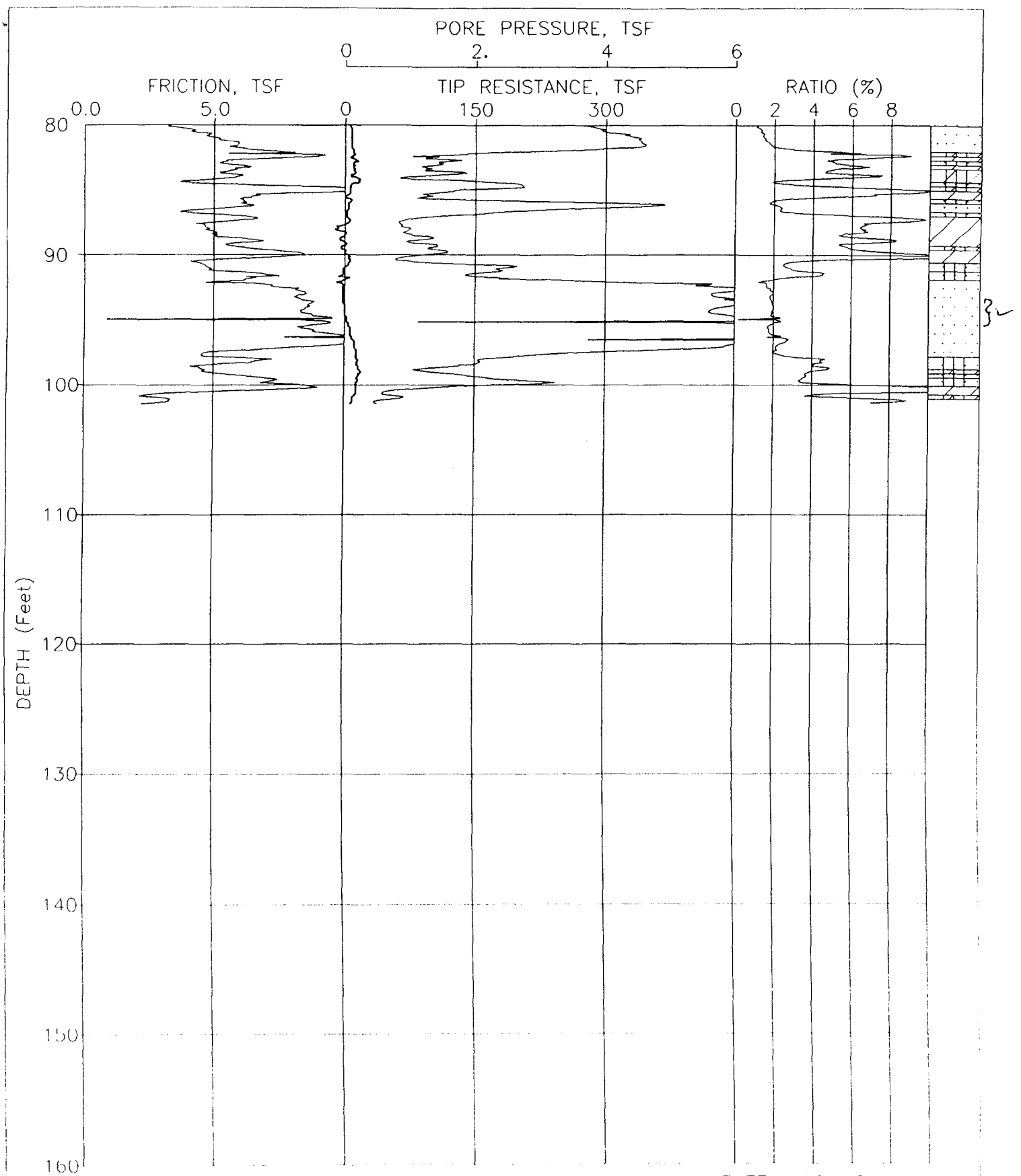
ELEVATION: [illegible] CONE NUMBER: FT.SCKEW835 PLATE: 2 OF 2



JOB NUMBER: 99-0272 CPT NUMBER: SG15 DATE: 02-16-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKFW835 PLATE: 1 OF 2

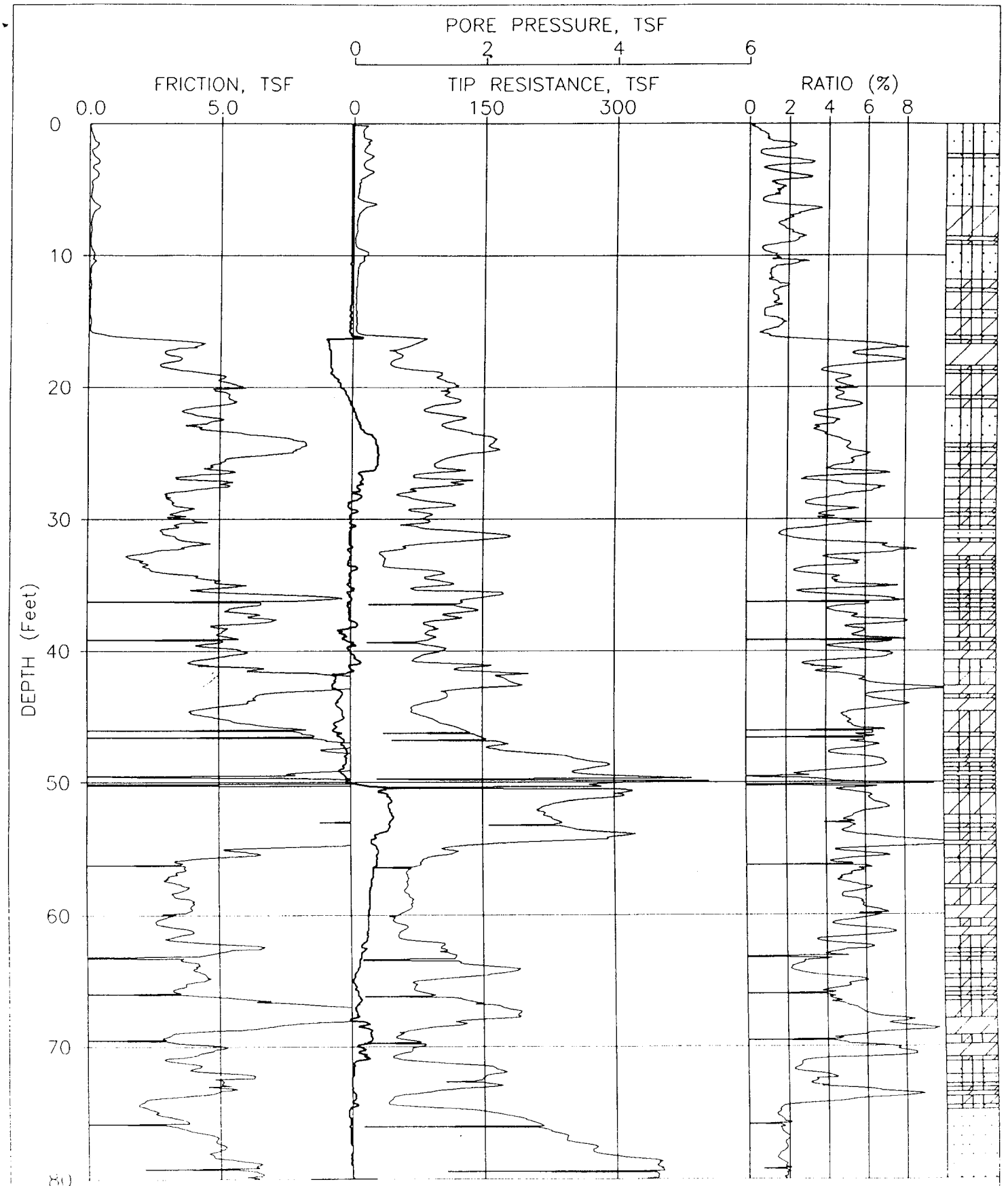
FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG15 DATE: 02-16-1999

ELEVATION: 100 CONE NUMBER: F7.5CKEW835 PLATE 2 OF 2

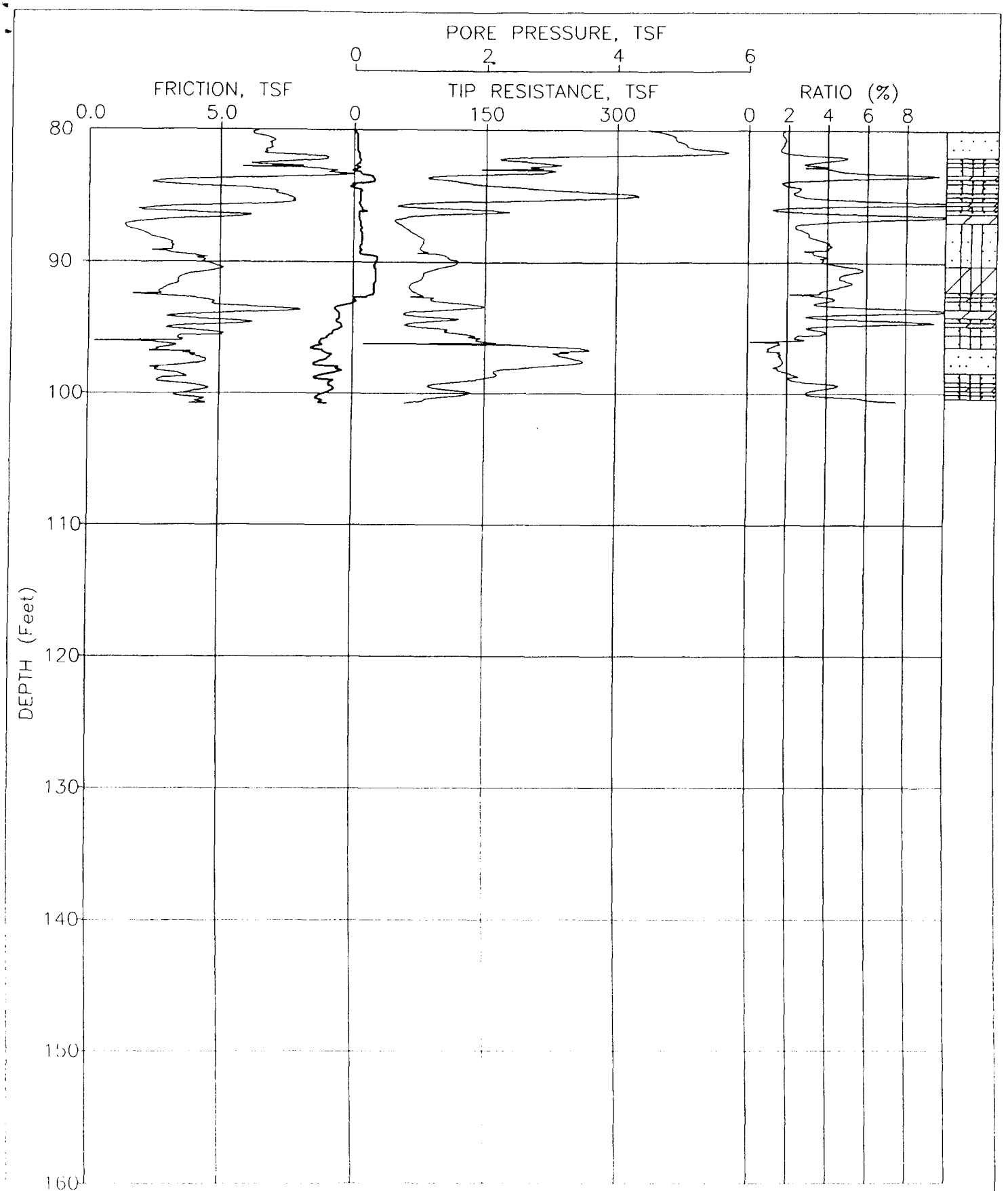
FUGRO GEOSCIENCES, INC



JOB NUMBER: 99-0272 CPT NUMBER: SG137 DATE: 02-12-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0272 CPT NUMBER: SG137 DATE: 02-12-1999

ELEVATION: 0.00 CONE NUMBER: F7.5CKEW835 PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC