IT Corporation
3347 Michelson Drive, Suite 200
Irvine, CA 92612-1692
Tel. 949.261.6441
Fax. 949.474.8309
A Member of The IT Group

M60050.000576
MCAS EL TORO
SSIC #5090.3

the IT group

July 28, 1999

Ms. Bozier H. Demaree
Contracting Officer
Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway
San Diego, CA 92132-5187

Attention: Ms. Lynn Hornecker

Subject: CPT Logs and Sample Analysis Results from IRP Site 1
Contract N68711-93-D-1459, Delivery Order 075,
IRP Sites 2, 17 and 24, MCAS El Toro, California

Dear Ms. Hornecker:

Attached is a copy of the cone penetration testing logs and the analytical data for the perchlorate and EPA 8270 samples that were collected during the CPT work. As we have previously discussed, the results for the samples were below detection limits.

A copy of this data has also been provided to Crispin Wanyoike at Earth Tech for his use.

If you have any questions or need additional information please call or e-mail me.

Sincerely,

William Sedlak
Sr. Project Manager

cc: L. Holloway, COTR
C. Wanyoike, Earth Tech
OHM PMO File
Project File, B.01

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

OHM TRANSMITTAL/DELIVERABLE RECEIPT

CONTRACT N68711-93-D-1459 **DOCUMENT CONTROL NO: SW7051**

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Bozier H. Demaree, Code 02R1.BD
1220 Pacific Highway
San Diego, California 92132-5190

Date: 30-Jul-99

D.O.: 75

Location: MCAS EL TORO

FROM: Stewart Bornhoft, Program Manager

Edwin G. Bond, Contracts Manager

DESCRIPTION OF ENCLOSURE: **CPT Logs and Sample Analysis Results from IRP Site 1, IRP Sites 2, 17 and 24, dated July 28, 1999**

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

VERSION: FINAL **REVISION** 0

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

SCHEDULED DELIVERY DATE: 30-Jul-99 **ACTUAL DELIVERY DATE:** 30-Jul-99

NUMBER OF COPIES SUBMITTED TO THE NAVY: 1/O, 3/C, 2/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)	
L. Hornecker, 5BME.LH (1C/1E)	Chron (1C)	
G. Tinker, 05BM.GT (1C)	W. Sedlak, Irv (1C/1E)	

Date/Time Received: _____ / _____

Doc Class: D-03

FUGRO GEOSCIENCES, INC.

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

July 6, 1999
Report Number 0303-0304

IT Corporation, Inc.
3347 Michelson Drive, Suite 200
Irvine, California 92612-1692

Attention: Mr. Bill Sedlak

REPORT FOR
CONE PENETRATION TESTING
AND RELATED SERVICES
MCAS, EL TORO
DELIVERY ORDER 075
SWDIV CONTRACT NO.: N68711-93-D-1459

Dear Mr. Sedlak:

Please find enclosed herewith the final results of the piezocone 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.

CPT #01c01 is presented twice in the final report. One plot will match the scaling of all other CPT's; the other plot uses exaggerated scales on the tip resistance and sleeve friction due to extremely dense soils.

Fugro Geosciences, Inc. 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.

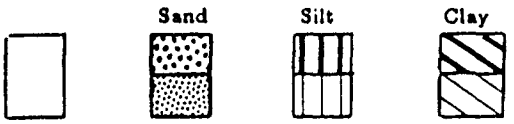
Recep Yilmaz
President

RY/mw

1 Diskette Enclosed

Key to Soil Classification and Symbols

SOIL TYPE
(Shown in Symbol Column)



Fill | Sandy | Silty | Clayey

Predominant type shown heavy

SAMPLE TYPE
(Shown in Samples Column)

Undisturbed | Rock Core | Split Spoon | No Recovery

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 (P1 < 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 P1 $\geq$ 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.

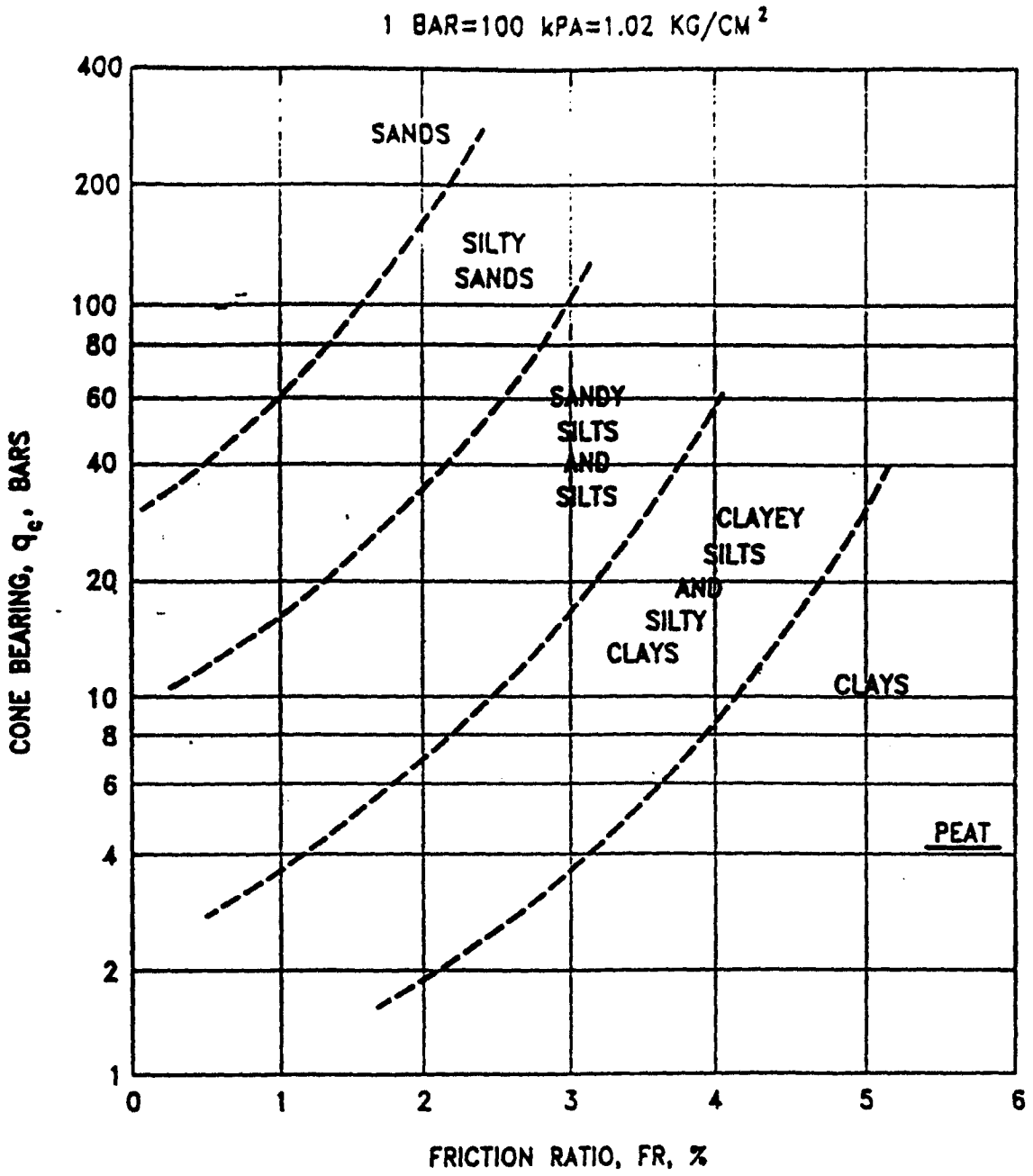
TERMS CHARACTERIZING SOIL STRUCTURE

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

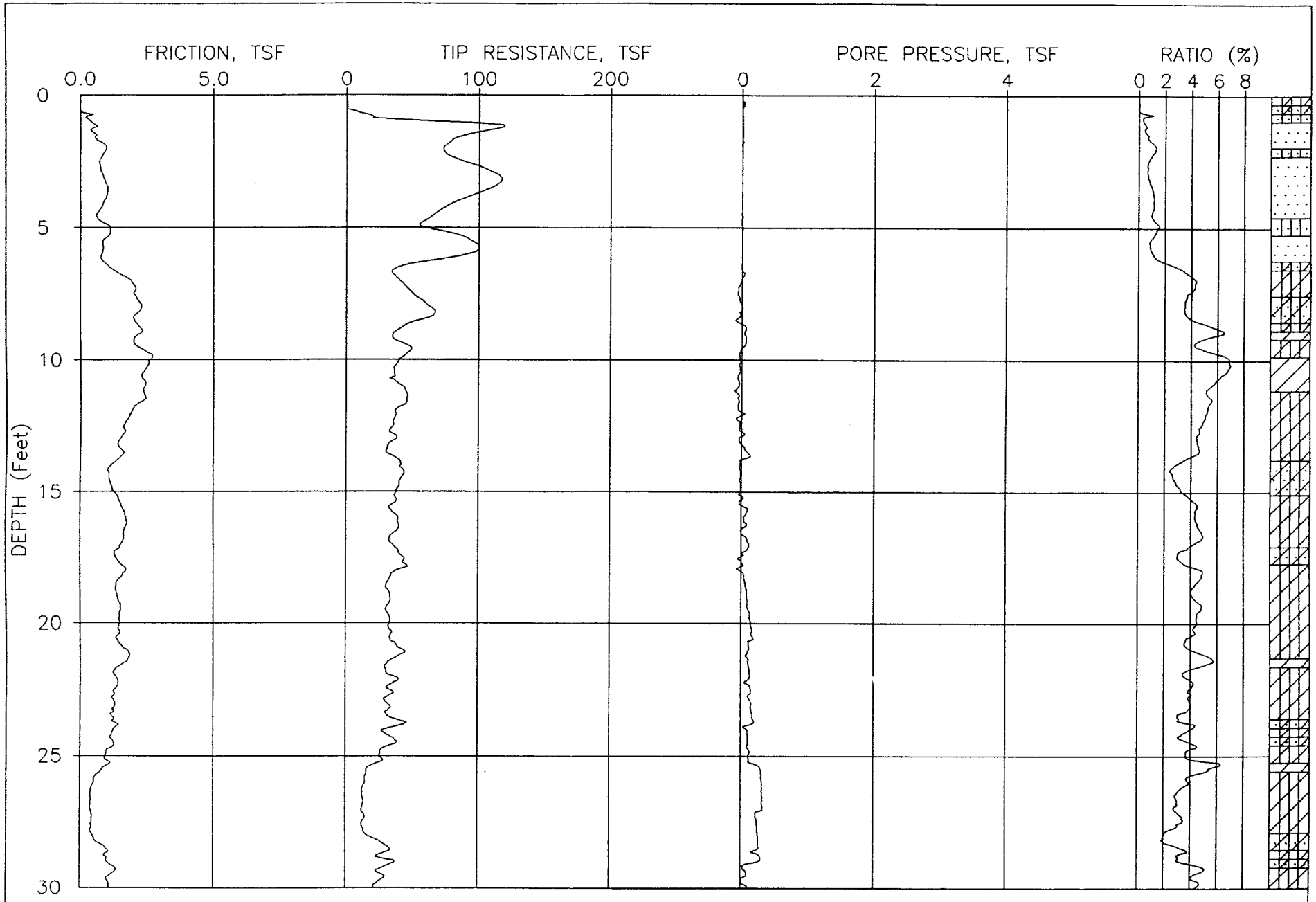
Slickensided: having inclined planes of weakness that are slick and glossy in appearance.

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: 99-0304

CPT NUMBER: 2

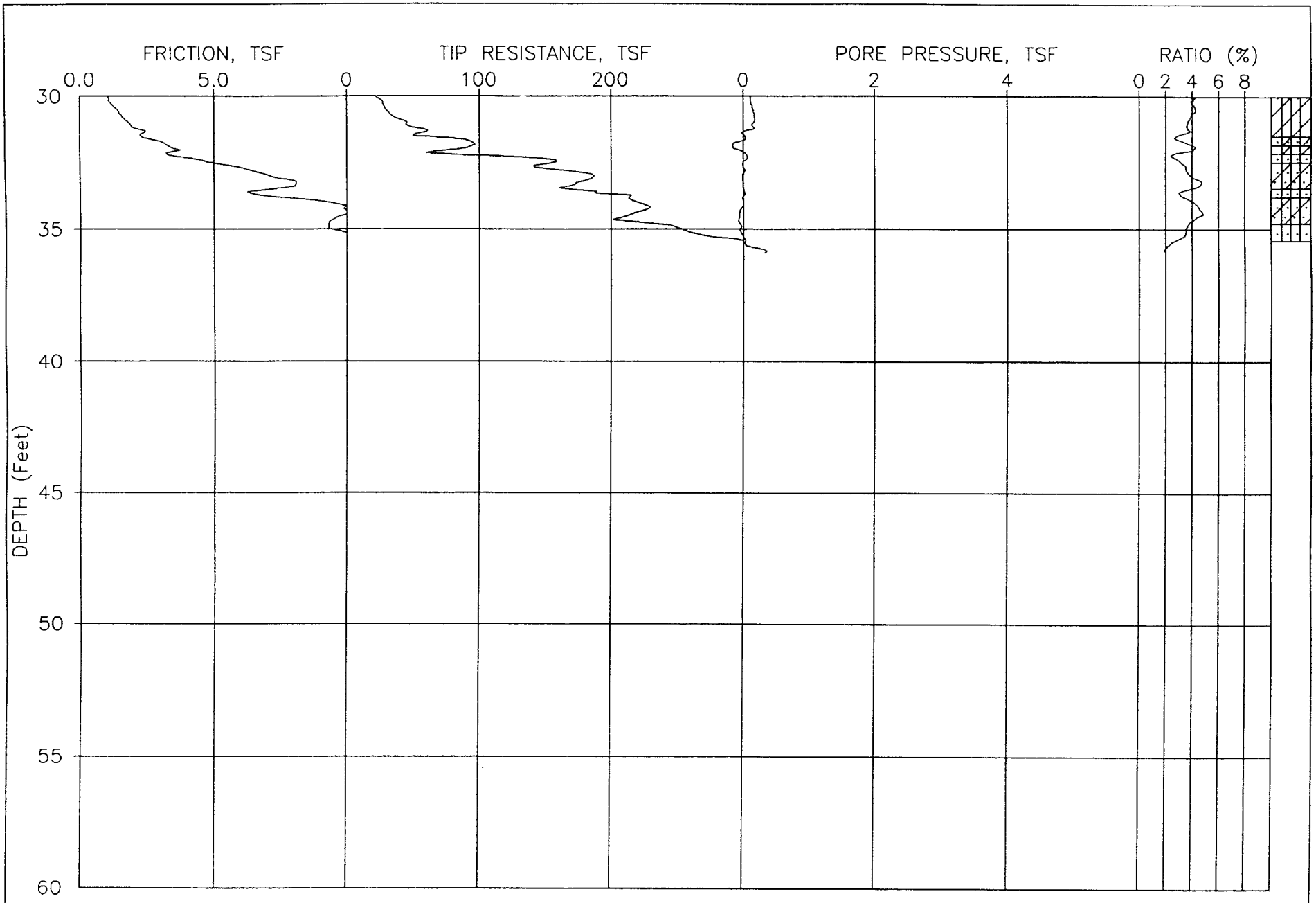
DATE: 06-24-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 2

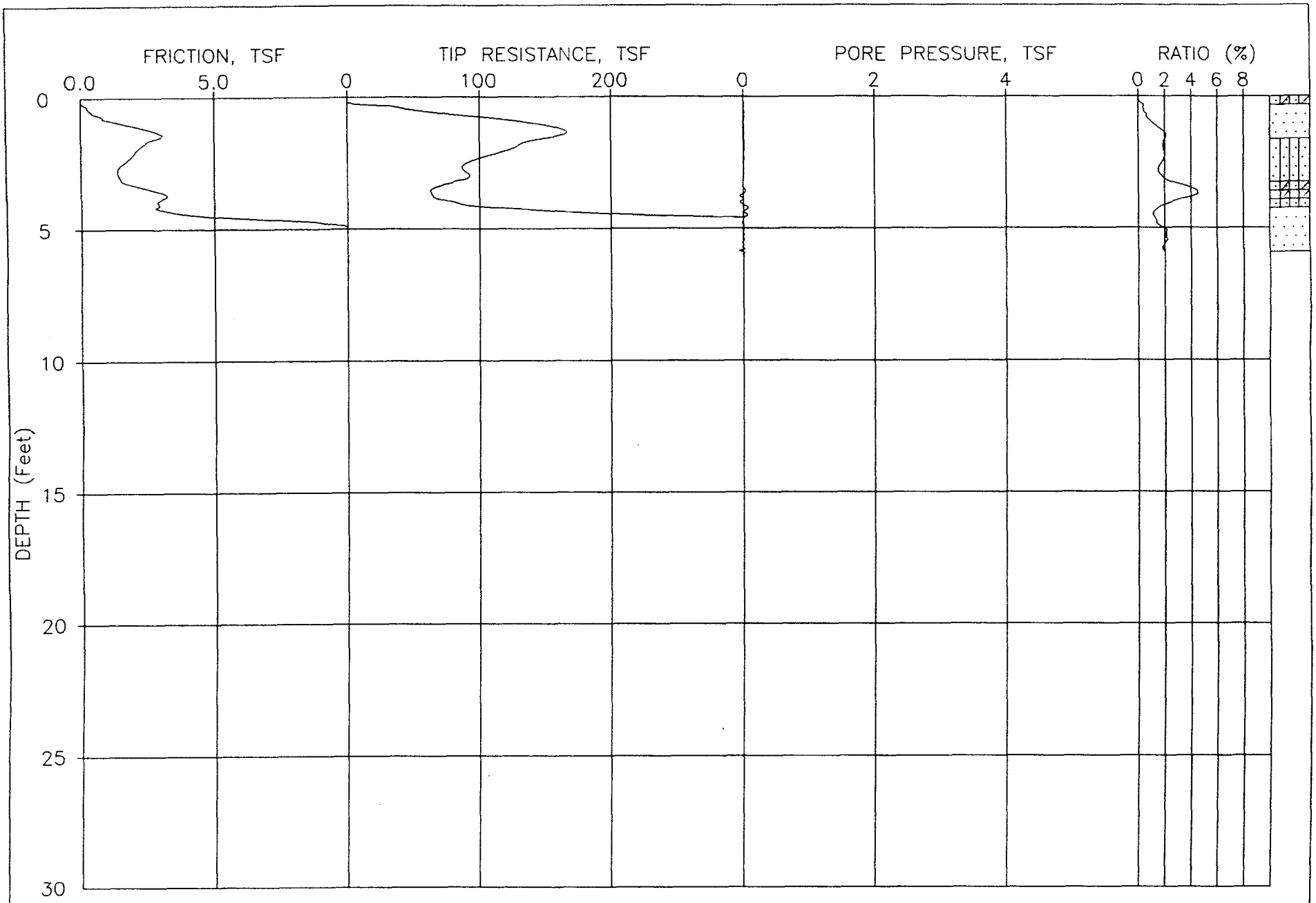
DATE: 06-24-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C04

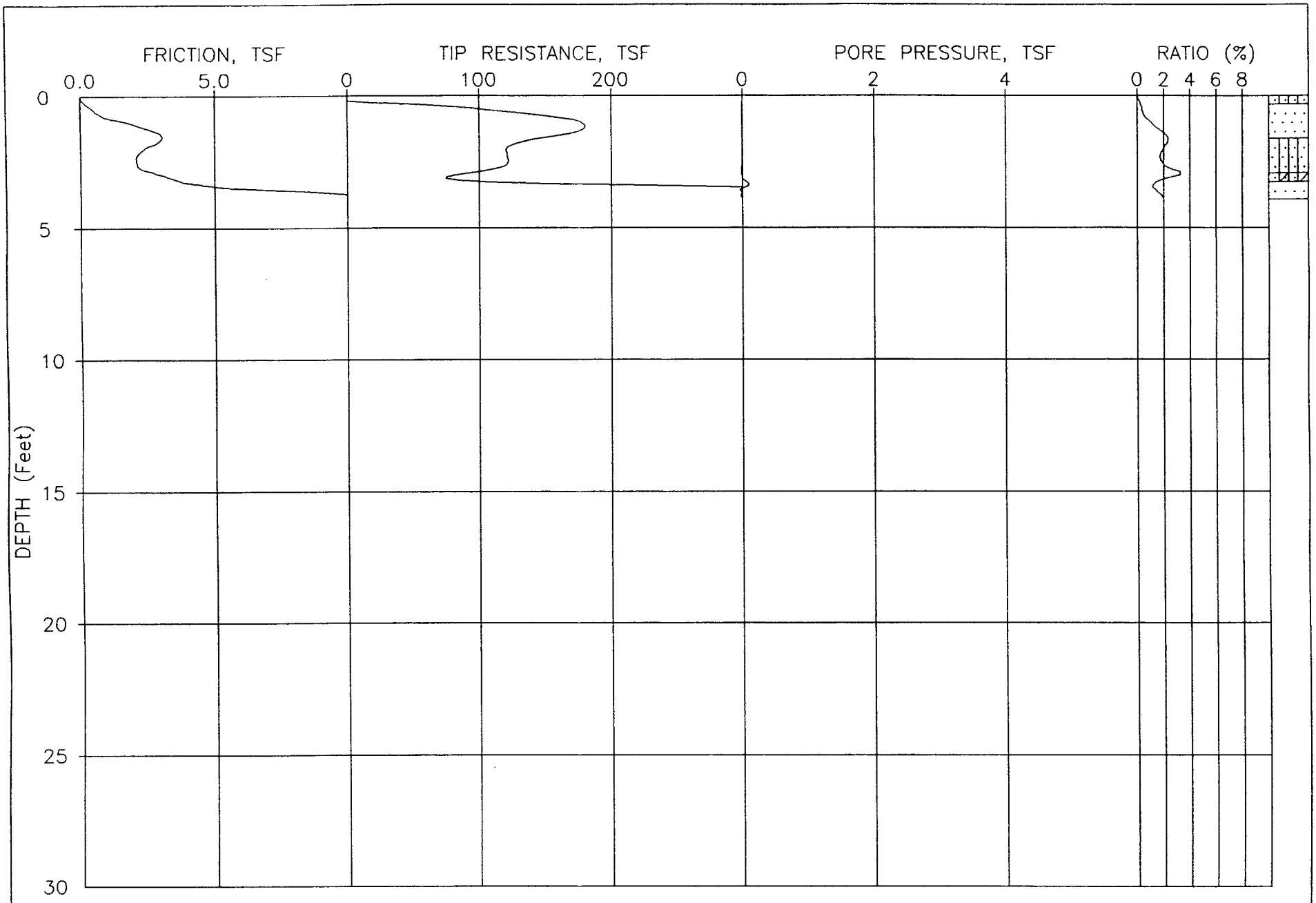
DATE: 06-24-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 1

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C04A

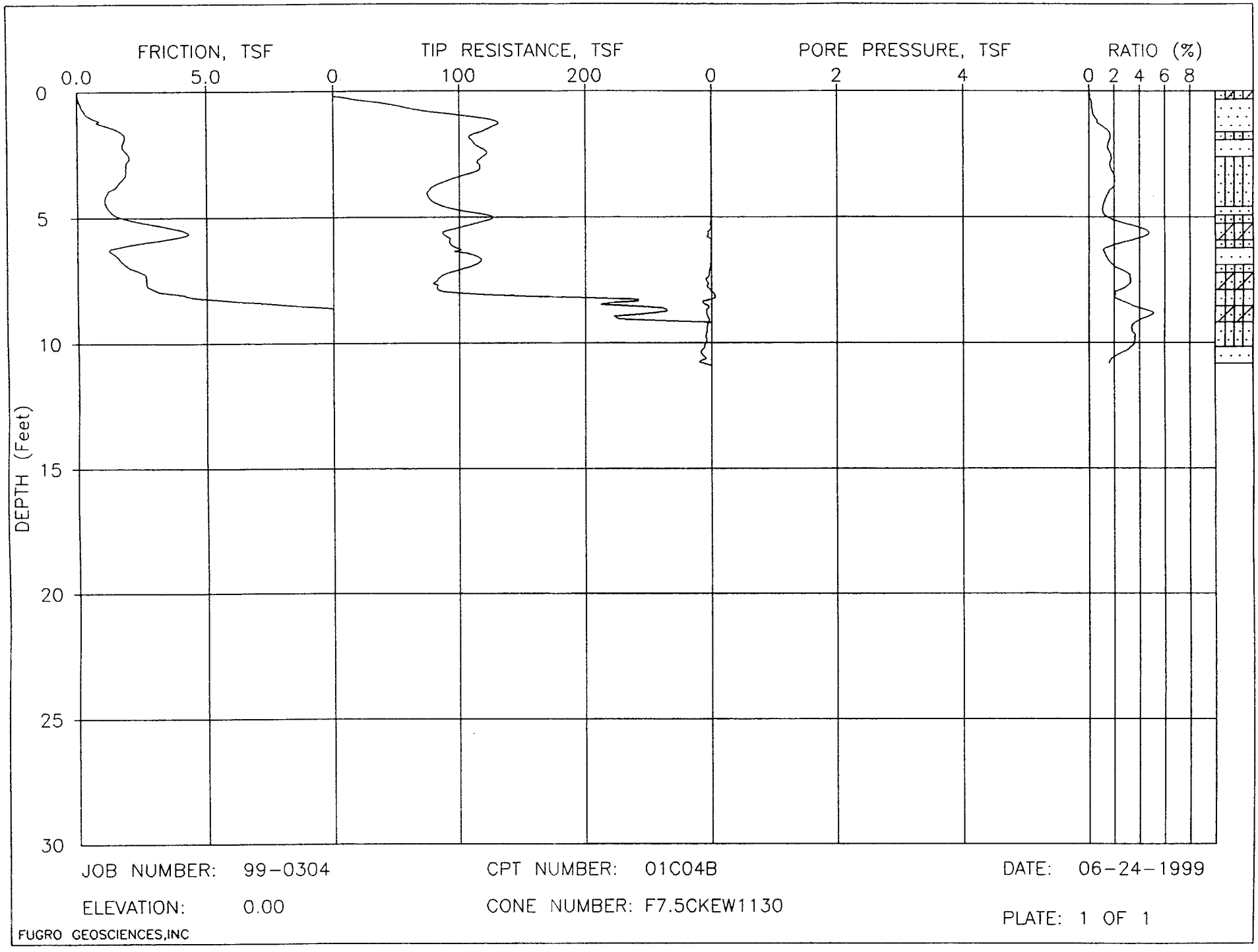
DATE: 06-24-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 1

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C04B

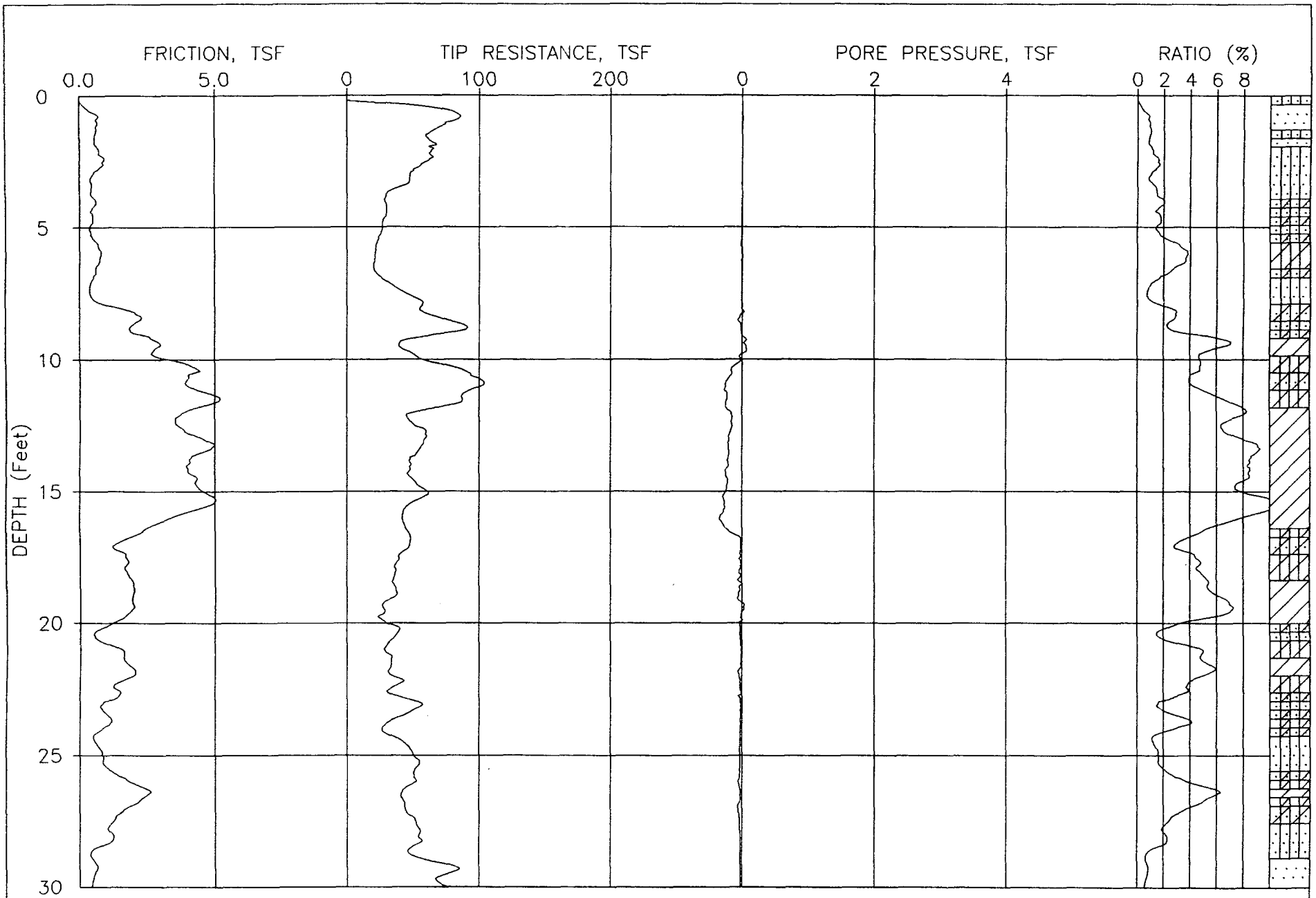
DATE: 06-24-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 1

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C05

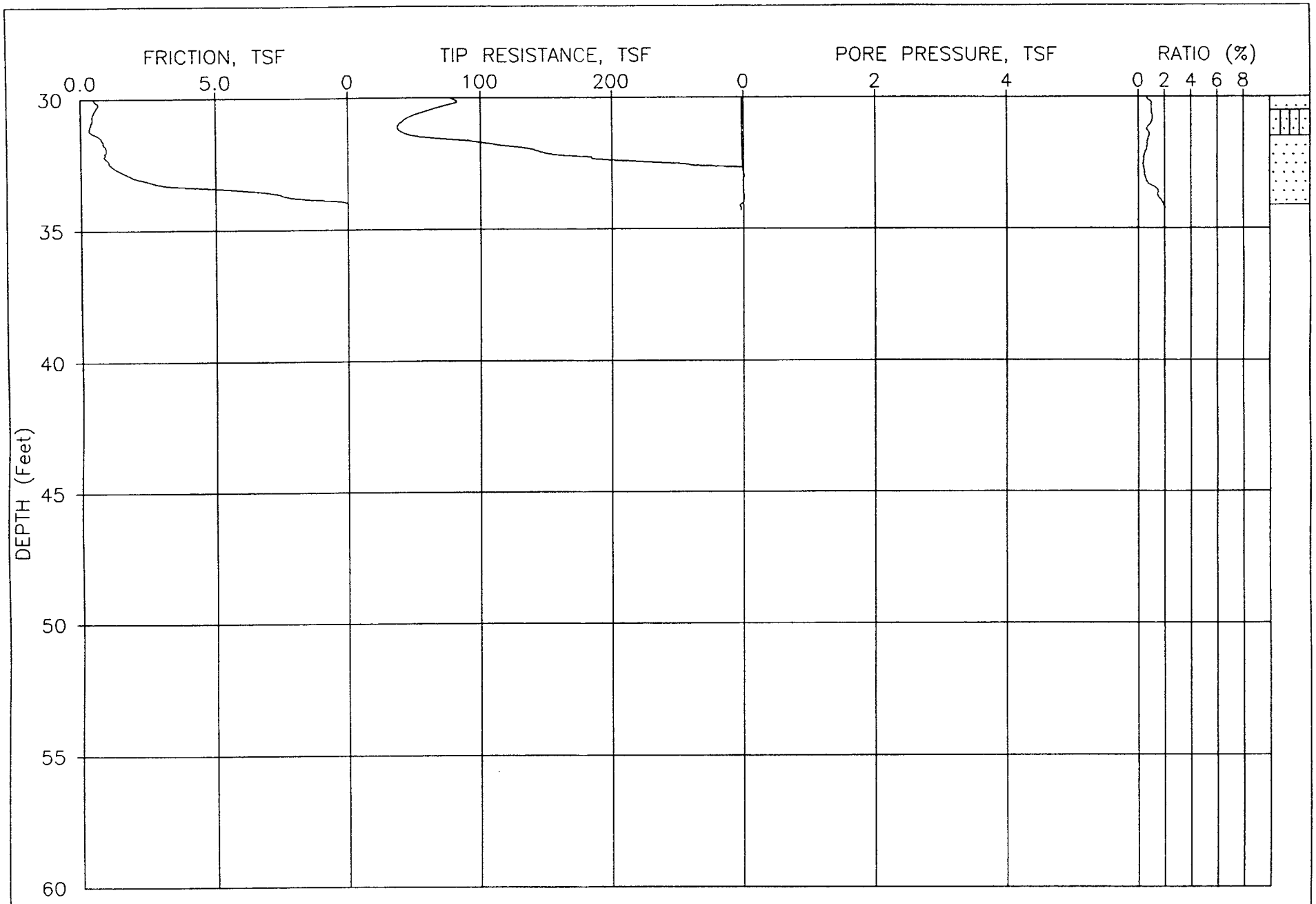
DATE: 06-24-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C05

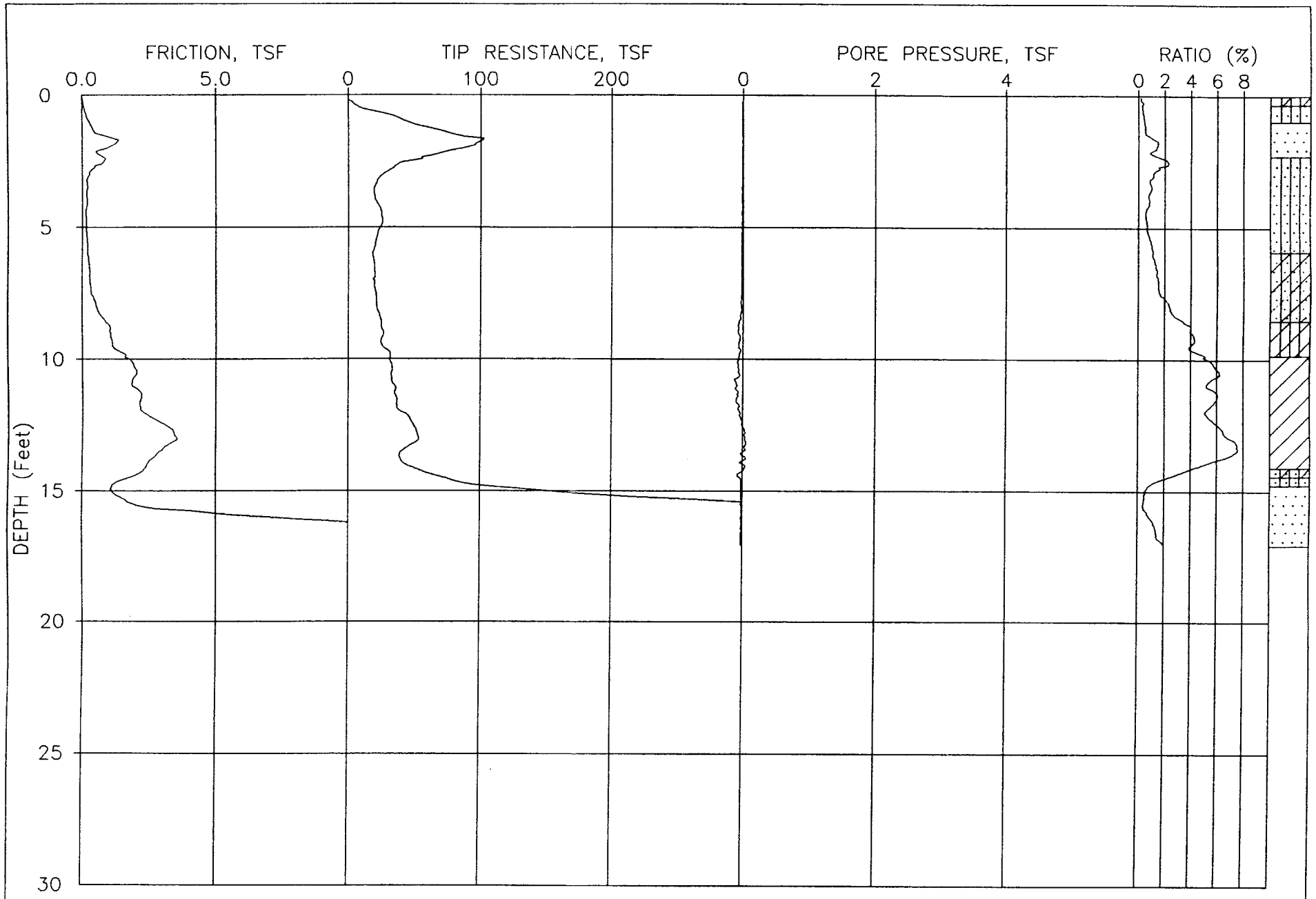
DATE: 06-24-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C06

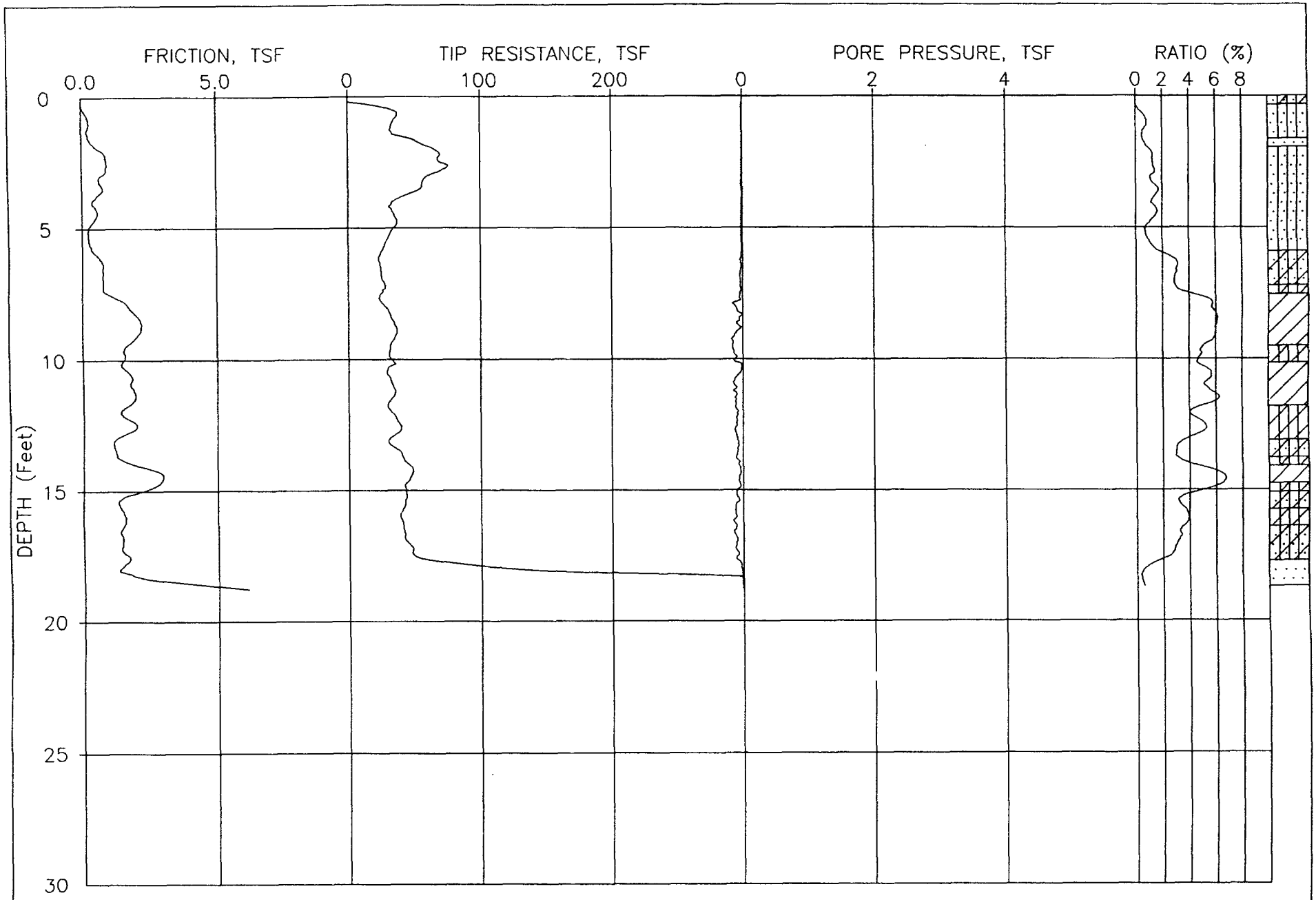
DATE: 06-25-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 1

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C06A

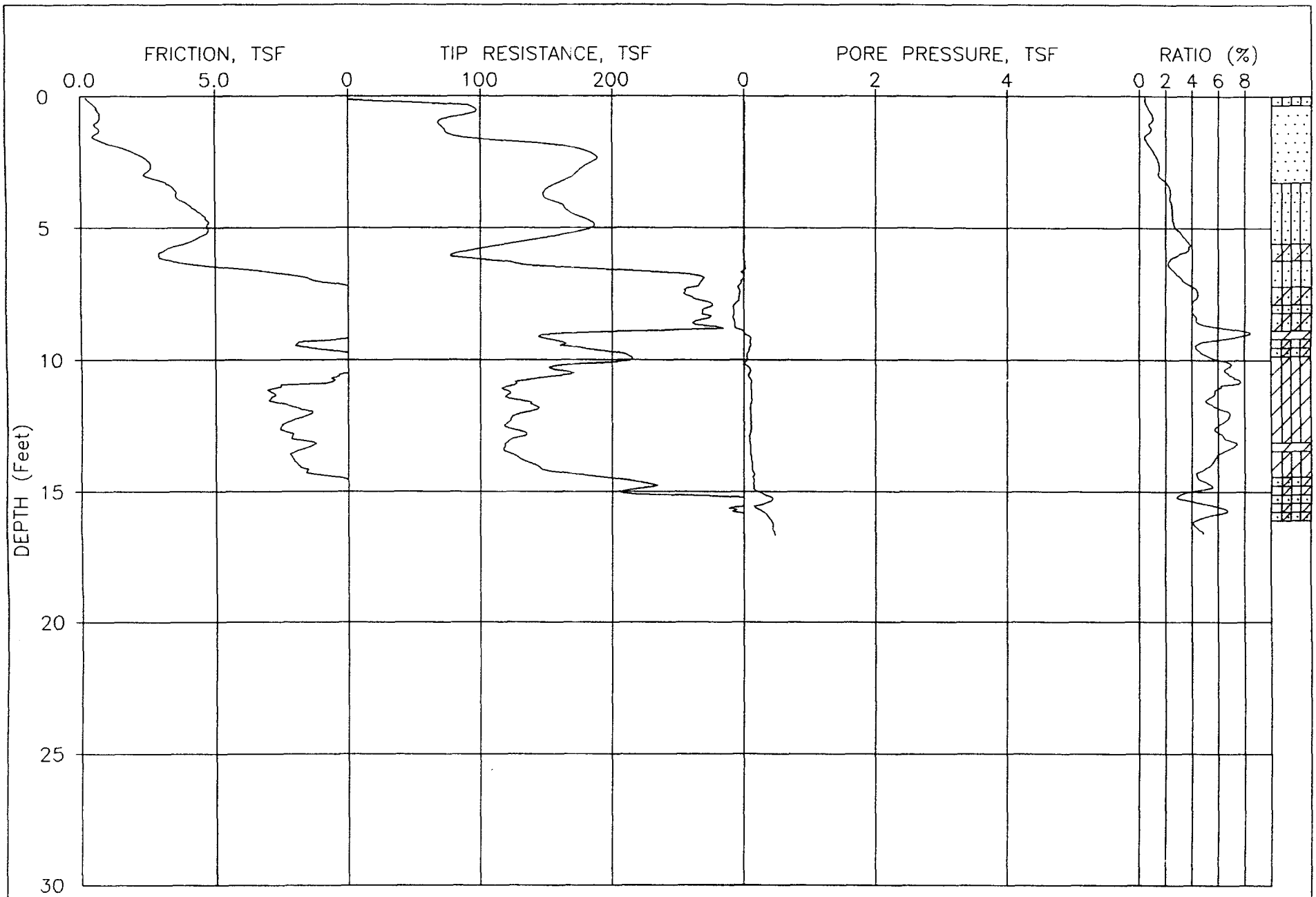
DATE: 06-25-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 1

FUGRO GEOSCIENCES,INC



JOB NUMBER: 99-0304

CPT NUMBER: 01C07

DATE: 06-25-1999

ELEVATION: 0.00

CONE NUMBER: F7.5CKEW1130

PLATE: 1 OF 1

FUGRO GEOSCIENCES,INC

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
222575
FORM 0019 REV. 2-97

PROJ. / LAB COORDINATOR: L. BIENKOWSKI	LAB COORDINATOR'S PHONE: 949-660-7537	LAB COORDINATOR'S FAX: 949-475-5433	LABORATORY SERVICE ID:	LABORATORY CONTACT: COLUMBIA	MAIL REPORT (COMPANY NAME): IT GROUP
PROJECT NAME: EL TORO	PROJECT LOCATION: EL TORO DO-85	PROJECT NUMBER: 18793	LABORATORY PHONE: 408-746-9700	LABORATORY FAX: BRANCHES TRONCALES	RECIPIENT NAME: DUAYNE ISHIDA
PROJECT CONTACT: L. BIENKOWSKI	PROJECT PHONE NUMBER: —	PROJECT FAX: —	LABORATORY ADDRESS: 3334 VICTOR COURT	ADDRESS: 3347 MICHELSON DRIVE	
PROJECT ADDRESS: —	CITY, STATE AND ZIPCODE: —	CLIENT: SCUDIV	CITY, STATE AND ZIPCODE: SANTA CLARA, CA, 95054	CITY, STATE AND ZIPCODE: IRVINE CA 92612	
PROJECT MANAGER: BILL SEDLAK	PROJECT MANAGER'S PHONE: 949-261-6441	PROJECT MANAGER'S FAX: 949-475-5433			

Item	Sample Identifier	Matrix	1999 Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: PARC/ORGANIC	Comments
1	18793-595	SOIL	6-25	1355	—	1	III	5DAY	X	
2	18793-596	S	6-25	1435	—	1	III	5DA	X	
3										
4										
5										
6										
7										
8										
9										
10										

SAMPLES COLLECTED BY: C. PARRISH
COURIER AND AIR BILL NUMBER: FED-X 3557049705
COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
[signature]		6/25/99		

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type: G	C	F	QC
1.02-CPT-7 2.5-3	X			
2.02-CPT-7 15.5-16	X			

Comments

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IT Corporation	**Service Request:**	S9901943
Project:	El Toro DO-75/18793	**Date Collected:**	6/25/99
Sample Matrix:	Soil	**Date Received:**	6/26/99

Perchlorate

Prep Method:	NONE	Units:	mg/Kg(ppm)
Analysis Method:	CADHS CLOR4METH	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
18793-595	S9901943-001	0.02	1	7/1/99	7/1/99	ND	U
18793-596	S9901943-002	0.02	1	7/1/99	7/1/99	ND	U
Method Blank	S990701-MB	0.02	1	7/1/99	7/1/99	ND	U

Approved By: PJT Date: 07/15/99

1A/020597p

COMPLETED

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
222574
FORM 0019 REV. 2-97

OHM's LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
J. BIENKOWSKI	949-660-7537	949-475-5433	99-4451	APCL	ITGROUP
PROJECT NAME: EL TORO	PROJECT LOCATION: EL TORO DO-75	PROJECT NUMBER: 18793	LABORATORY PHONE: 909-590-1828	LABORATORY FAX	RECIPIENT NAME: DWAYNE ISHIDA
PROJECT CONTACT: J. BENKOWSKI	PROJECT PHONE NUMBER: —	PROJECT FAX: —	LABORATORY ADDRESS: 13760 MAGNOLIA		ADDRESS
PROJECT ADDRESS: —	CITY, STATE AND ZIPCODE: —	CLIENT: SWDIV	CITY, STATE AND ZIPCODE: CHINO, CA.		CITY, STATE, AND ZIPCODE
PROJECT MANAGER: B. SEDLAK	PROJECT MANAGER'S PHONE: 949-261-6441	PROJECT MANAGER'S FAX: —			

Item	Sample Identifier	Matrix	Date 1997	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: EPA 8270								Comments
1	18793-595	S	6-25	1435	4°C	1	III	5DA	X								
2	18793-596	S	6-25	1435	4°C	1	III	5DA	X								
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

SAMPLES COLLECTED BY: C. PARRISH
COURIER AND AIR BILL NUMBER: COURIER
COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
Parrish	[illegible]	6-25-97	1700	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type: G	C	F	QC
1.02-CPT-7A 2-2.5' BGS	X			
2.02-CPT-7A 15-15.5 BGS	X			

Comments

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

99-4451

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
OHM Remediation Services (Irvine)
Attention: Dwayne Ishida
3347 Michelson Dr. Ste 200
Irvine CA 92612-1692
Tel: (949)660-7594 Fax: (949)660-5382

Service ID #: 801-994451
Collected by: C.Parrish
Collected on: 06/25/99

Received: 06/25/99
Extracted: 06/30/99
Tested: 06/28-07/10/99
Reported: 07/14/99

Sample Description: Soil from El Toro DO-75
Project Description: 18793 El Toro

Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result 18793-595 99-04451-1	18793-596 99-04451-2
MOISTURE, PERCENT IN SOIL	ASTM-D2216	%Moisture	0.5	5.5	5.5
SEMI-VOC, 64 COMPOUNDS					
Dilution Factor				1	1
ACENAPHTHENE	8270	µg/kg	500	< 530	< 530
ACENAPHTHYLENE	8270	µg/kg	500	< 530	< 530
ANTHRACENE	8270	µg/kg	500	< 530	< 530
BENZO[A]ANTHRACENE	8270	µg/kg	500	< 530	< 530
BENZO[A]PYRENE	8270	µg/kg	500	< 530	< 530
BENZO[B]FLUORANTHENE	8270	µg/kg	500	< 530	< 530
BENZO[G,H,I]PERYLENE	8270	µg/kg	500	< 530	< 530
BENZO[K]FLUORANTHENE	8270	µg/kg	500	< 530	< 530
BIS(2-CHLOROETHOXY)METHANE	8270	µg/kg	500	< 530	< 530
BIS(2-CHLOROETHYL)ETHER	8270	µg/kg	500	< 530	< 530
BIS(2-CHLOROISOPROPYL)ETHER	8270	µg/kg	500	< 530	< 530
BIS(2-ETHYLHEXYL)PHTHALATE	8270	µg/kg	500	< 530	< 530
4-BROMOPHENYL PHENYL ETHER	8270	µg/kg	500	< 530	< 530
BUTYL BENZYL PHTHALATE	8270	µg/kg	500	< 530	< 530
3-METHYL-4 CHLOROPHENOL	8270	µg/kg	1000	< 1100	< 1100
4-CHLOROANILINE	8270	µg/kg	1000	< 1100	< 1100
2-CHLORONAPHTHALENE	8270	µg/kg	500	< 530	< 530
2 CHLOROPHENOL	8270	µg/kg	500	< 530	< 530
4-CHLOROPHENYL PHENYL ETHER	8270	µg/kg	500	< 530	< 530
CHRYSENE	8270	µg/kg	500	< 530	< 530
DI-N-BUTYLPHTHALATE	8270	µg/kg	500	< 530	< 530
DI-N-OCTYLPHTHALATE	8270	µg/kg	500	< 530	< 530
DIBENZ[A,H]ANTHRACENE	8270	µg/kg	500	< 530	< 530
DIBENZOFURAN	8270	µg/kg	500	< 530	< 530
1,2-DICHLOROBENZENE	8270	µg/kg	500	< 530	< 530
1,3-DICHLOROBENZENE	8270	µg/kg	500	< 530	< 530
1,4 DICHLOROBENZENE	8270	µg/kg	500	< 530	< 530
3,3'-DICHLOROBENZIDINE	8270	µg/kg	1000	< 1100	< 1100
2,4-DICHLOROPHENOL	8270	µg/kg	500	< 530	< 530
DIETHYL PHTHALATE	8270	µg/kg	500	< 530	< 530

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 18793-595 99 04451-1	Analysis Result 18793-596 99-04451-2
DIMETHYL PHTHALATE	8270	µg/kg	500	< 530	< 530
2,4-DIMETHYLPHENOL	8270	µg/kg	500	< 530	< 530
2 METHYL-4,6-DINITROPHENOL	8270	µg/kg	2500	< 2600	< 2600
2,4-DINITROPHENOL	8270	µg/kg	2500	< 2600	< 2600
2,4-DINITROTOLUENE	8270	µg/kg	500	< 530	< 530
2,6-DINITROTOLUENE	8270	µg/kg	500	< 530	< 530
FLUORANTHENE	8270	µg/kg	500	< 530	< 530
FLUORENE	8270	µg/kg	500	< 530	< 530
HEXACHLOROBENZENE	8270	µg/kg	500	< 530	< 530
HEXACHLOROBUTADIENE	8270	µg/kg	500	< 530	< 530
HEXACHLOROCYCLOPENTADIENE	8270	µg/kg	500	< 530	< 530
HEXACHLOROETHANE	8270	µg/kg	500	< 530	< 530
INDENO[1,2,3-CD]PYRENE	8270	µg/kg	500	< 530	< 530
ISOPHORONE	8270	µg/kg	500	< 530	< 530
2-METHYLNAPHTHALENE	8270	µg/kg	500	< 530	< 530
4-METHYLPHENOL	8270	µg/kg	500	< 530	< 530
2-METHYLPHENOL	8270	µg/kg	500	< 530	< 530
NAPHTHALENE	8270	µg/kg	500	< 530	< 530
2-NITROANILINE	8270	µg/kg	2500	< 2600	< 2600
3-NITROANILINE	8270	µg/kg	2500	< 2600	< 2600
4-NITROANILINE	8270	µg/kg	2500	< 2600	< 2600
NITROBENZENE	8270	µg/kg	500	< 530	< 530
2 NITROPHENOL	8270	µg/kg	500	< 530	< 530
4-NITROPHENOL	8270	µg/kg	2500	< 2600	< 2600
N-NITROSODI-N-PROPYLAMINE	8270	µg/kg	500	< 530	< 530
N-NITROSODIPHENYLAMINE	8270	µg/kg	500	< 530	< 530
PENTACHLOROPHENOL	8270	µg/kg	2500	< 2600	< 2600
PHENANTHRENE	8270	µg/kg	500	< 530	< 530
PHENOL	8270	µg/kg	500	< 530	< 530
PYRENE	8270	µg/kg	500	< 530	< 530
1,2,4-TRICHLOROBENZENE	8270	µg/kg	500	< 530	< 530
2,4,5-TRICHLOROPHENOL	8270	µg/kg	500	< 530	< 530
2,4,6-TRICHLOROPHENOL	8270	µg/kg	500	< 530	< 530

PQL: Practical Quantitation Limit MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
† All results are reported on dry basis for soil samples.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

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