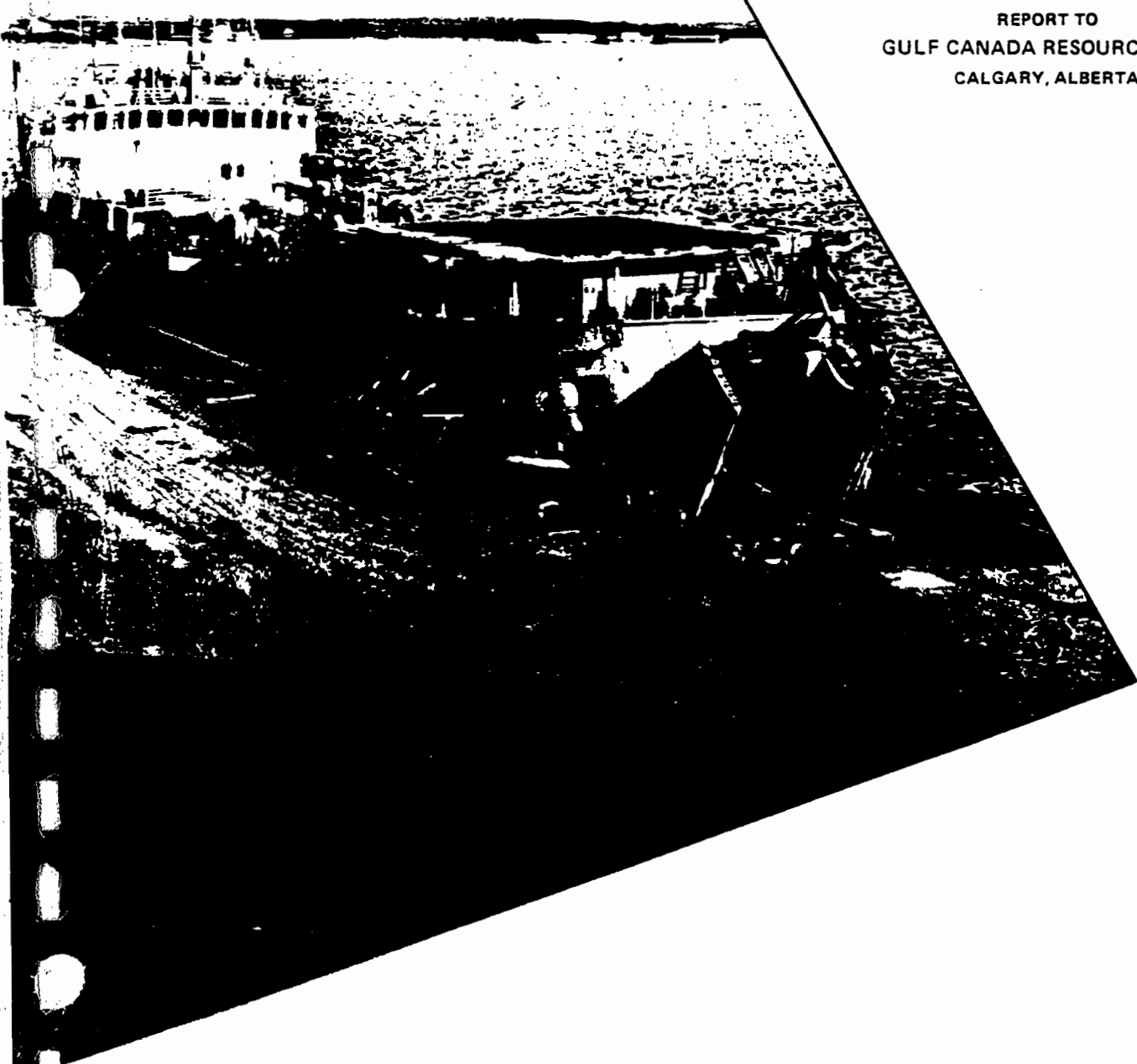




1983 OFFSHORE GEOTECHNICAL
SITE INVESTIGATION
EAST AMAULIGAK SITE
BEAUFORT SEA

REPORT TO
GULF CANADA RESOURCES INC.
CALGARY, ALBERTA



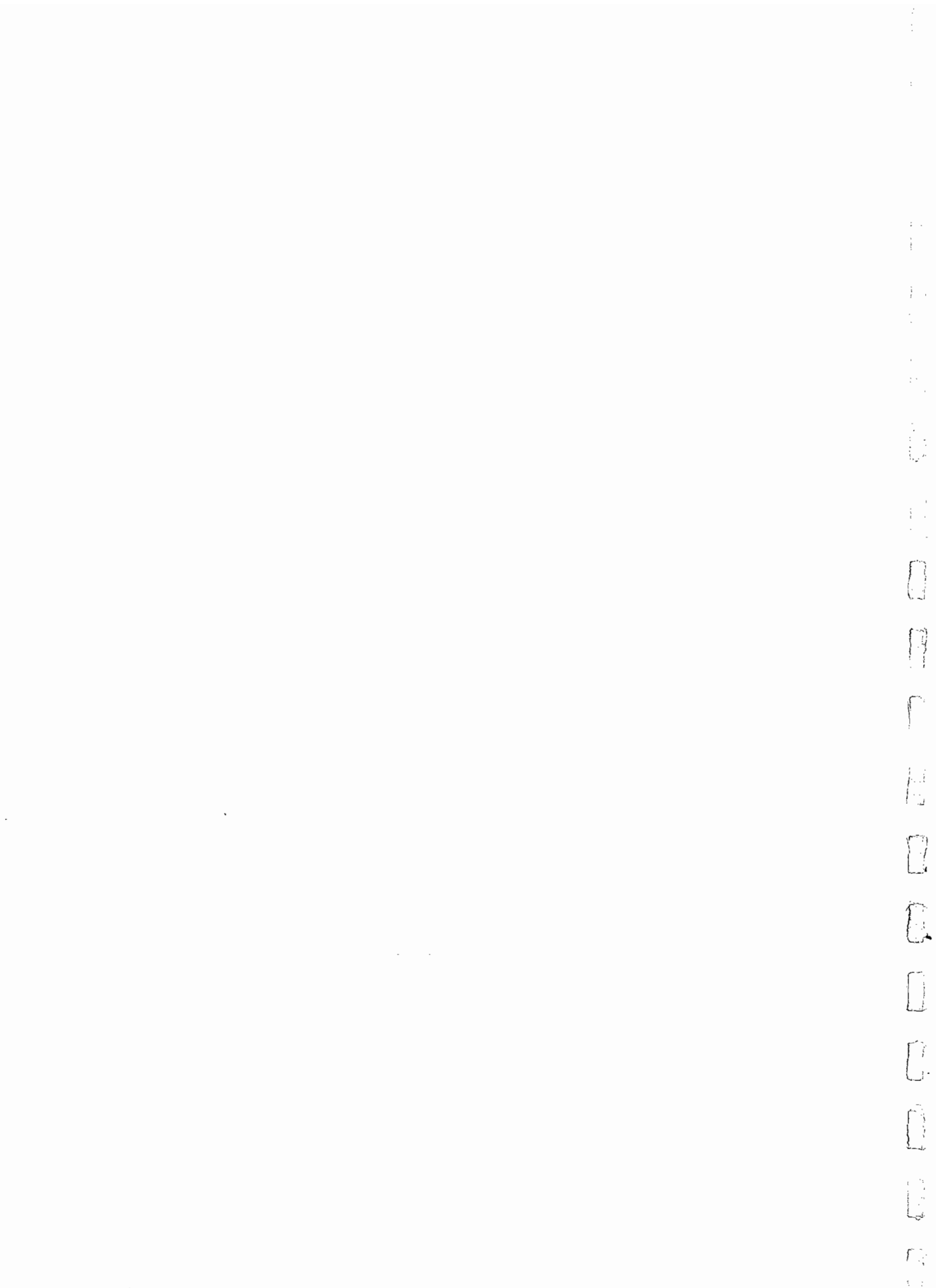


TABLE 1 BOREHOLE AND PROBEHOLE LOCATION

BOREHOLE OR PROBEHOLE	UTM COORDINATES (ZONE 8)		GEOGRAPHIC COORDINATES		DATE (completed)	SEABED PENETRATION (metres)
	N	E	LATITUDE	LONGITUDE		
AD84C101,02*	N 7 775 062	E 545 062	70° 04' 48"	133° 48' 53"	84-09-28	9.0
AD84S101	N 7 775 062	E 545 065	70° 04' 48"	133° 48' 53"	84-09-29	16.5
AD84C103, 3B*	N 7 774 562	E 544 712	70° 04' 32"	133° 49' 27"	84-09-29	25.6
AD84C104	N 7 774 808	E 544 717	70° 04' 40"	133° 49' 26"	84-09-30	17.6
AD84C105	N 7 774 819	E 544 960	70° 04' 40"	133° 49' 03"	84-09-30	16.4
AD84S105	N 7 774 810	E 544 954	70° 04' 40"	133° 49' 04"	84-09-30	17.7
AD84C106	N 7 774 562	E 544 962	70° 04' 32"	133° 49' 04"	84-09-30	12.5
AD84C107	N 7 775 062	E 544 712	70° 04' 48"	133° 49' 26"	84-10-01	10.3
AD84C108	N 7 775 307	E 544 710	70° 04' 56"	133° 49' 26"	84-10-01	7.8
AD84C109	N 7 775 308	E 544 960	70° 04' 56"	133° 49' 02"	84-10-01	6.9
AD84C1010, 10B	N 7 775 054	E 544 903	70° 04' 47"	133° 49' 08"	84-10-01	16.8
AD84C1011	N 7 774 830	E 545 450	70° 04' 40"	133° 48' 17"	84-10-02	8.3
AD84C1012	N 7 774 812	E 545 212	70° 04' 39"	133° 48' 39"	84-10-02	8.5
AD84C1013	N 7 775 062	E 545 212	70° 04' 48"	133° 48' 39"	84-10-02	8.6
AD84C1014	N 7 775 061	E 545 454	70° 04' 47"	133° 48' 16"	84-10-02	9.1
AM84C101, 1B*	N 7 774 948	E 545 332	70° 04' 44"	133° 48' 28"	84-10-02	12.1
AM84C102, 2B*	N 7 774 948	E 545 568	70° 04' 44"	133° 48' 06"	84-10-03	23.7
AM84C103, 3B*	N 7 774 875	E 545 405	70° 04' 41"	133° 48' 21"	84-10-02	33.3
AM84C104	N 7 774 872	E 545 493	70° 04' 41"	133° 48' 13"	84-10-03	9.3
AM84S105	N 7 774 830	E 545 450	70° 04' 40"	133° 48' 17"	84-10-02	15.5
AM84C106	N 7 774 784	E 545 404	70° 04' 38"	133° 48' 21"	84-10-03	8.7
AM84C107, 7B*	N 7 774 781	E 545 496	70° 04' 38"	133° 48' 13"	84-10-03	30.5
AM84C108, 8B*	N 7 774 712	E 545 332	70° 04' 36"	133° 48' 28"	84-10-04	32.8

NOTE: 1. All coordinates supplied by C.E.S.
 2. "AD84" or "AM84" denotes a borehole or probehole at the AMAULIGAK I-65 site, drilled or tested in 1984. "SI" refers to "sample investigation", "CI" refers to "static cone investigation". The number following the latter designation is the borehole or probehole number.
 * Probehole was predrilled through the upper clay and casing was set for continuation of CPT into sand.

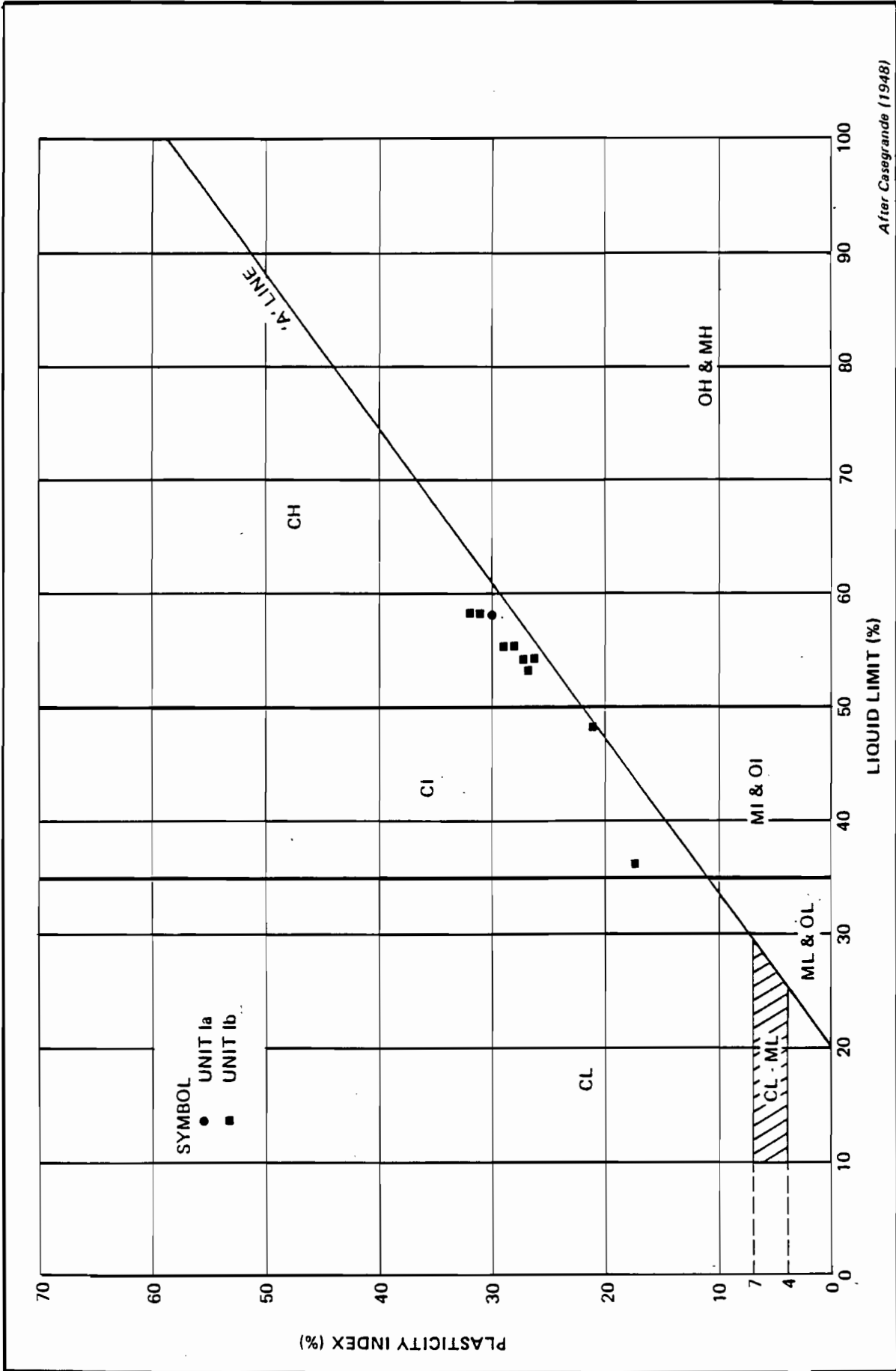


FIGURE 4 PLASTICITY CHART

APPENDIX A
BOREHOLE LOGS



SYSTEM INTERNATIONAL UNITS

QUANTITY	NAME	SYMBOL	EXPRESSED IN TERMS OF OTHER SI UNITS	EXPRESSED IN TERMS OF BASE AND SUPPLEMENTARY UNITS
SI UNITS				
length	metre	m		
mass	kilogram	kg		
time	second	s		
electric current	ampere	A		
thermodynamic temperature	kelvin	K		
amount of substance	mole	mol		
luminous intensity	candela	cd		
SI SUPPLEMENTARY UNITS				
plane angle	radian	rad		
solid angle	steradian	sr		
EXAMPLES OF SI DERIVED UNITS WITH SPECIAL NAMES				
frequency	hertz	Hz	1/s	s ⁻¹
force	newton	N	m · kg/s ²	m · kg · s ⁻²
pressure, stress	pascal	Pa	N/m ²	m ⁻¹ · kg · s ⁻²
energy, work, quantity of heat	joule	J	N · m	m ² · kg · s ⁻²
power, radiant flux	watt	W	J/s	m ² · kg · s ⁻³
EXAMPLES OF SI DERIVED UNITS WITHOUT SPECIAL NAMES				
velocity - linear	metre per second		m/s	m · s ⁻¹
- angular	(radian per second)		rad/s	rad · s ⁻¹
acceleration - linear	(metre per second) per second		m/s ²	m · s ⁻²
- angular	(radian per second) per second		rad/s ²	rad · s ⁻²
concentration (of amount of substance)	mole per cubic metre		mol/m ³	mol · m ⁻³
dynamic viscosity	pascal second		Pa · s	m ⁻¹ · kg · s ⁻¹
moment of force	newton metre		N · m	m ² · kg · s ⁻²
surface tension	newton per metre		N/m	kg · s ⁻²
heat flux density, irradiance	watt per square metre		W/m ²	kg · s ⁻³
heat capacity, entropy	joule per kelvin		J/K	m ² · s ⁻² · K ⁻¹
specific heat capacity, specific entropy	joule per kilogram kelvin		J/(kg · K)	m ² · s ⁻² · K ⁻¹
specific energy	joule per kilogram		J/kg	m ² · s ⁻²
thermal conductivity	watt per metre kelvin		W/(m · K)	m · kg · s ⁻³ · K ⁻¹

OTHER UNITS PERMITTED FOR USE WITH SI

QUANTITY	NAME	SYMBOL	DEFINITION
time	minute	min	1 min = 60 s
	hour	h	1 h = 3,600 s
	day*	d	1 d = 86,400 s
	year	a	
	plane angle	degree	°
	minute	'	1' = (°/60) rad
	second	"	1" = (°/3600) rad
	area	hectare	ha
volume	litre	L	1,000 L = 1 m ³
temperature	degree Celsius	°C	0° C = 273.15° K temperature interval 1°C = 1 K
mass	tonne	t	1 t = 1,000 kg = 1 Mg

MULTIPLYING FACTOR	PREFIX	SYMBOL	MULTIPLYING FACTOR	PREFIX	SYMBOL
1,000,000,000,000,000,000 = 10 ¹⁸	exa	E	0.1 = 10 ⁻¹	deci*	d
1,000,000,000,000,000 = 10 ¹⁵	peta	P	0.01 = 10 ⁻²	centi*	c
1,000,000,000,000 = 10 ¹²	tetra	T	0.001 = 10 ⁻³	milli	m
1,000,000,000 = 10 ⁹	giga	G	0.000,001 = 10 ⁻⁶	micro	μ
1,000,000 = 10 ⁶	mega	M	0.000,000,001 = 10 ⁻⁹	nano	n
1,000 = 10 ³	kilo	k	0.000,000,000,001 = 10 ⁻¹²	pico	p
100 = 10 ²	hecto*	h	0.000,000,000,000,001 = 10 ⁻¹⁵	femto	f
10 = 10 ¹	deca*	da	0.000,000,000,000,000,001 = 10 ⁻¹⁸	atto	a

* to be avoided where possible

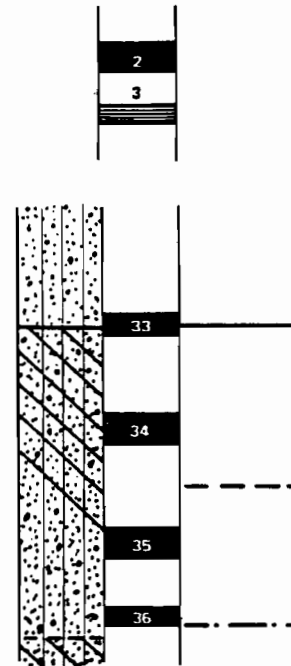
SYMBOLS AND ABBREVIATIONS USED ON BOREHOLE LOGS

SOIL SAMPLE

- represented by sample identification number which increase sequentially from the top of the hole, thickness of block is equivalent to sample recovery

SOIL BOUNDARIES

- have been indicated using the following system
- stratum boundary observed within sample
- stratum boundary assumed to occur within ± 0.5 m of the marked level and is probably gradational between the two samples
- stratum boundary assumed to occur within ± 1.0 m of the marked level
- stratum boundary notation for both depth below seabed (41.5 m) and elevation below sealevel (uncorrected for tides) (-64.6 m. Elevation)



41.5 (-64.6 El.)

SOIL DESCRIPTION

UNIFIED SOIL CLASSIFICATION

- determined in accordance with chart on following page

USC

TEXTURAL DESCRIPTION

- material named after its principal component
- name is modified by other components as follows:

Presence of Component "XXX"	Modifier
> - 35%	and XXX
21 - 35%	XXX-ey
11 - 20%	Some XXX
1 - 10%	Trace of XXX
- Modifiers are always recorded in order of decreasing amounts.
- Classification may be modified as information regarding plasticity, grain size distribution, etc., is made available from lab test results.

GROUND ICE DESCRIPTION

- determined in accordance with chart on following page; extra effort has been made to better describe the degree and extent of soil bonding and also a value of core temperature ($^{\circ}$ F) at that level
- see also definition of terms in text

e.g. FROZEN 28.1 $^{\circ}$ C
- Nf - Nbn
- poorly to slightly bonded
SAND: Nbn 28.5 $^{\circ}$ C
CLAY: not frozen

TEST RESULTS

- see legend at bottom of borehole log

CONSISTENCY

Fine-Grained Soils

Major portion passing No. 200 Sieve. Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silt. Consistency is rated according to undrained shear strength, as indicated by cone penetrometer reading or miniature vane and triaxial test results.

Descriptive Term	Undrained Shear strength (kPa)
Very Soft	less than 12.5
Soft	12.5 to 25
Firm	25 to 50
Stiff	50 to 100
Very Stiff	100 to 200
Hard	200 and higher

Coarse-Grained Soils

Major portion retained in No. 200 Sieve. Includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as determined by laboratory tests.

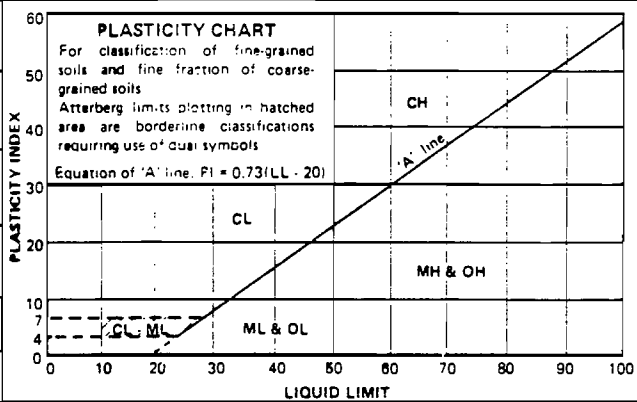
Descriptive Term	Relative Density
Very Loose	0 - 20%
Loose	20 - 40%
Compact or Medium	40 - 75%
Dense	75 - 90%
Very Dense	90 - 100%

PLASTICITY

Low - Liquid limit less than 35
Medium - Liquid limit between 35 and 50
High - Liquid limit greater than 50

UNIFIED SOIL CLASSIFICATION†

MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES	CLASSIFICATION CRITERIA		
COARSE GRAINED SOILS	More than 50% retained on No. 200 sieve*	GRAVELLS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELLS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines GW, GP, SW, SP GM, GC, SM, SC Borderline classification requiring use of dual symbols
			GRAVELLS WITH FINES	GP	Poorly-graded gravels and gravel-sand mixtures, little or no fines	
			CLEAN SANDS	GM	Silty gravels, gravel-sand-silt mixtures	
		SANDS WITH FINES	GC	Clayey gravels, gravel-sand clay mixtures		
		CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
		SANDS WITH FINES	SP	Poorly-graded sands and gravelly sands, little or no fines	Not meeting both criteria for SW	
	50% or more passes No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	PLASTICITY CHART For classification of fine-grained soils and fine fraction of coarse-grained soils Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols Equation of 'A' line: $PI = 0.73(LL - 20)$	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
		OL	Organic silts and organic silty clays of low plasticity			
		SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		
CH	Inorganic clay of high plasticity, fat clays					
HIGHLY ORGANIC SOILS	PT	PT	Peat, muck and other highly organic soils	*Based on the material passing the 3 in. (75 mm) sieve †ASTM Designation D 2487, for identification procedure see D 2488		



GROUND ICE DESCRIPTION

ICE NOT VISIBLE

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION	Diagram
N	Nf	Poorly-bonded or friable	
	Nbn	No excess ice, well-bonded	
	Nbe	Excess ice, well-bonded	

VISIBLE ICE LESS THAN 50% BY VOLUME

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION	Diagram
V	Vx	Individual ice crystals or inclusions	
	Vc	Ice coatings on particles	
	Vr	Random or irregularly oriented ice formations	
	Vs	Stratified or distinctly oriented ice formations	

VISIBLE ICE GREATER THAN 50% BY VOLUME

ICE	ICE + Soil Type	SUBGROUP DESCRIPTION	Diagram
ICE	ICE + Soil Type	Ice with soil inclusions	
	ICE	Ice without soil inclusions (greater than 25 mm (1 in.) thick)	

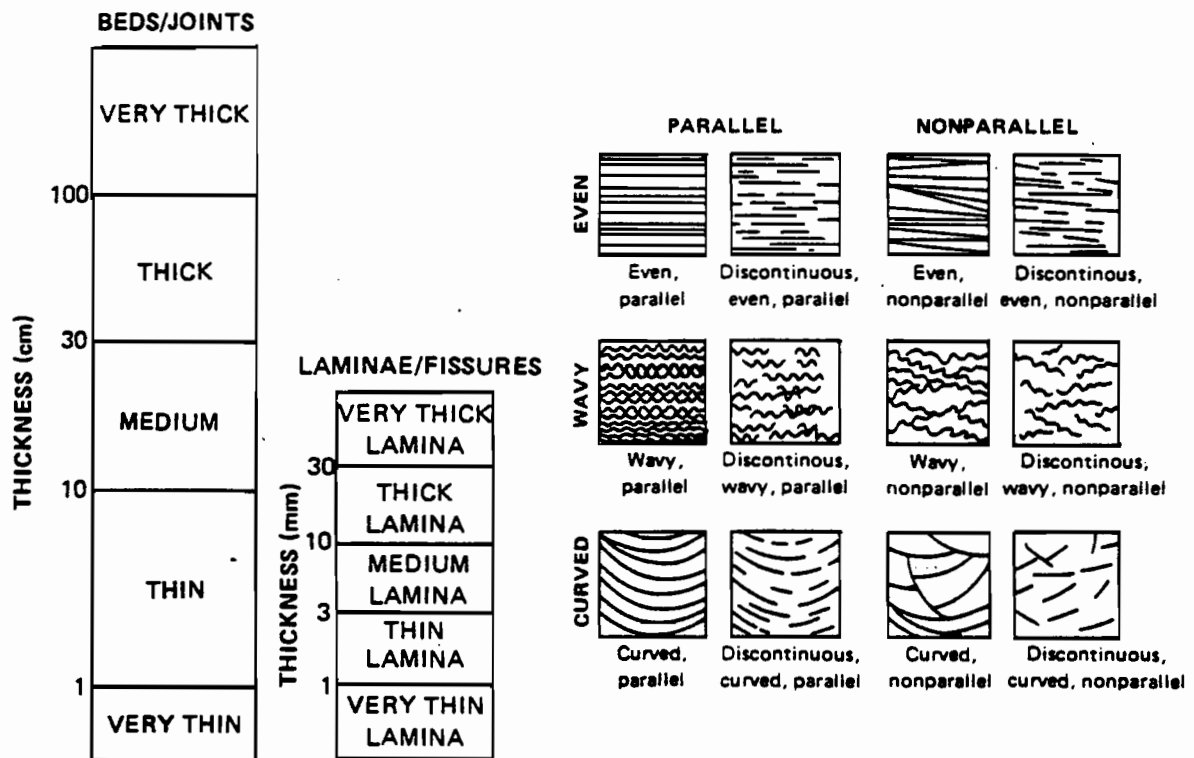
- NOTE:**
- Dual symbols are used to indicate borderline or mixed ice classifications
 - Visual estimates of ice contents indicated on borehole logs $\pm 5\%$
 - This system of ground ice description has been modified from NRC Technical Memo 79, Guide to the Field Description of Permafrost for Engineering Purposes

LEGEND
 Soil Ice

DESCRIPTION OF SEDIMENTARY STRUCTURES

BEDS SEDIMENTATION UNITS DEPOSITED UNDER ESSENTIALLY CONSTANT PHYSICAL CONDITIONS, SEPARATED BY BEDDING PLANES WHICH ARE RECOGNIZABLE BY TEXTURAL OR COMPOSITIONAL CHANGES RESULTING FROM PERIODS OF NON-DEPOSITION OR EROSION, OR ABRUPT CHANGES IN DEPOSITIONAL CONDITIONS. BEDS MAY BE INTERNALLY HOMOGENEOUS, OR COMPOSED OF SMALLER UNITS-LAMINAE

LAMINAE THE SMALLEST MEGASCOPIC LAYERS IN A SEDIMENTARY SEQUENCE, REPRESENTING MINOR FLUCTUATIONS IN PHYSICAL CONDITIONS DURING THE DEPOSITION OF BEDS. LAMINAE ARE RELATIVELY UNIFORM IN TEXTURE AND COMPOSITION AND GENERALLY LACK MEGASCOPIC INTERNAL LAYERING.

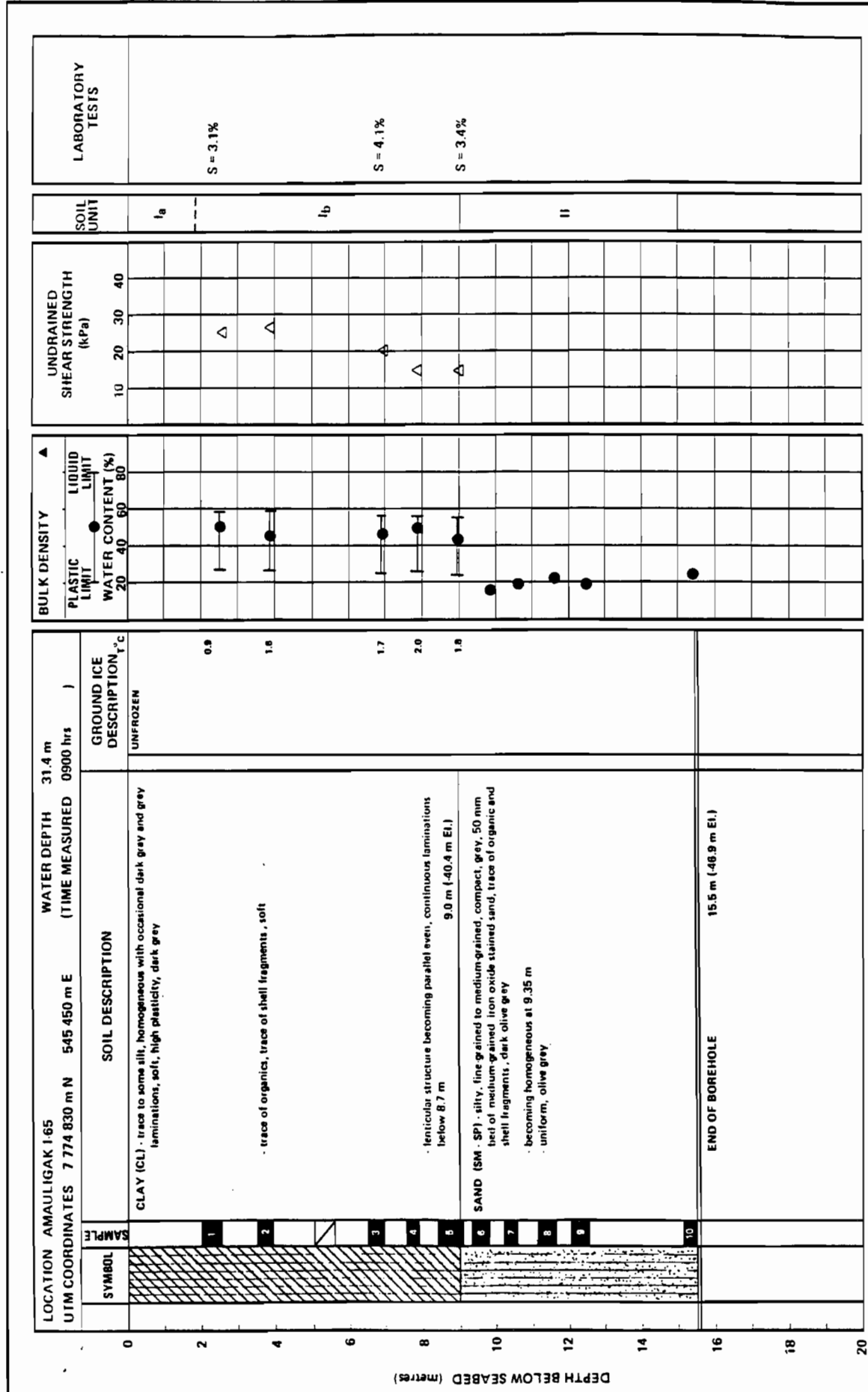


e.g. Thick bed
Thickly spaced joint

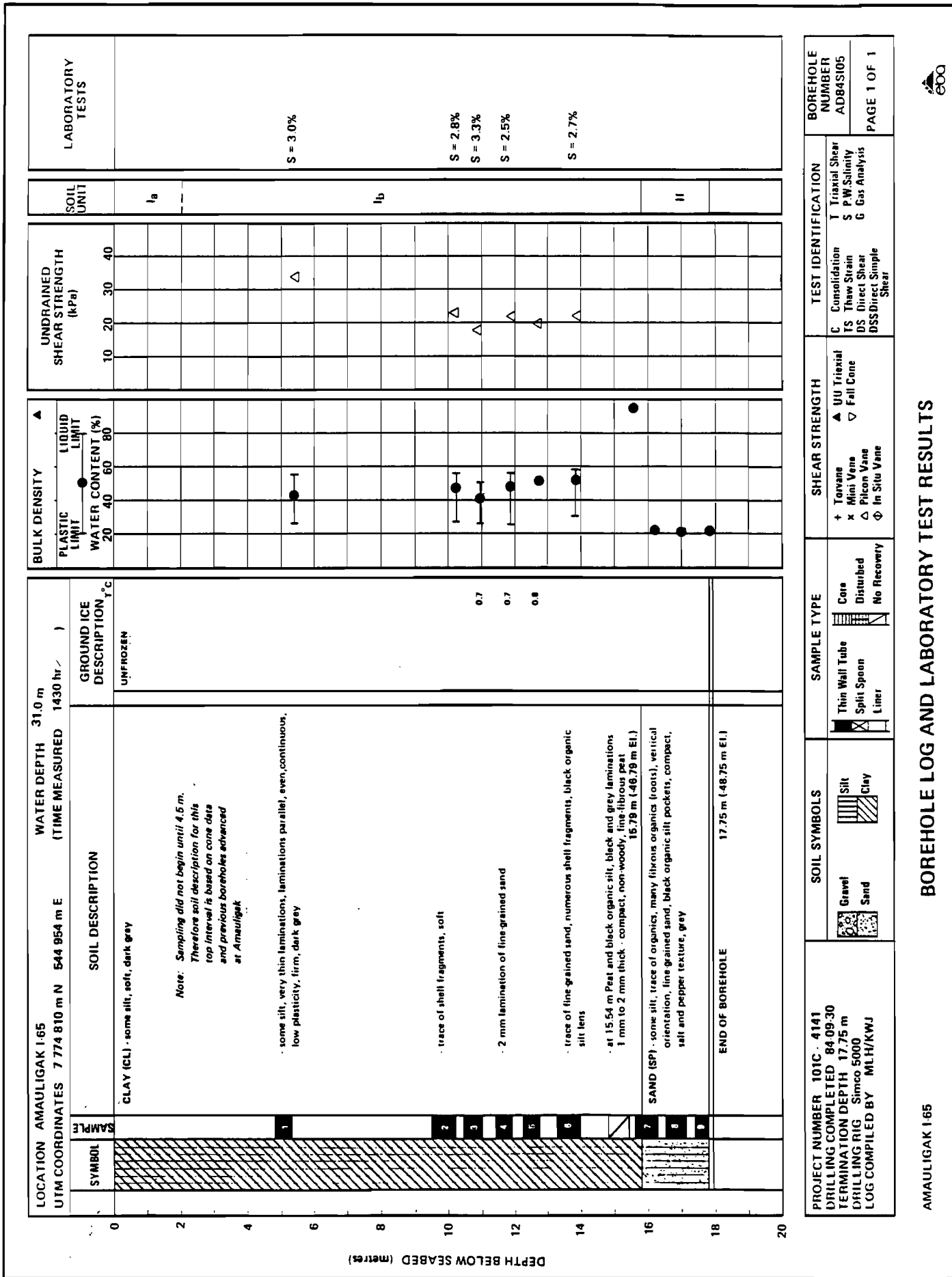
e.g. Thin lamina
Thinly spaced fissures

(After Campbell, 1967)

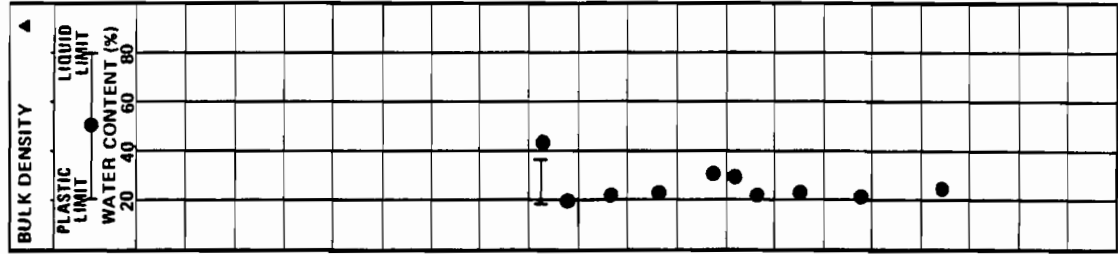
(Modified after Ingram, 1954
and Campbell, 1967)



PROJECT NUMBER 101C - 4141 DRILLING COMPLETED 84 - 10 - 02 TERMINATION DEPTH 15.1 m DRILLING RIG Simco 5000 (K'iggiak) LOG COMPILED BY KWJ/MLH	SOIL SYMBOLS	SAMPLE TYPE	SHEAR STRENGTH	TEST IDENTIFICATION	BOREHOLE NUMBER AMB4S105
					PAGE 1 OF 1



LOCATION AMAULIGAK I-65		WATER DEPTH 31.4 m	
UTM COORDINATES 7 775 062 m N 545 065 m E		(TIME MEASURED 1506 hrs)	
SAMPLE	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	
	CLAY - silty, very soft to soft, dark gray	UNFROZEN	
	NOTE: Sampling did not begin until 8.2 m. Therefore, soil description for this top interval is based on cone data and previous boreholes advanced at Amauligak.		
1	- trace of organics and shell fragments, 50 mm sand lens, very thin laminations, parallel, even and continuous 8.5 m (-39.9 m EI.)		
2	SAND (SM - SP) - fine-grained, trace of mica flakes, some silt, trace of organics, parallel organic laminations up to 12 mm, 20 mm clay lens at 8.58 m, dark olive gray		
3	- below 9.14 m: becoming silty, very fine-grained, occasional organic laminations 20 mm		
4	- parallel bedding, alternating 10 mm to 20 mm beds of clean sand and organic rich sand		
5	- below 12.8 m: decreasing in silt content to some silt, medium-grained sand beds oriented from 15° above horizontal to parallel to 15° below horizontal, from top to bottom of sample respectively		
6			
7			
8	- homogeneous		
	END OF BOREHOLE 16.54 m (47.94 m EI.)		



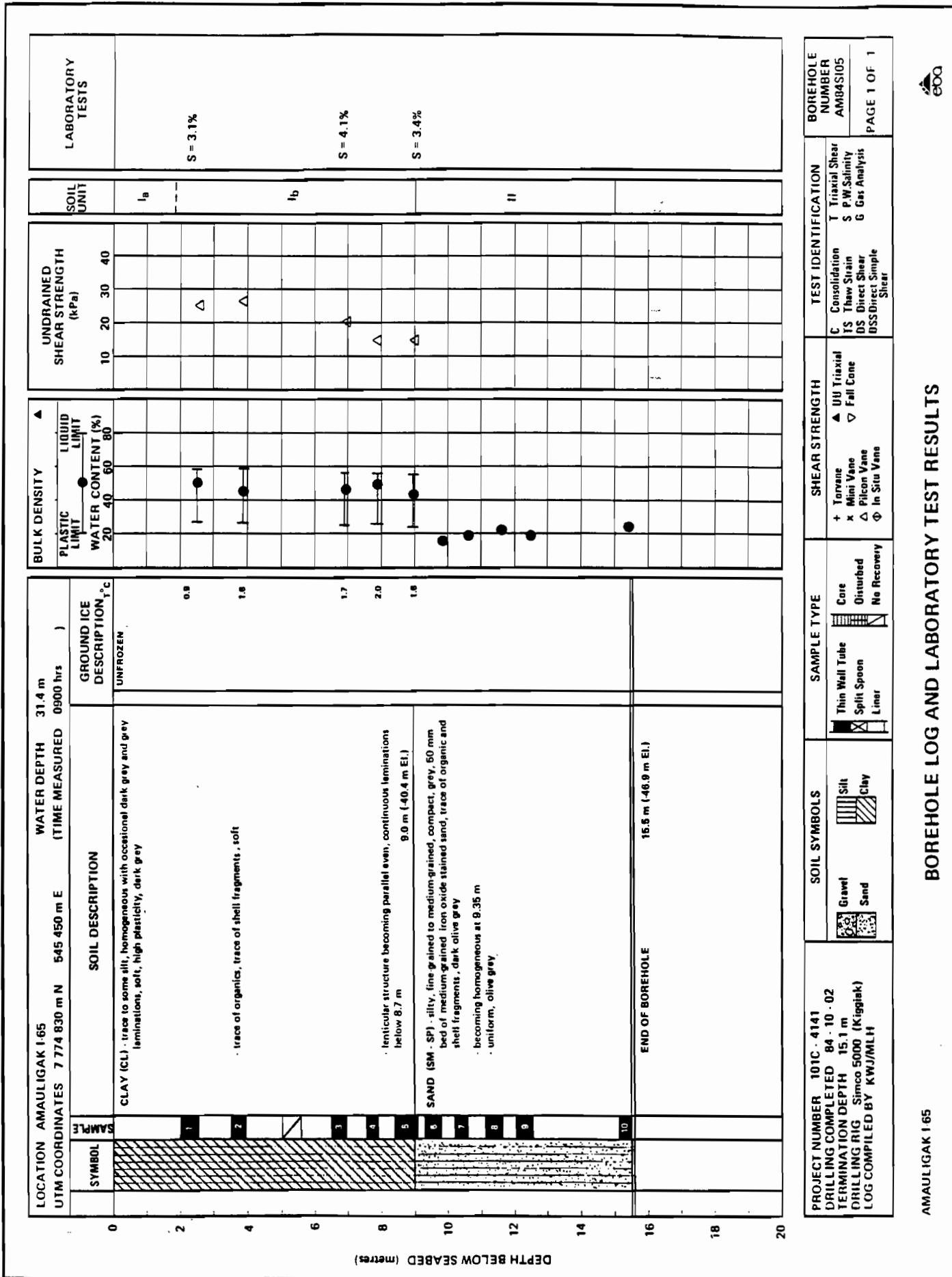
UNDRAINED SHEAR STRENGTH	SOIL UNIT	LABORATORY TESTS
	Is	
	Ib	
	II	

PROJECT NUMBER 101C - 4141	SOIL SYMBOLS	SAMPLE TYPE	SHEAR STRENGTH	TEST IDENTIFICATION	BOREHOLE NUMBER
DRILLING COMPLETED 84-09-29	Gravel Sand Silt Clay	Thin Wall Tube Split Spoon Liner	+ Torvane x Mini Vane △ Picon Vane ◇ In Situ Vane	C Consolidation TS Thaw Strain DS Direct Shear DSS Direct Simple Shear	AD84SI01
TERMINATION DEPTH 16.54 m					PAGE 1 OF 1
DRILLING RIG Simco 5000					
LOG COMPILED BY TRM/KWJ					

AMAULIGAK I-65

BOREHOLE LOG AND LABORATORY TEST RESULTS

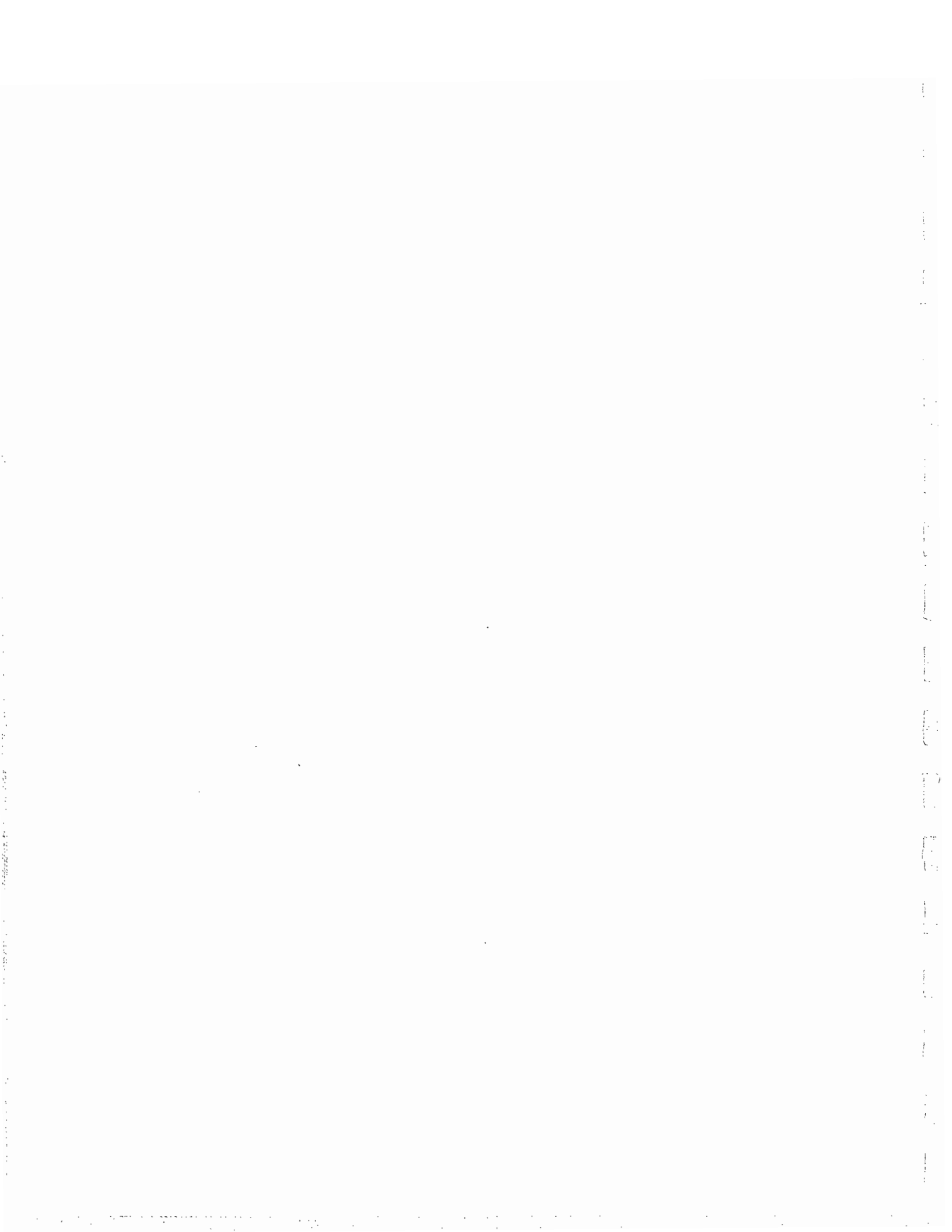






APPENDIX B

DIAGNOSTIC PROFILES



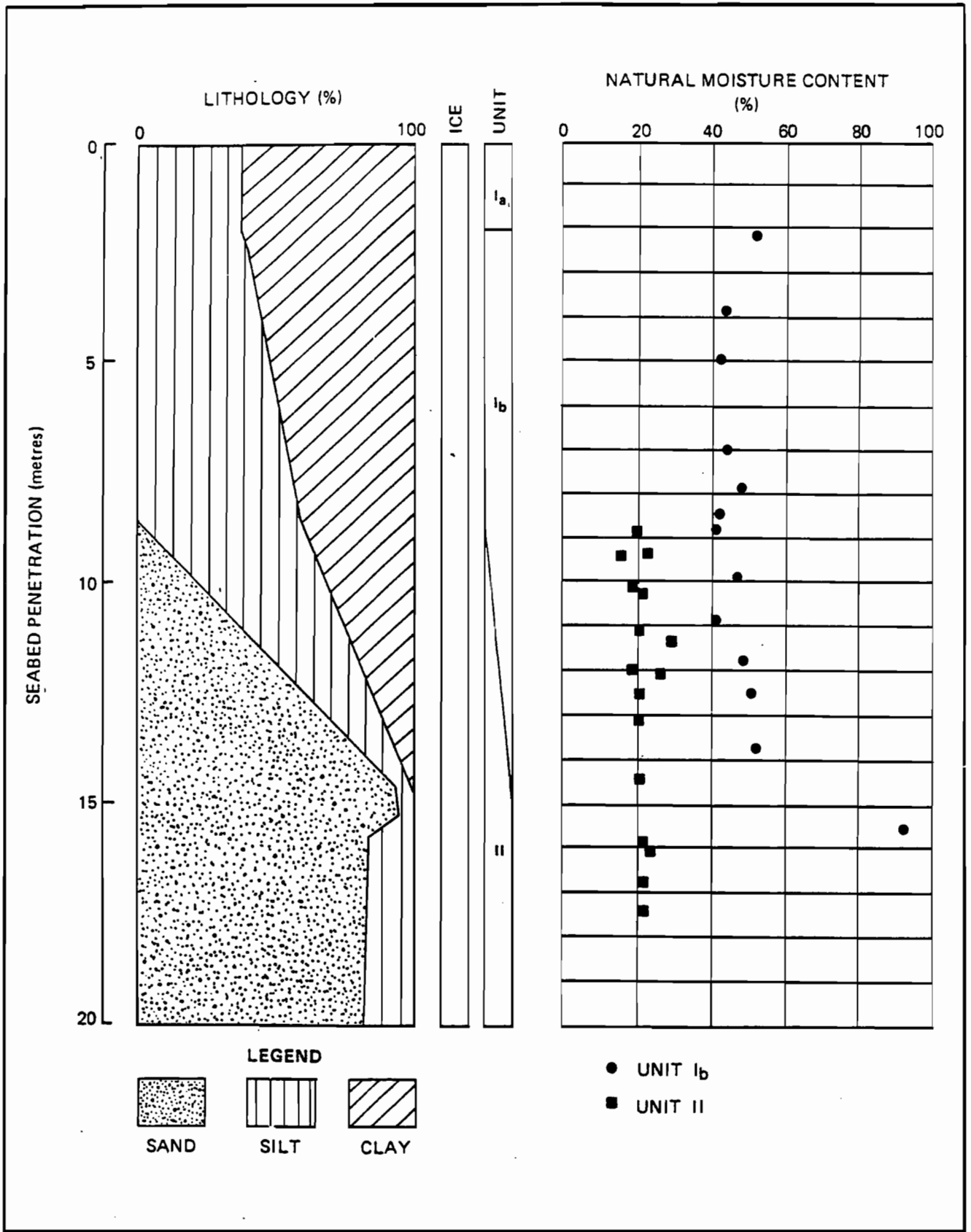


FIGURE C.1 NATURAL MOISTURE CONTENT PROFILE – AMAULIGAK I-65

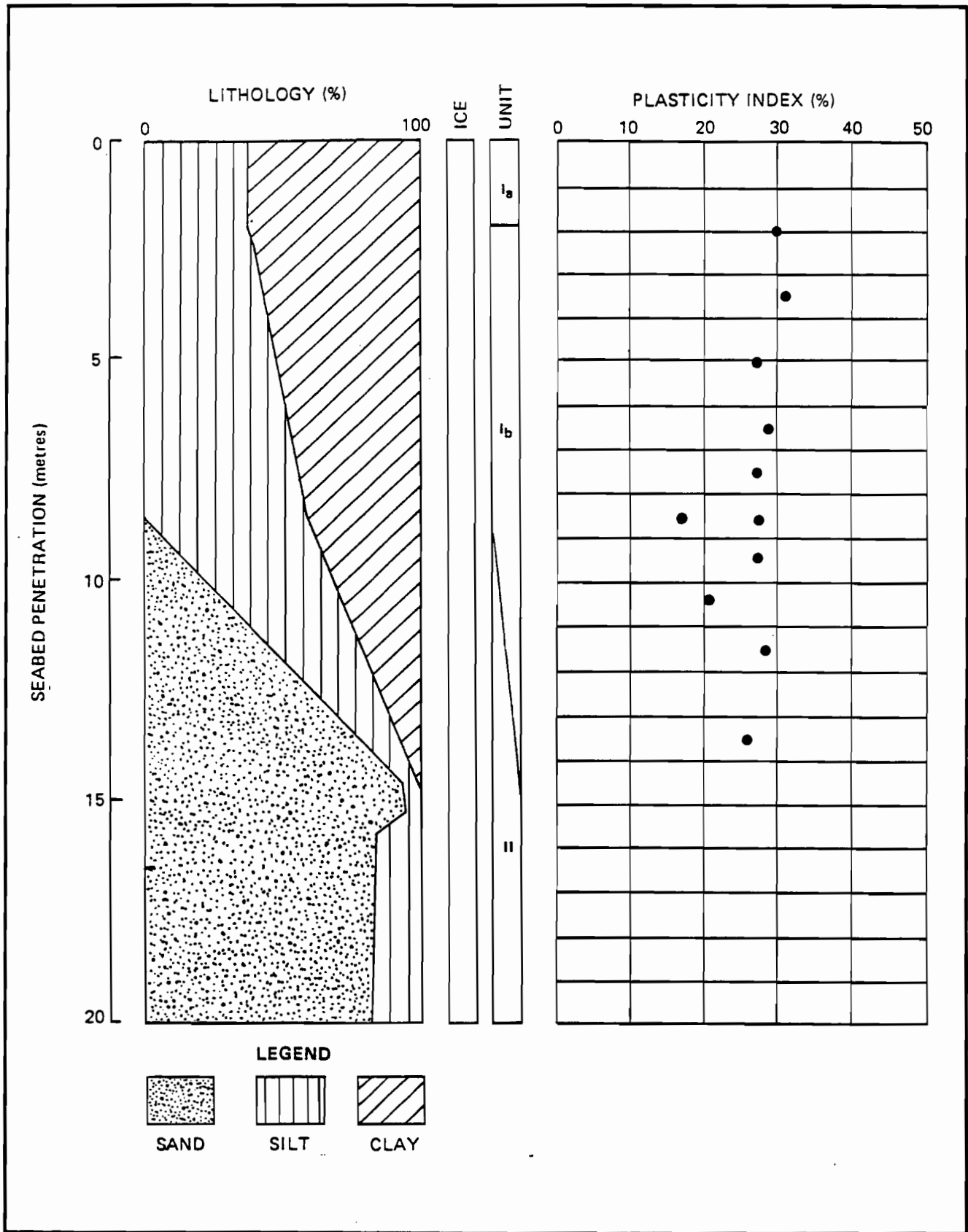


FIGURE C.2

PLASTICITY INDEX PROFILE –
AMAULIGAK I-65

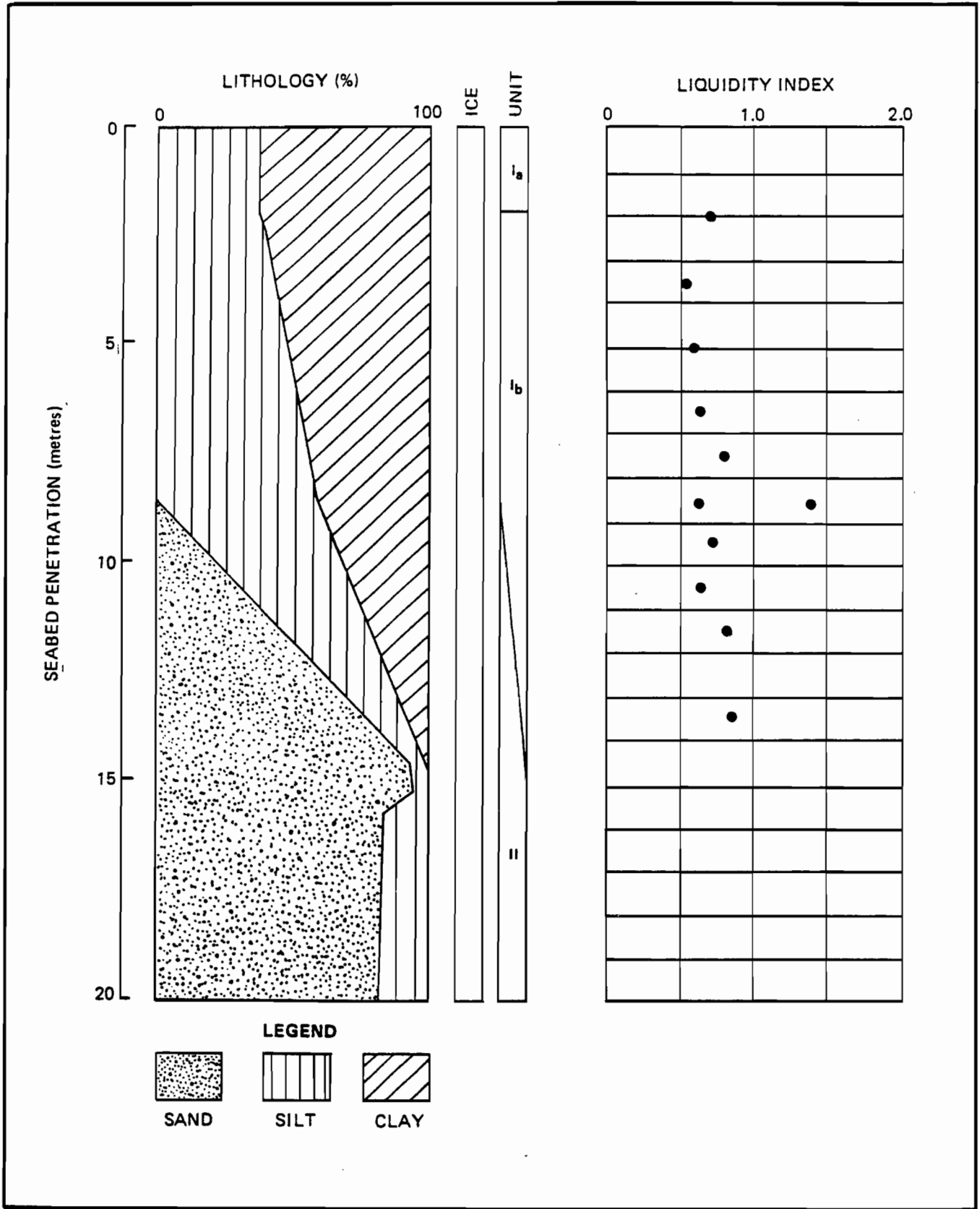


FIGURE C.3

LIQUIDITY INDEX PROFILE –
AMAULIGAK I-65

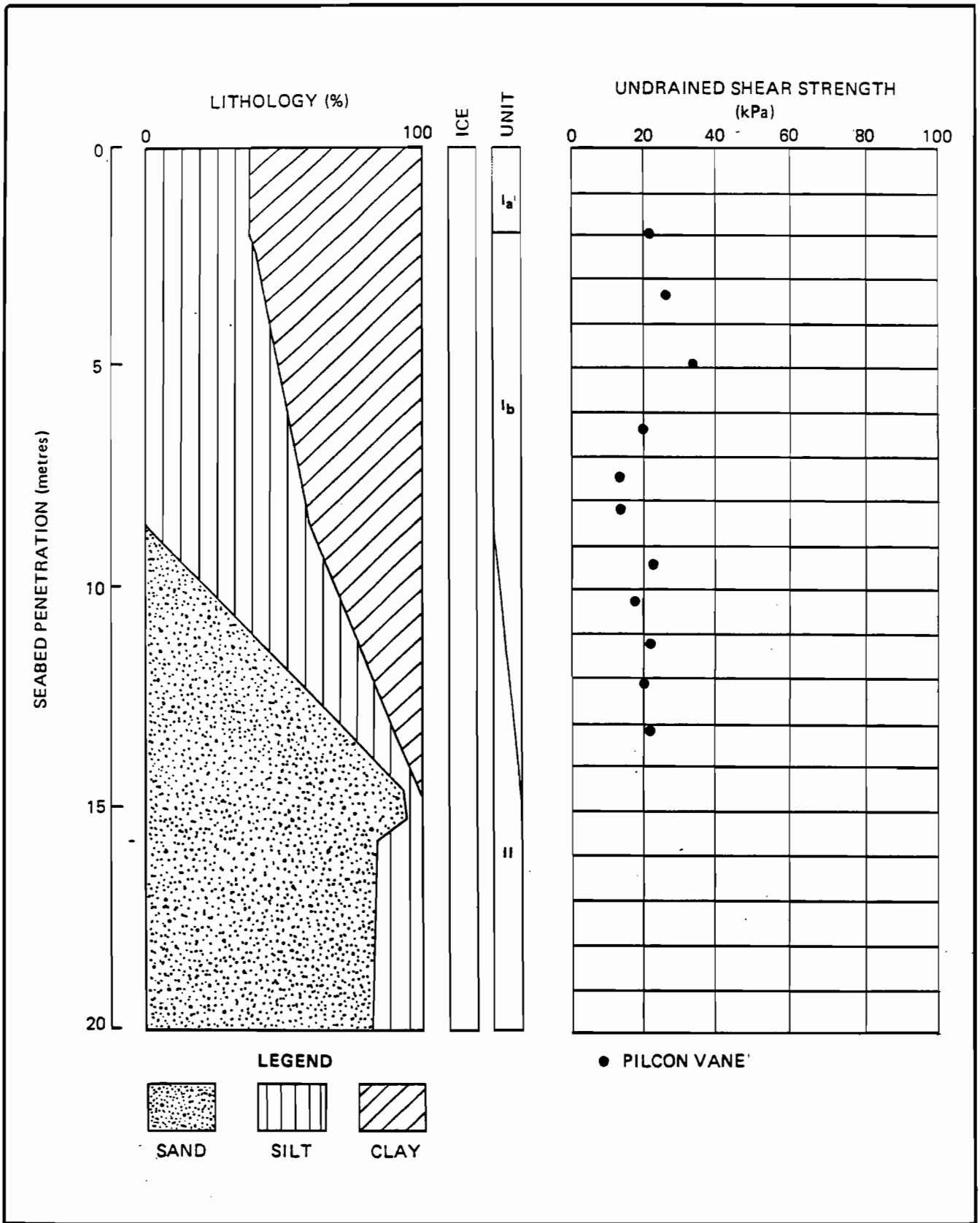


FIGURE C.4 UNDRAINED SHEAR STRENGTH PROFILE – AMAULIGAK I-65

APPENDIX C

SUMMARY OF LABORATORY TESTING

THE UNIVERSITY OF CHICAGO

Sample Number		Depth (mave)	Unified Soil Classification	Ground Ice Description (%)	Temp. (°C)	Moisture Content (%)	Frozen Moisture Content (%)	Bulk Density (Mgm ⁻³)	GRAIN SIZE DISTRIBUTION					SHEAR STRENGTH			CONSOLIDATION CHARACTERISTICS			TEST METHOD		
									Liquid Limit (%)	Plastic Limit (%)	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	D ₅₀ (µm)	Test	Shear Strength (kPa)	Failure Strain (%)	Consistency		P _o (kPa)	P _c (kPa)
1A	B	8.23 - 8.48	CI			43			36	19	40	32	28									
1B	B	8.48 - 8.98	SM			20					--	25	75									
2A	B	9.14 - 9.72	SM			23					--	20	80									
3A	B	10.06 - 10.61				22																
4A	B	10.97 - 11.75				30																
5A	B	11.89 - 12.40				27																
5B	B	12.40 - 12.66	SM-SP			21					--	10	90									
6A	B	12.80 - 13.37				21																
7A	B	14.32 - 14.78				21																
8A	B	15.85 - 16.54	SM			24					--	23	77									
		END OF BOREHOLE																				

SUMMARY OF TEST RESULTS

AD84S101

LEGEND AND NOTES

B - Bag Sample
 G - Gas Sample
 L - Linear Sample
 P - Pilon Sample
 NR - No Recovery
 NS - No Sample Remaining

C - Frozen Core
 PW - Porewater Sample
 T - Sample Stored in Tube
 W - Waxed Sample
 RC - Radiocarbon sample

MV - Mini vane
 FC - Fall Cone
 TV - Torvane
 PV - Pilon Vane
 RV - Remote Vane

UU - Unconsolidated Undrained Triaxial
 UU_p - UU Triaxial with Pore Pressure Measurements
 CU - Consolidated Undrained Triaxial
 CU_p - CU Triaxial with Pore Pressure Measurements
 CD - Consolidated Drained Triaxial

O - Organic Content
 S - Salinity
 TS - Thaw Strain
 SG - Specific Gravity

GULF 1984 OFFSHORE GEOTECHNICAL SITE INVESTIGATION
AMAULIGAK I-65 SITE

Project Number: 101C-4141
 Reviewed By: _____ P. Eng.
 Page 1 of 1

Borehole Number		SUMMARY OF TEST RESULTS														TEST RESULTS									
Sample Number	Borehole	Depth (metres)	Unified Soil Classification	Ground Ice Description (%)	Temp. (°C)	Moisture Content (%)	Frozen Moisture Content (%)	Bulk Density (Mg/m ³)	ATTENBERG LIMITS					GRAIN SIZE DISTRIBUTION				SHEAR STRENGTH			CONSOLIDATION CHARACTERISTICS				
									Liquid Limit (%)	Plastic Limit (%)	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	D ₅₀ (µm)	Test	Shear Strength (kPa)	Failure Strain (%)	Consistency	P ₀ (kPa)	P _c (kPa)	C _c			
1A	U	4.72 - 5.10	CH						54	27	47	48	5	--		PV	34		Firm						S=3.06
1B	B	4.72 - 5.10				43																			
2A	T	9.45 - 9.95		0.66					54	28						PV	23		Soft						S=2.86
2B	B	9.45 - 9.95	CH			47																			
3C	B	10.36 - 10.96	CH						48	27	53	46	1			PV	18		Soft						S=3.34
4A	B	11.28 - 11.83		0.73		49																			S=2.56
4B	B	11.28 - 11.83	CH						55	27															
5A	U	12.19 - 12.57		0.76		52																			
6A	B	13.11 - 13.91	CH			53			58	32	49	41	10												S=2.76
7A	U	15.54 - 15.79	PT			94																			
7B	B	15.79 - 16.17	SN			22					--	16	84	--											
8A	U	16.46 - 17.11				22					--	17	83	--											
9A	B	17.37 - 17.75	SM			21					--	17	83	--											

LEGEND AND NOTES
 B - Rug Sample
 G - Gas Sample
 L - Luer Sample
 P - Piston Sample
 NH - No Recovery
 NS - No Sample Remaining
 PF - Permafrost Sample
 PW - Porewater Sample
 T - Sample Stored in Tube
 W - Waxed Sample
 RC - Radiocarbon Sample
 MV - Minivane
 FC - Fall Cone
 TV - Torvane
 PV - Pitcon Vane
 RV - Remote Vane
 UU - Unconsolidated Undrained Triaxial
 UUup - UU Triaxial with Pore Pressure Measurements
 CU - Consolidated Undrained Triaxial
 CUup - CU Triaxial with Pore Pressure Measurements
 CD - Consolidated Drained Triaxial
 O - Organic Content
 S - Salinity
 TS - Thaw Strain
 SG - Specific Gravity

GULF 1984 OFFSHORE GEOTECHNICAL SITE INVESTIGATION
 AMAULIGAK 1-65 SITE

SUMMARY OF TEST RESULTS														TEST RESULTS TABULATED											
Borehole Number	Sample Number	Depth (metres)	Unified Soil Classification	Ground Ice Description (%)	Temp. (°C)	Moisture Content (%)	Frozen Moisture Content (%)	Bulk Density (Mgm ³)	ATTERBERG LIMITS			GRAIN SIZE DISTRIBUTION			SHEAR STRENGTH			CONSOLIDATION CHARACTERISTICS							
									Liquid Limit (%)	Plastic Limit (%)	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	D ₅₀ (µm)	Test	Shear Strength (kPa)	Failure Strain (%)	Consistency	P ₀ (kPa)	P _c (kPa)	C _c			
1A	B	1.98 - 2.45	CH		0.89	50				58	28	61	38	1	--	--	PV	22		Soft				S=3.17	
2A	T	3.50 - 3.90	CH		1.60					58	27	59	41	--	--	--	PV	26		Firm					
2B	B	3.50 - 3.90	CH			44				55	26						PV	20		Soft				S=4.17	
3A	B	6.55 - 6.90	CH		1.66	45				54	27	55	45	--	--	--	PV	14		Soft					
4A	B	7.48 - 7.86	CH		1.95	49				53	26	58	39	3	--	--	PV	14		Soft					
5A	B	8.38 - 9.01	CH		1.79	43																			
6A	B	9.30 - 9.70	SM			16																			
7A	B	10.20 - 10.50	SM			20																			
8A	B	11.12 - 11.60	SH			21																			
9A	B	12.04 - 12.52	SH			19																			
10A	B	15.10 - 15.50	SP-SM			23																			
		END OF BOREHOLE																							

LEGEND AND NOTES

B - Bag Sample
 G - Gas Sample
 L - Lunar Sample
 P - Piston Sample
 MR - No Recovery
 NS - No Sample Remaining

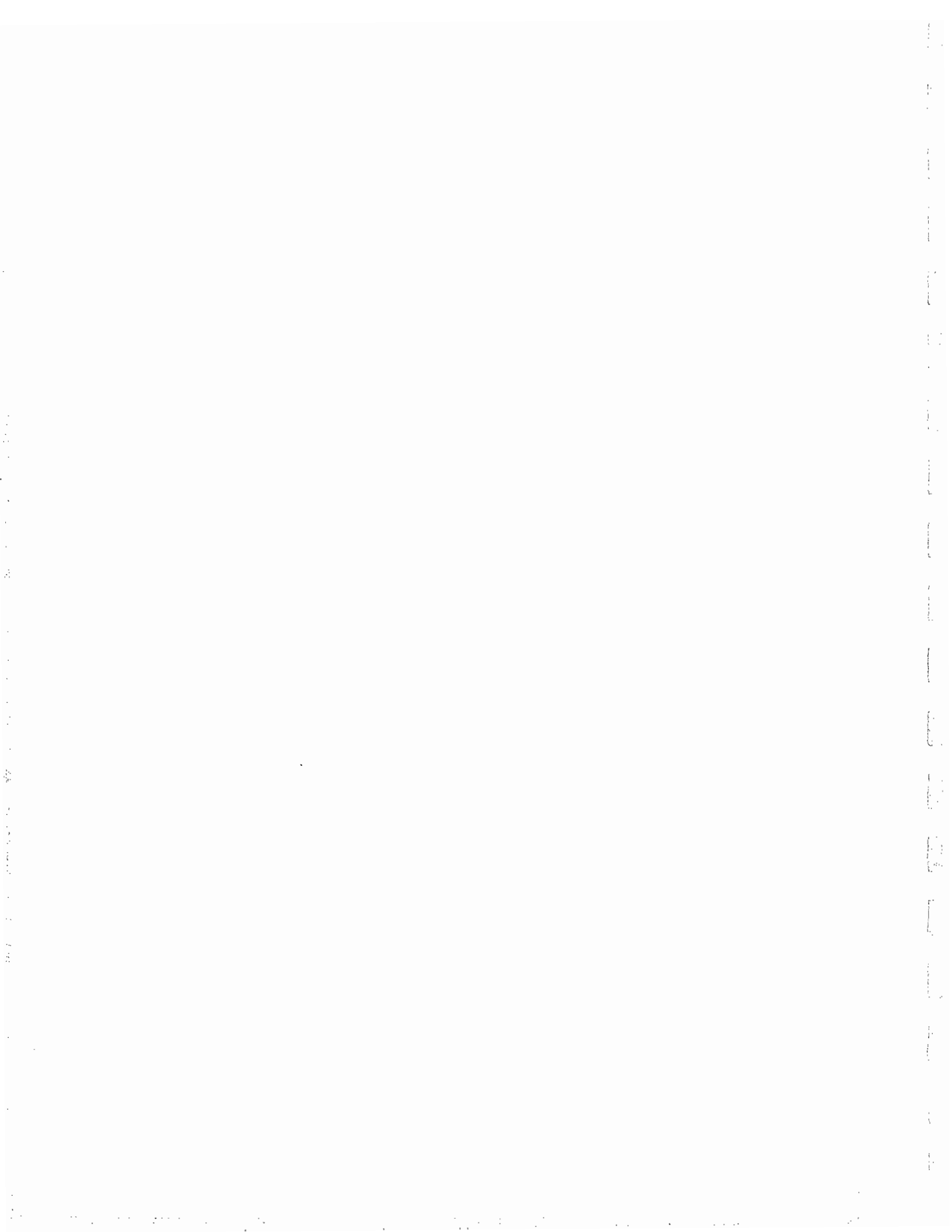
PF - Permafrost Sample
 PW - Porewater Sample
 T - Sample Stored in Tube
 W - Waxed Sample
 RC - Radiocarbon Sample

MV - Mini-vane
 FC - Fall Cone
 TV - Torvane
 PV - Piston Vane
 RV - Remote Vane

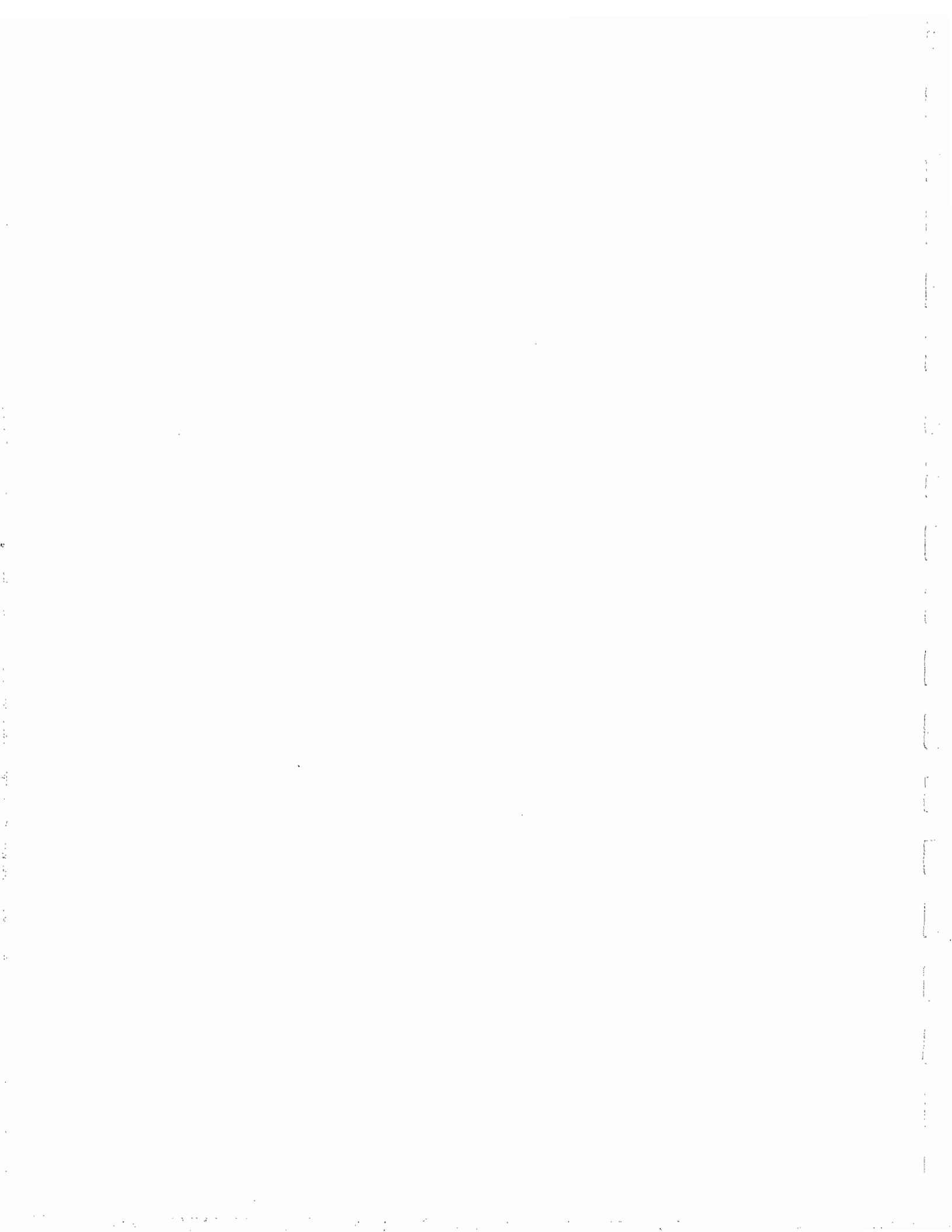
UU - Unconsolidated Undrained Triaxial
 UU_p - UU Triaxial with Pore Pressure Measurements
 CU - Consolidated Undrained Triaxial
 CU_p - CU Triaxial with Pore Pressure Measurements
 CD - Consolidated Drained Triaxial

O - Organic Content
 S - Salinity
 TS - Thaw Strain
 SG - Specific Gravity

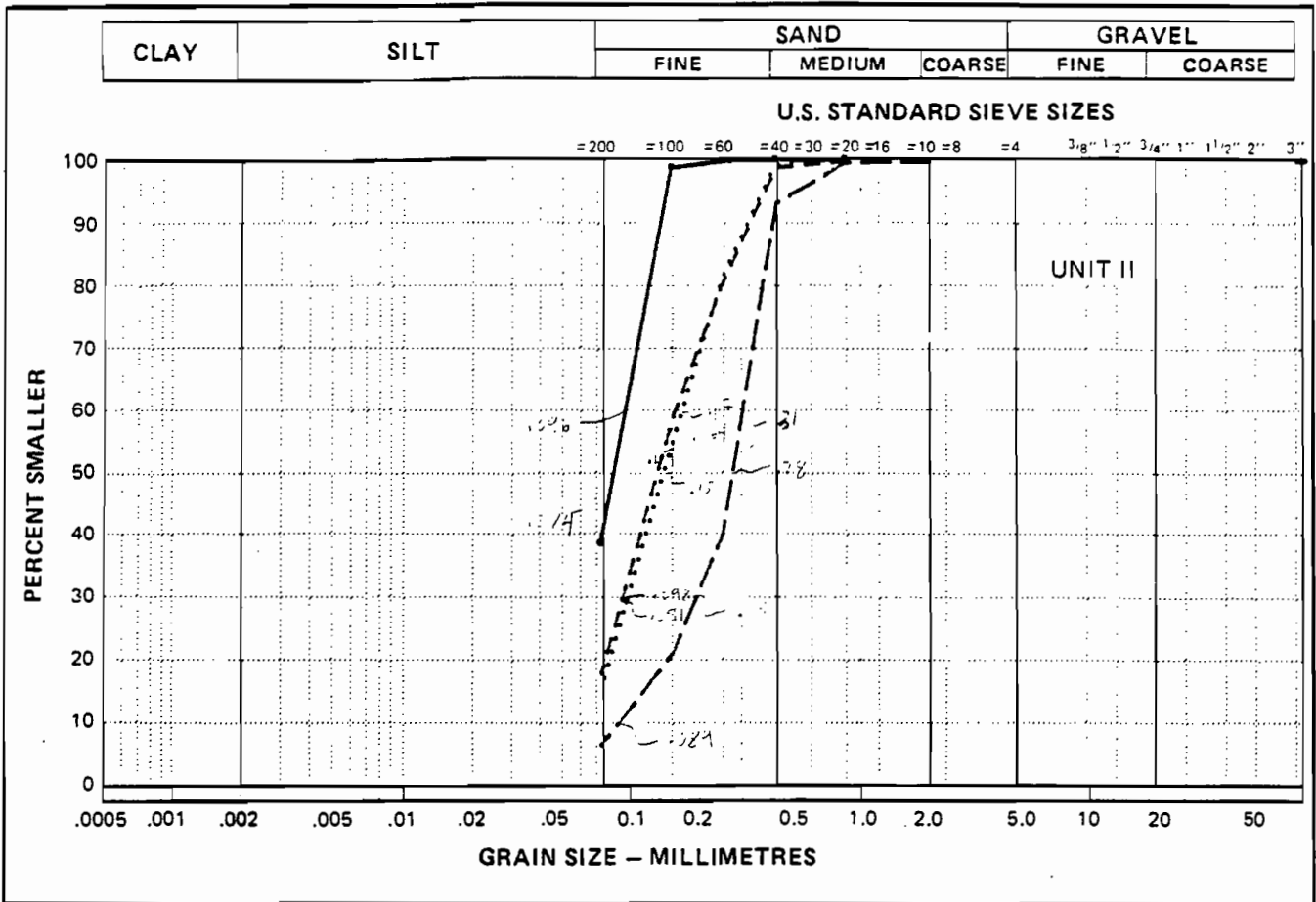
GULF 1984 OFFSHORE GEOTECHNICAL SITE INVESTIGATION
AMAULIGAK I-65 SITE



APPENDIX D
PARTICLE SIZE ANALYSES



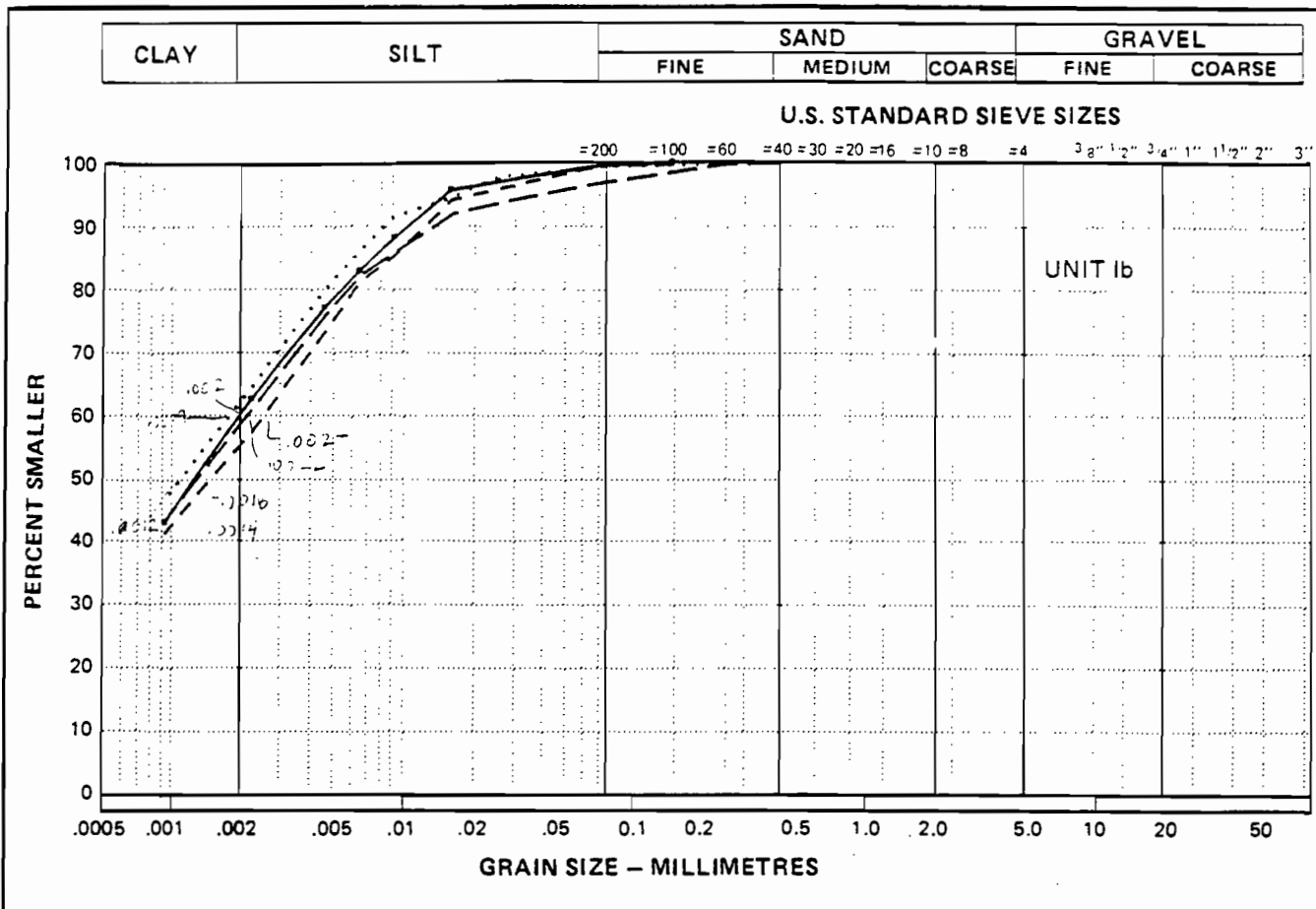
PARTICLE - SIZE ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
_____	AM84SI05	9.50 - 9.50	-	37.6	62.4	0.0	-	-	-
.....	AM84SI05	11.50 - 11.50	-	14.5	85.5	0.0	-	-	-
-----	AM84SI05	12.00 - 12.00	-	17.0	83.0	0.0	-	-	-
_____	AM84SI05	15.50 - 15.50	-	5.4	94.6	0.0	3.3	1.3	SP-SM

JOB NO. 101 -4118 **DATE 84-10-3**

PARTICLE - SIZE ANALYSIS OF SOILS

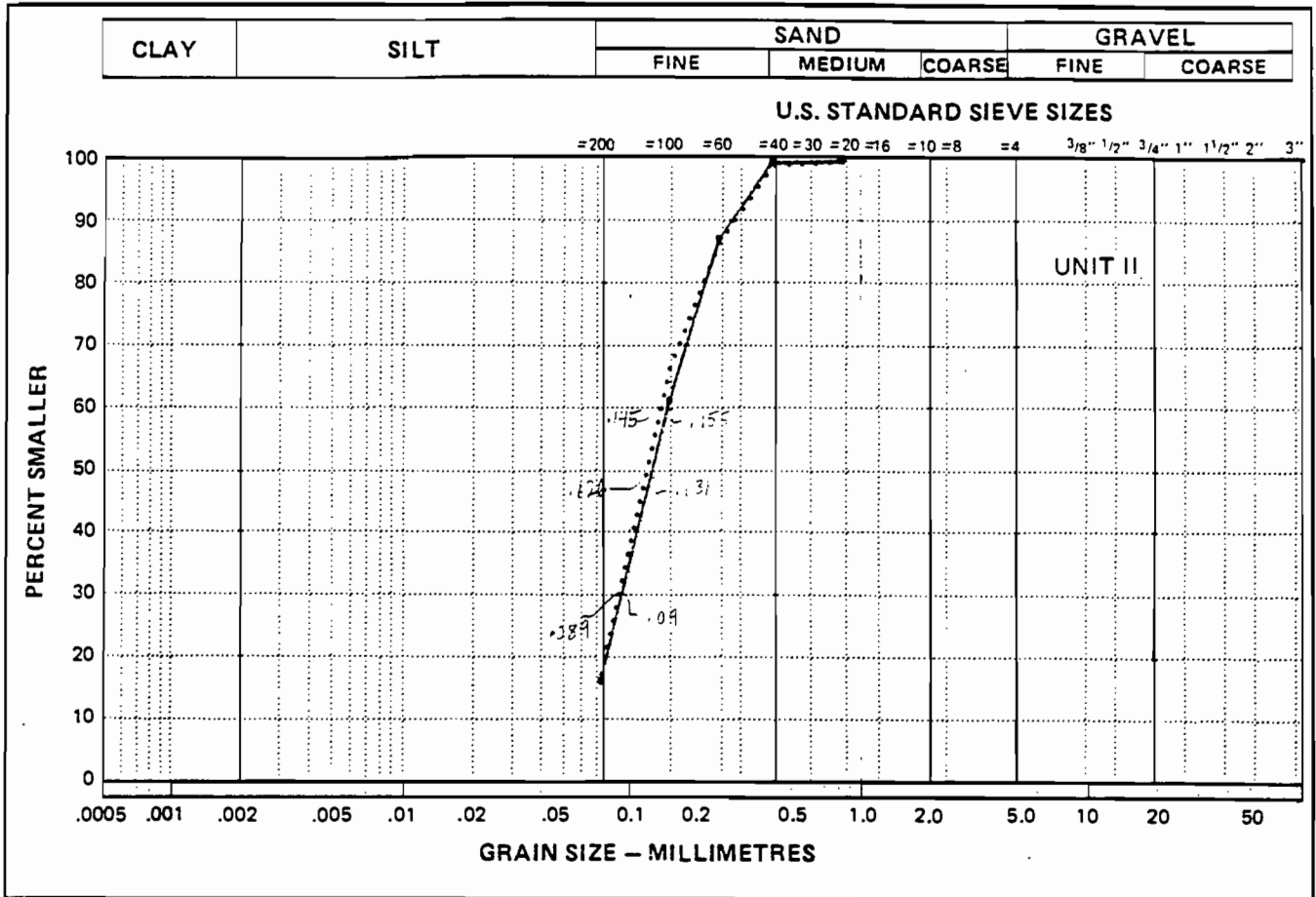


SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
_____	AM84SI05	3.50 - 3.90	58.7	40.9	.4	0.0	-	-	-
.....	AM84SI05	1.98 - 2.45	61.3	38.3	.4	0.0	-	-	-
---	AM84SI05	7.48 - 7.86	54.4	45.4	.2	0.0	-	-	-
---	AM84SI05	8.38 - 9.01	57.7	39.3	3.0	0.0	-	-	-

JOB NO. 101 -4118

DATE 84-10-31

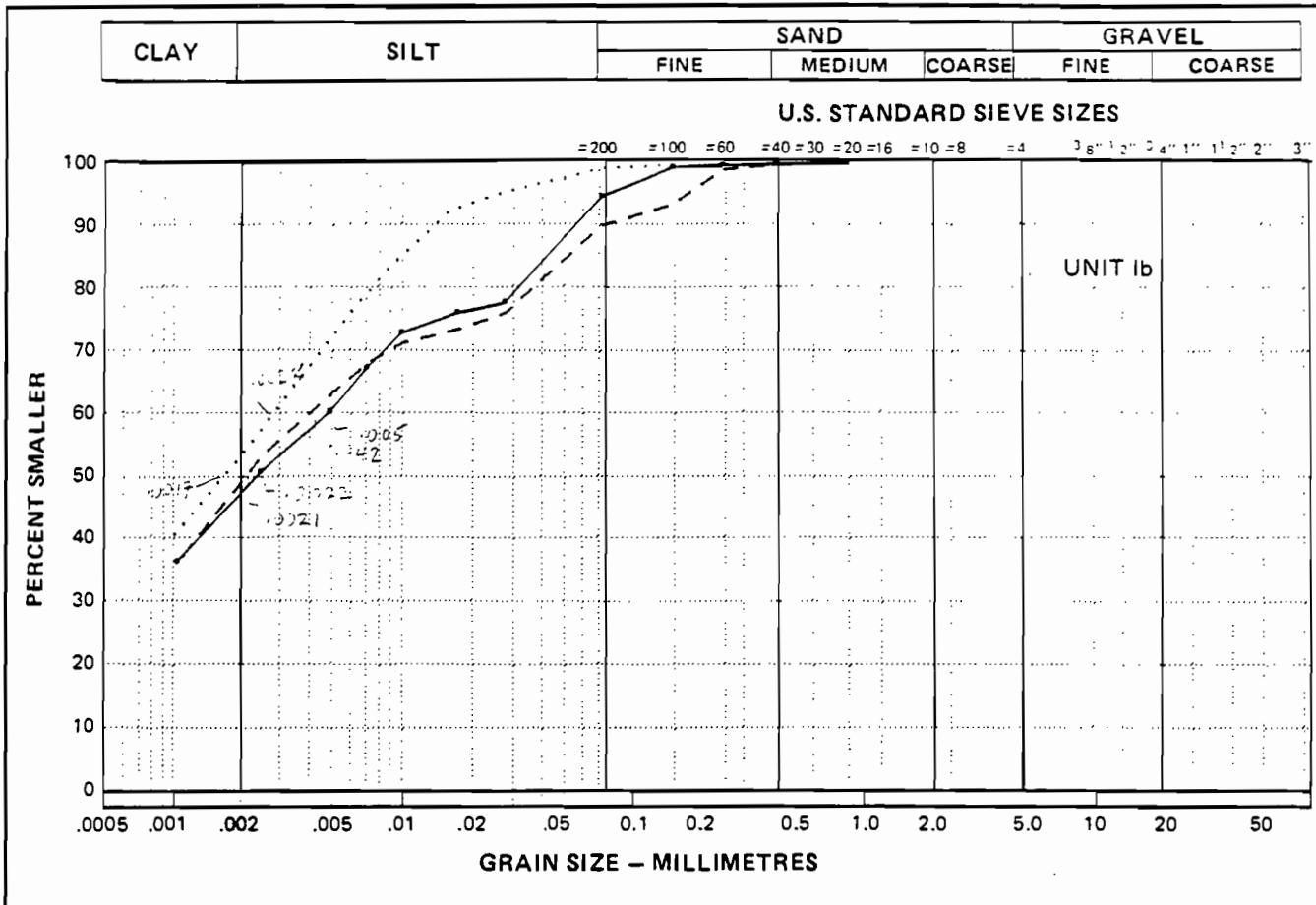
PARTICLE - SIZE ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
_____	AD84SI05	15.80 - 15.80	--	15.6	84.4	0.0	-	-	-
.....	AD84SI05	17.40 - 17.40	-	16.6	83.4	0.0	-	-	-

JOB NO. 101 -4118 DATE 84-10-2

PARTICLE - SIZE ANALYSIS OF SOILS

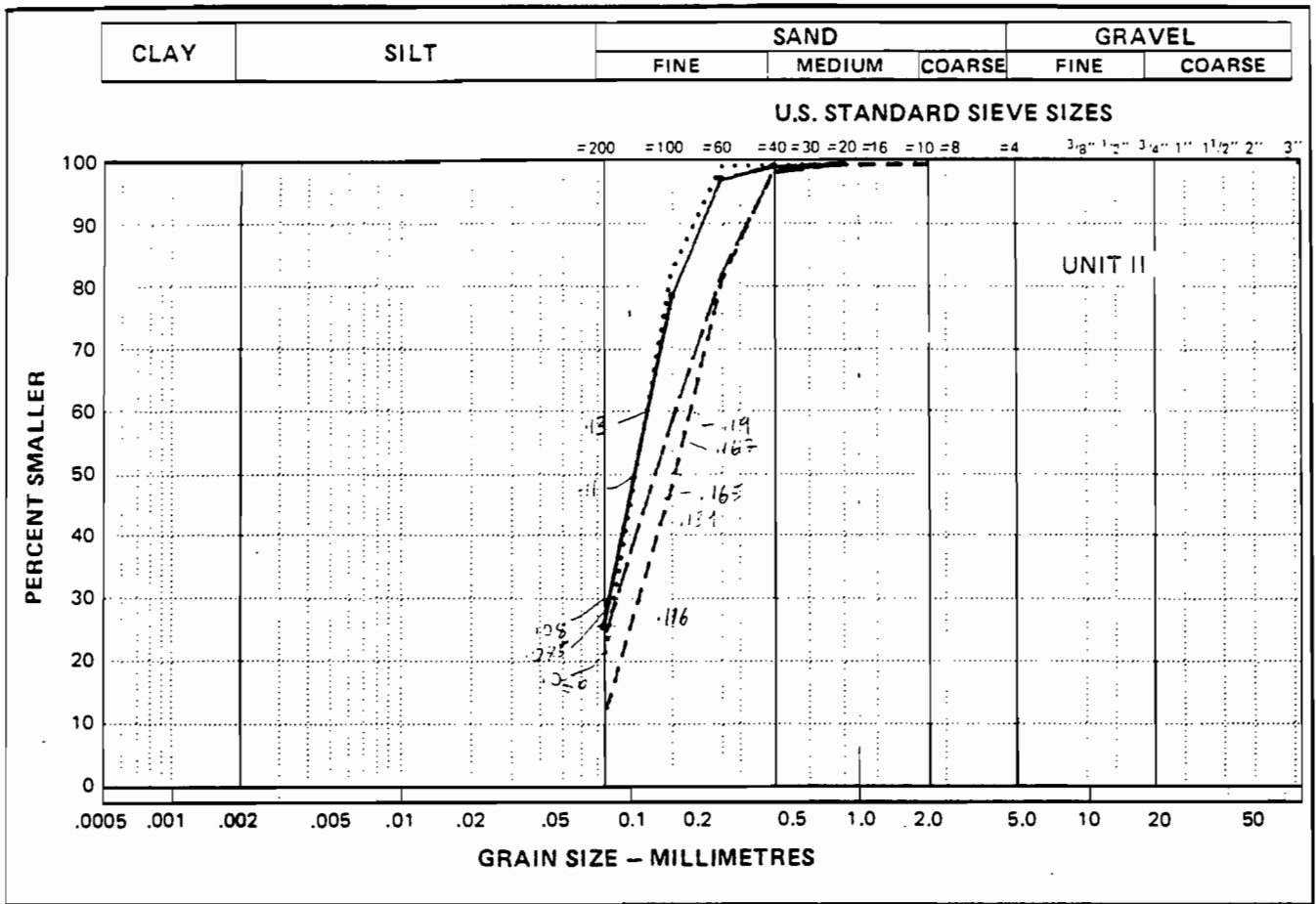


SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
—	AD84SI05	4.72 - 5.10	47.0	47.8	5.2	0.0	-	-	-
.....	AD84SI05	10.36 - 10.96	53.1	46.3	.6	0.0	-	-	-
---	AD84SI05	13.11 - 13.91	48.9	41.3	9.8	0.0	-	-	-

JOB NO. 101 -4118

DATE 84-11-12

PARTICLE - SIZE ANALYSIS OF SOILS

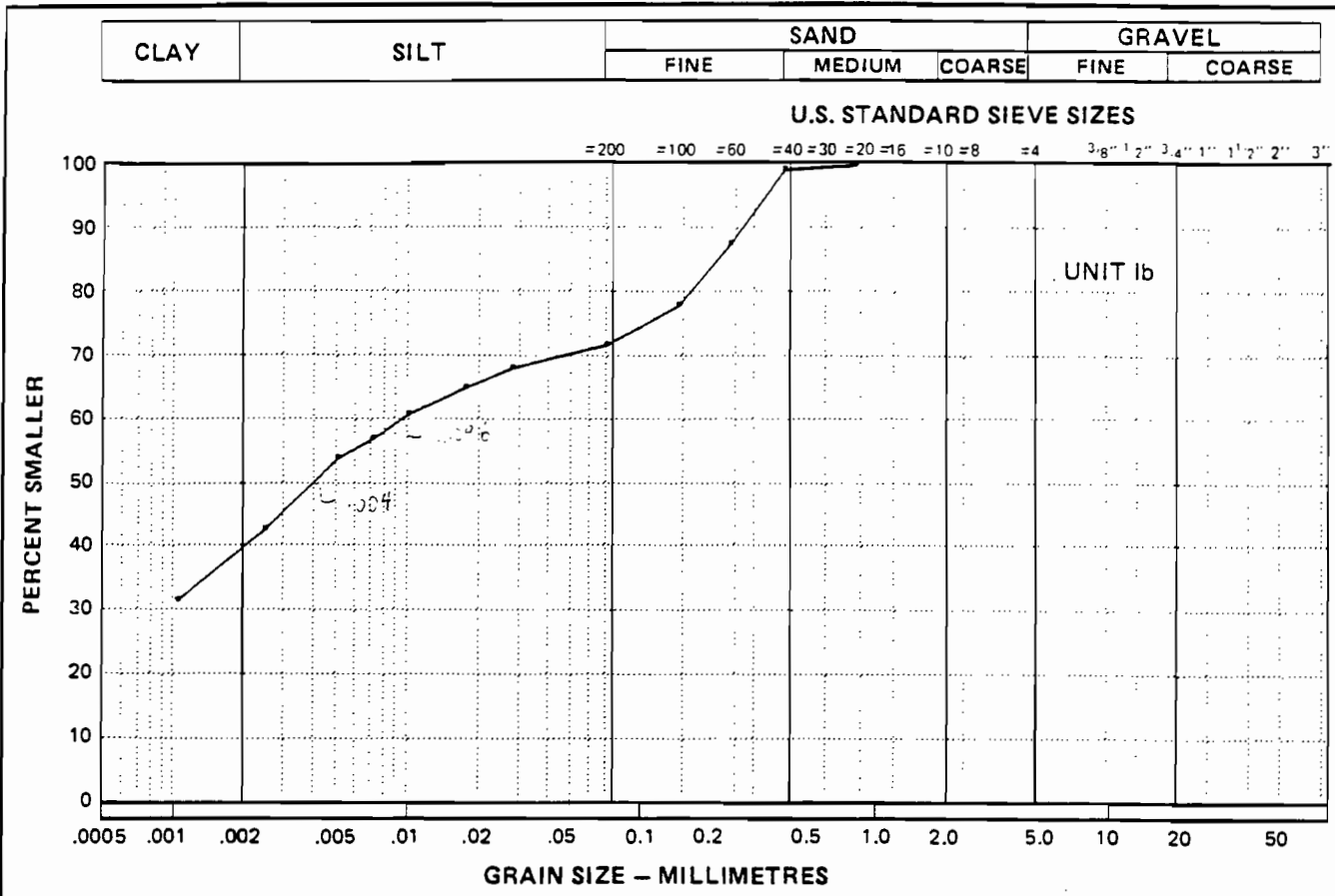


SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
_____	AD84SI01	8.00 - 8.70	-	25.0	75.0	0.0	-	-	-
.....	AD84SI01	9.40 - 9.40	-	19.6	80.4	0.0	-	-	-
___	AD84SI01	12.50 - 12.50	-	10.3	89.7	0.0	-	-	-
___	AD84SI01	16.10 - 16.10	-	22.8	77.2	0.0	-	-	-

JOB NO. 101 -4118

DATE 84-10-2

PARTICLE - SIZE ANALYSIS OF SOILS



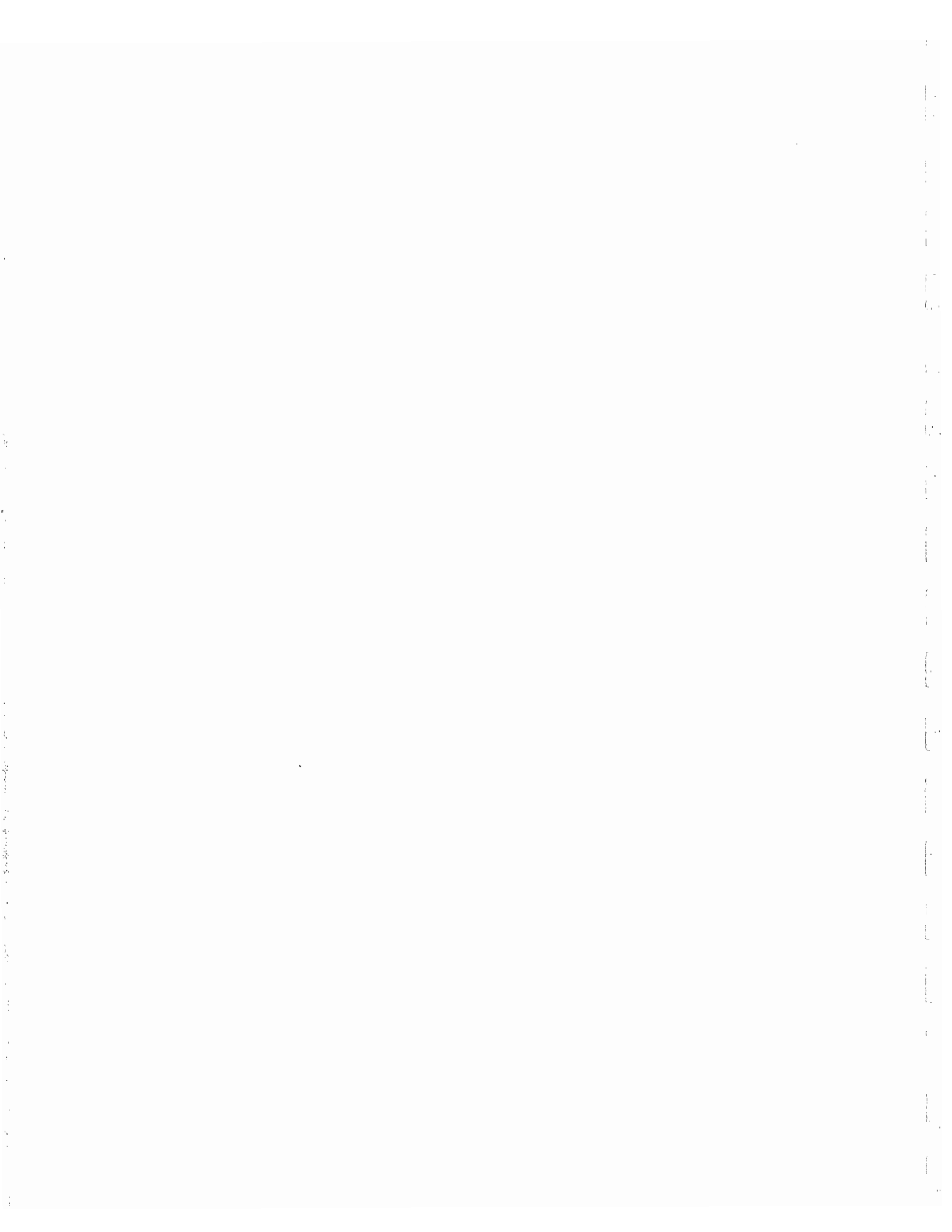
SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
	ADB4SI01	8.23 - 8.48	39.5	32.3	28.2	0.0	-	-	-

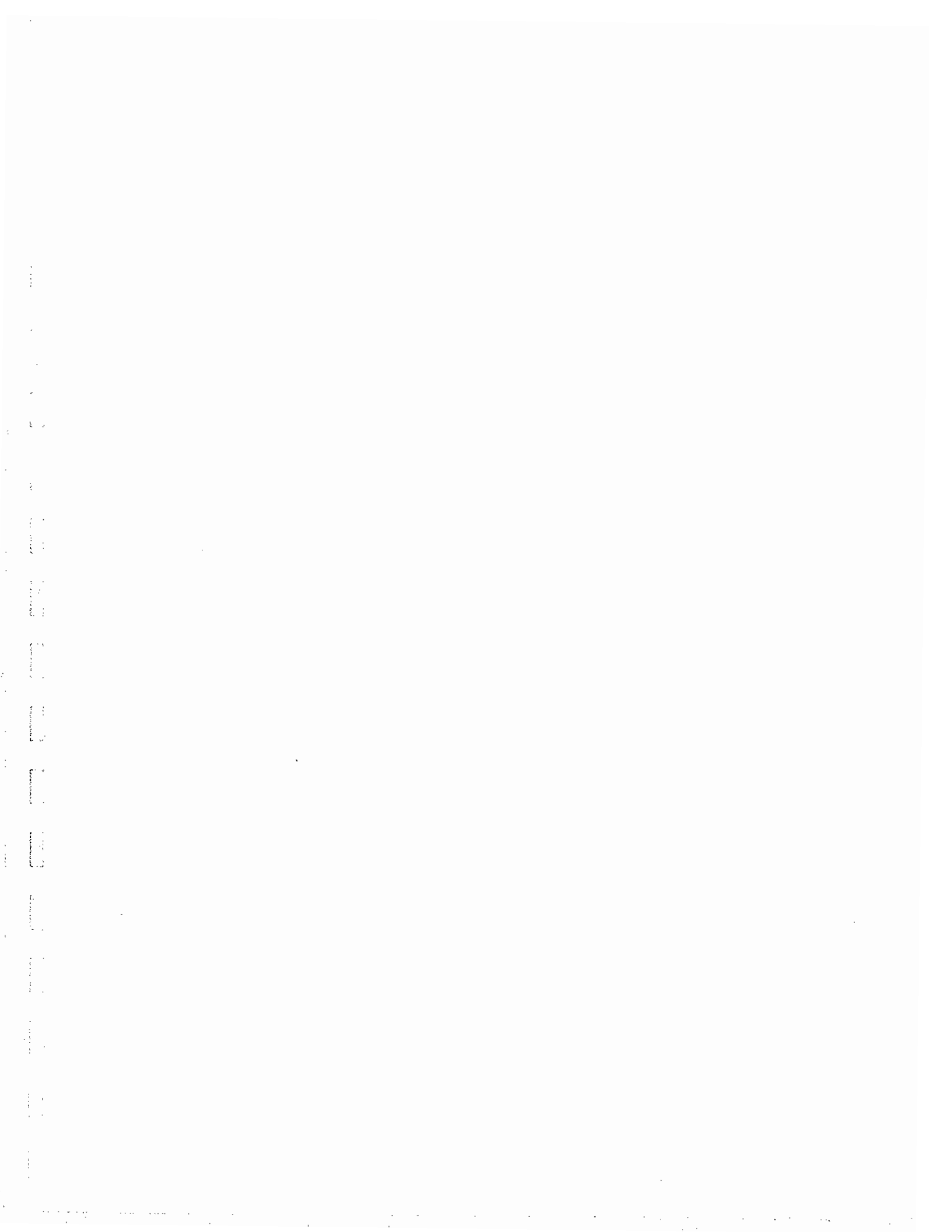
JOB NO. 101 -4118

DATE 84-11-12

APPENDIX E

LABORATORY TEST PROCEDURES







LABORATORY TEST PROCEDURES

Procedures Specified

1. Classification and Index Tests
2. Porewater Salinity Tests



LABORATORY TEST PROCEDURES

1. CLASSIFICATION AND INDEX TESTS

These tests are quite routine and the standard ASTM procedures employed are listed below:

<u>TEST</u>	<u>ASTM DESIGNATION</u>
Moisture Content	D 2216
Liquid Limit (1)	D 423
Plastic Limit and Plasticity Index	D 424
Grain Size	D 421 & 422
Specific Gravity	D 854
Relative Density	D 2049
Unified Soil Classification	D 2487

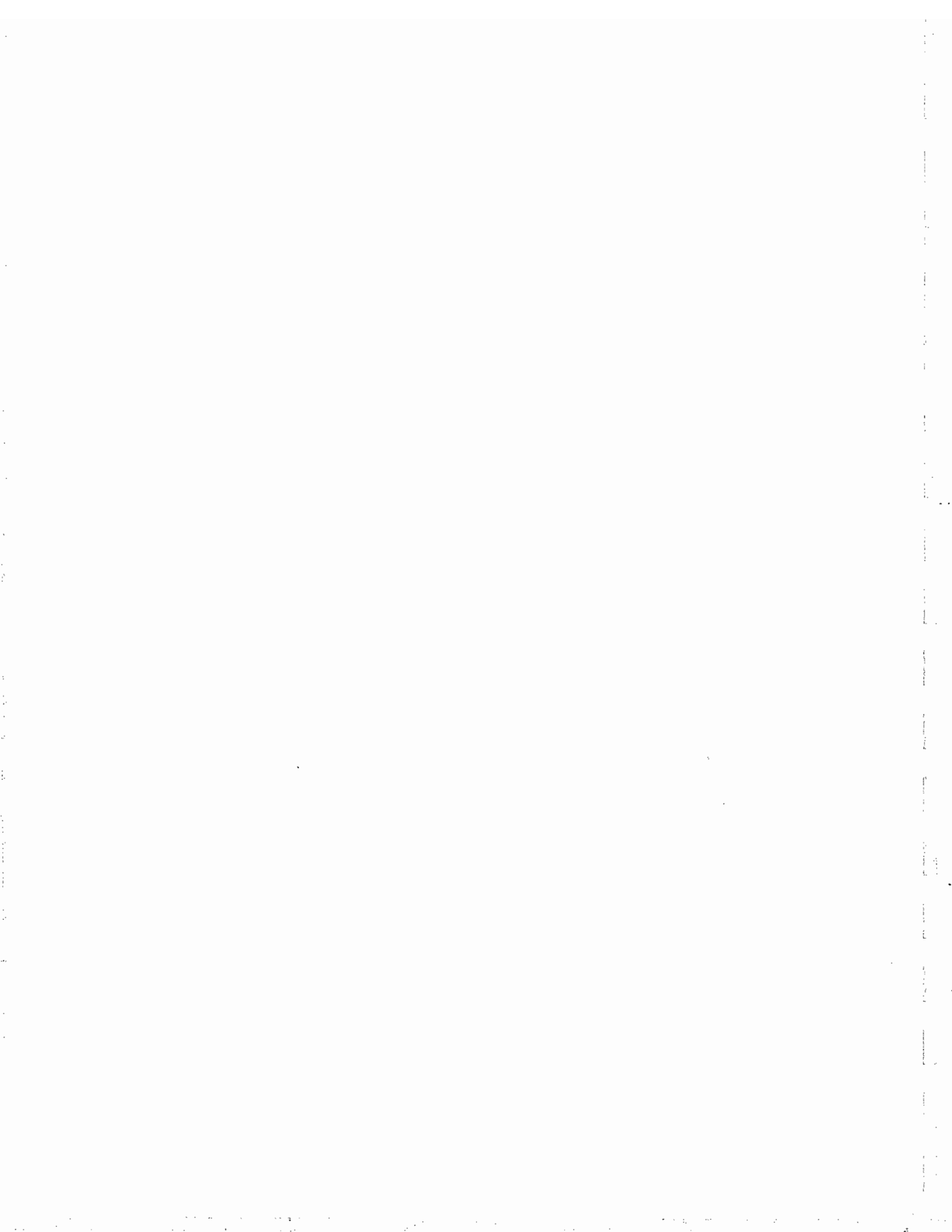
NOTE: 1. All liquid limits reported were obtained from 3 point determinations.

2. POREWATER SALINITY TESTS

Sample is trimmed to remove disturbed material. Porewater is extruded from thawed sample and filtered. The salinity content (NaCl) of the extruded porewater in % is determined using a hand-held refractometer. Several drops of porewater are placed on the reflecting plate and a reading is taken through the eyepiece. Results are reported to the nearest ppt.

APPENDIX F

STATIC CONE PENETRATION TEST RESULTS



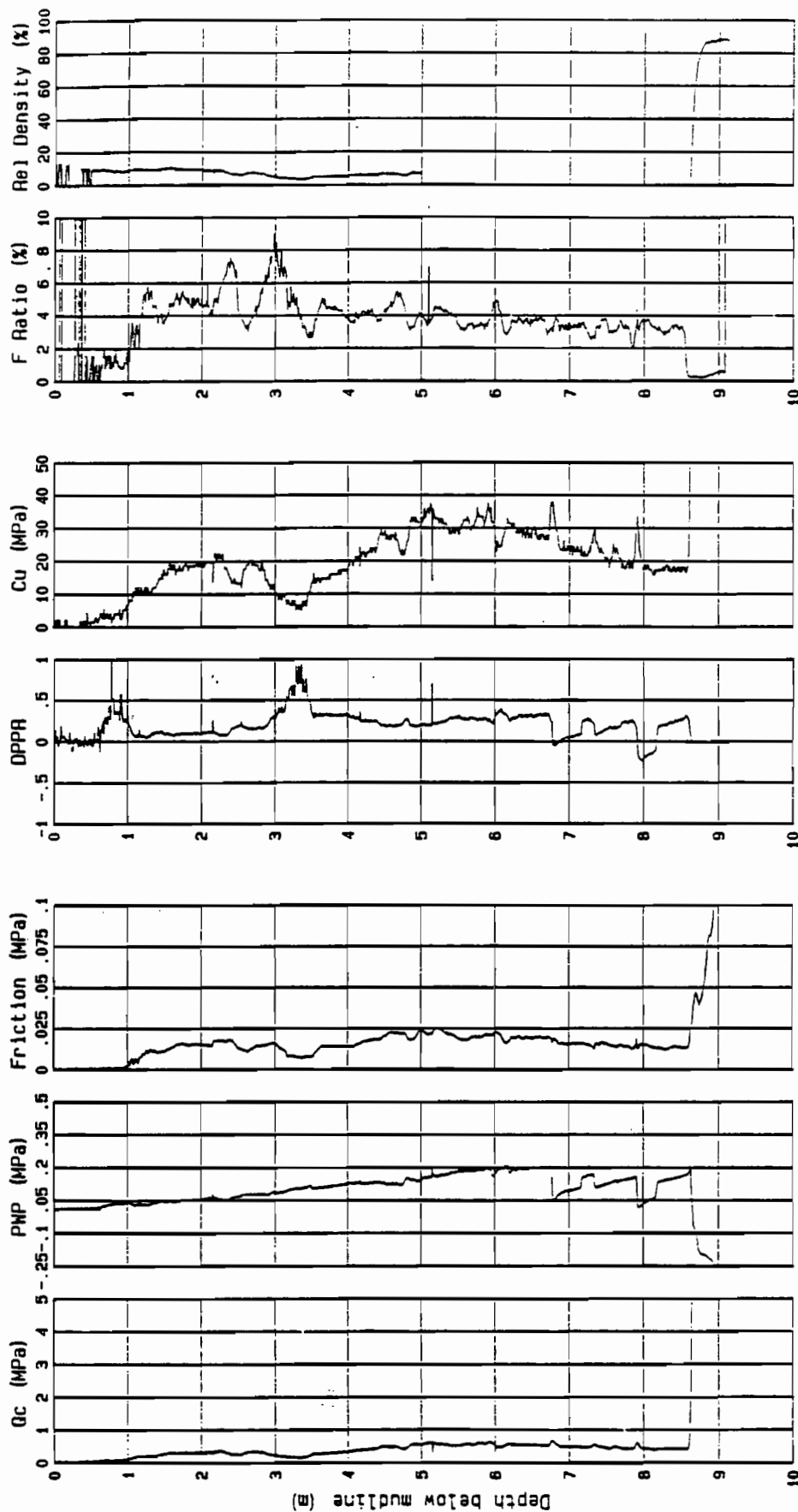
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 31.6

CPT : AMB4C101

PAGE 1 of 1

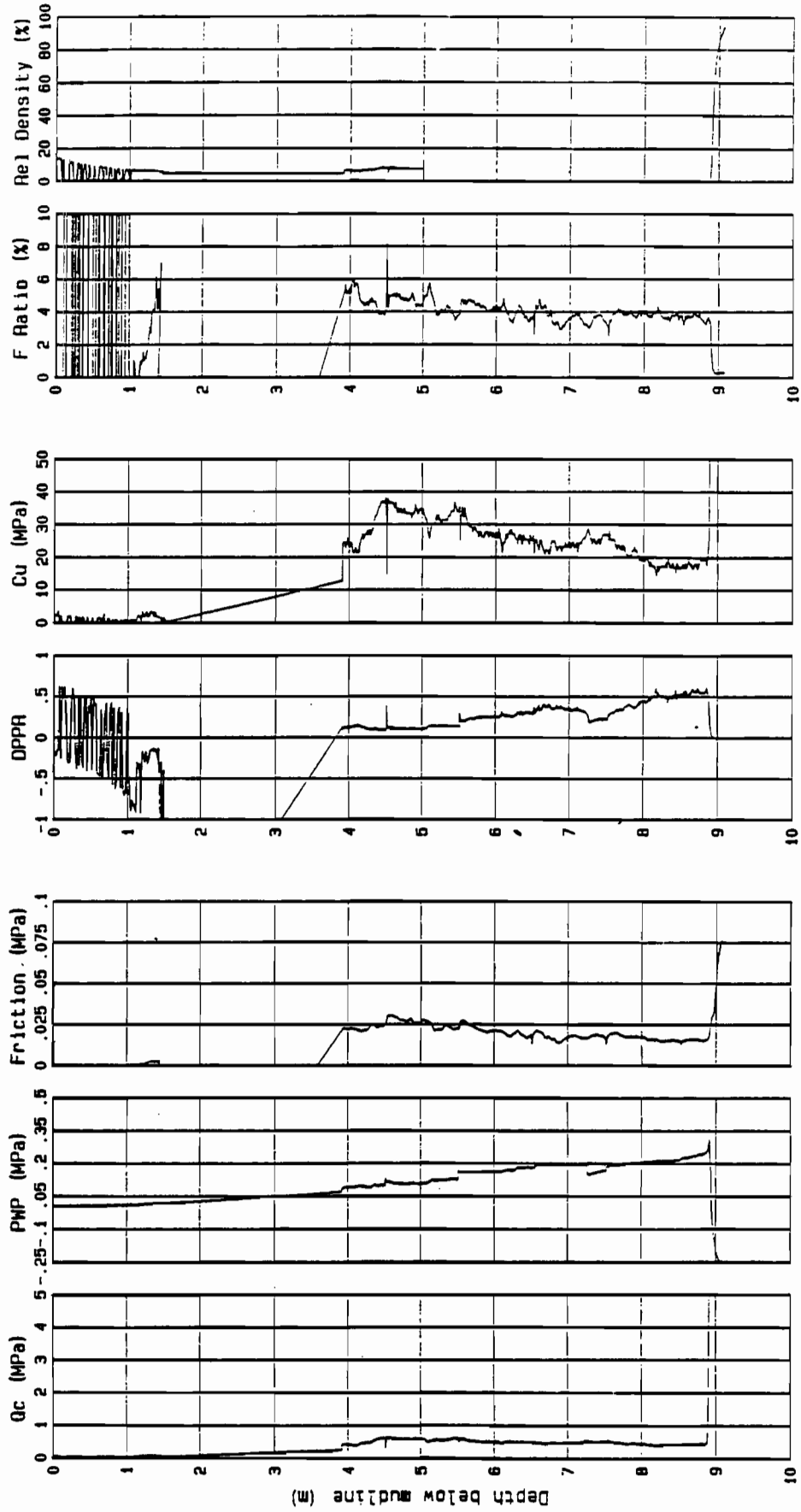


GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION
 Water depth (m) : 30.9

CPT : AMB4CI02

PAGE 1 of 1



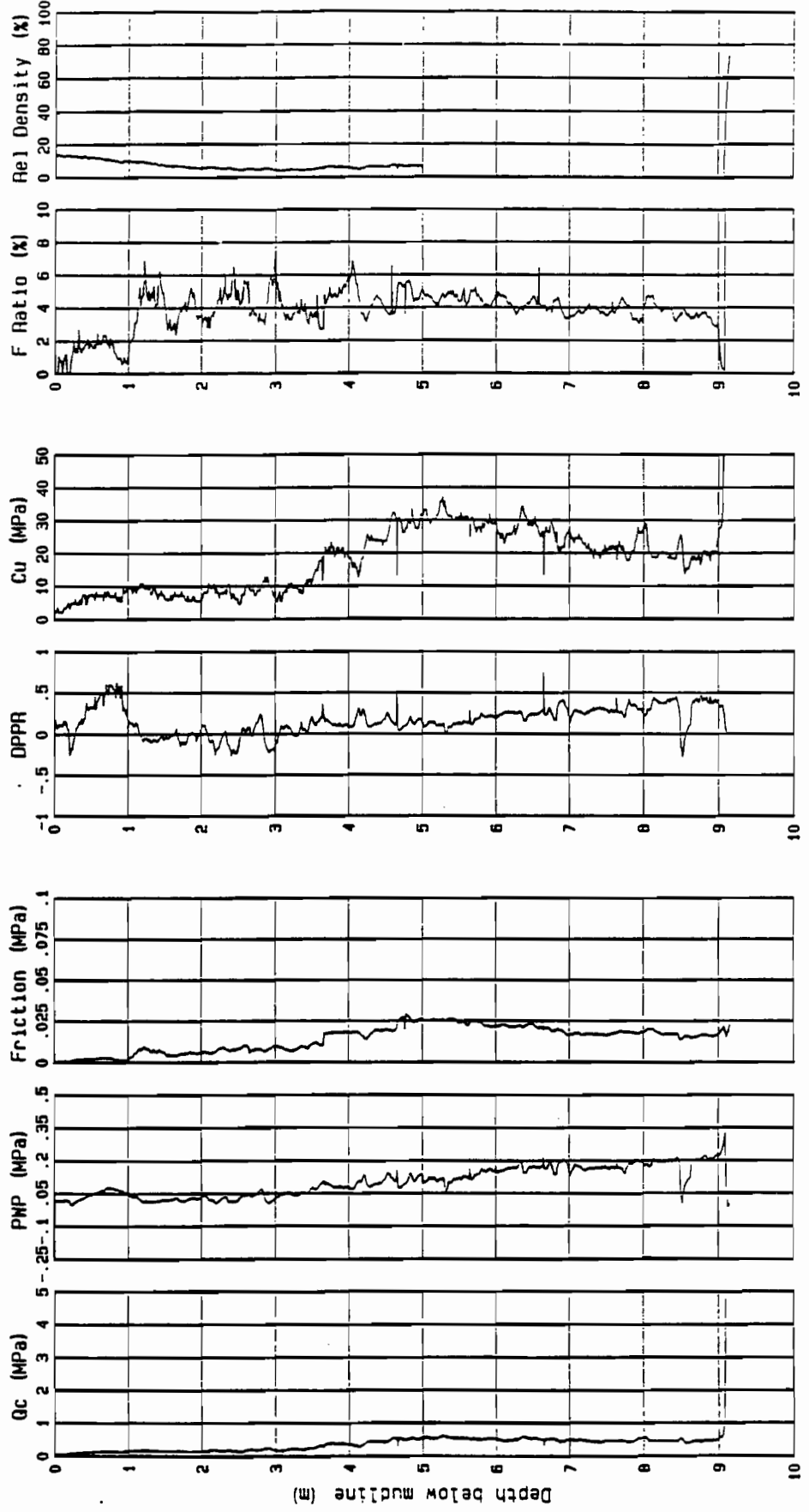
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 31.4

CPT : AMB4CI03

PAGE 1 of 1

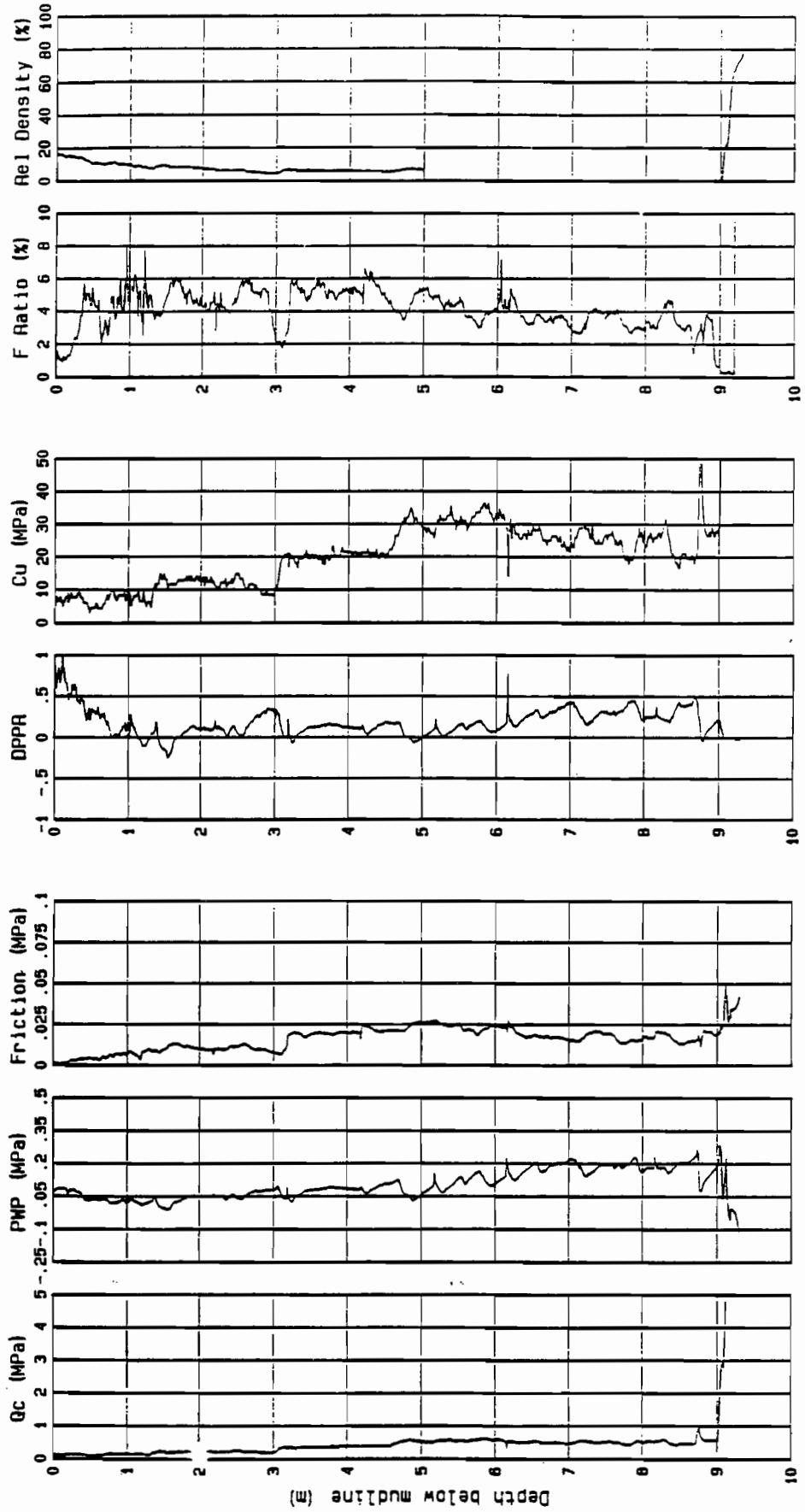


GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION
Water depth (m) : 31.7

CPT : AMB4CI04

PAGE 1 of 1



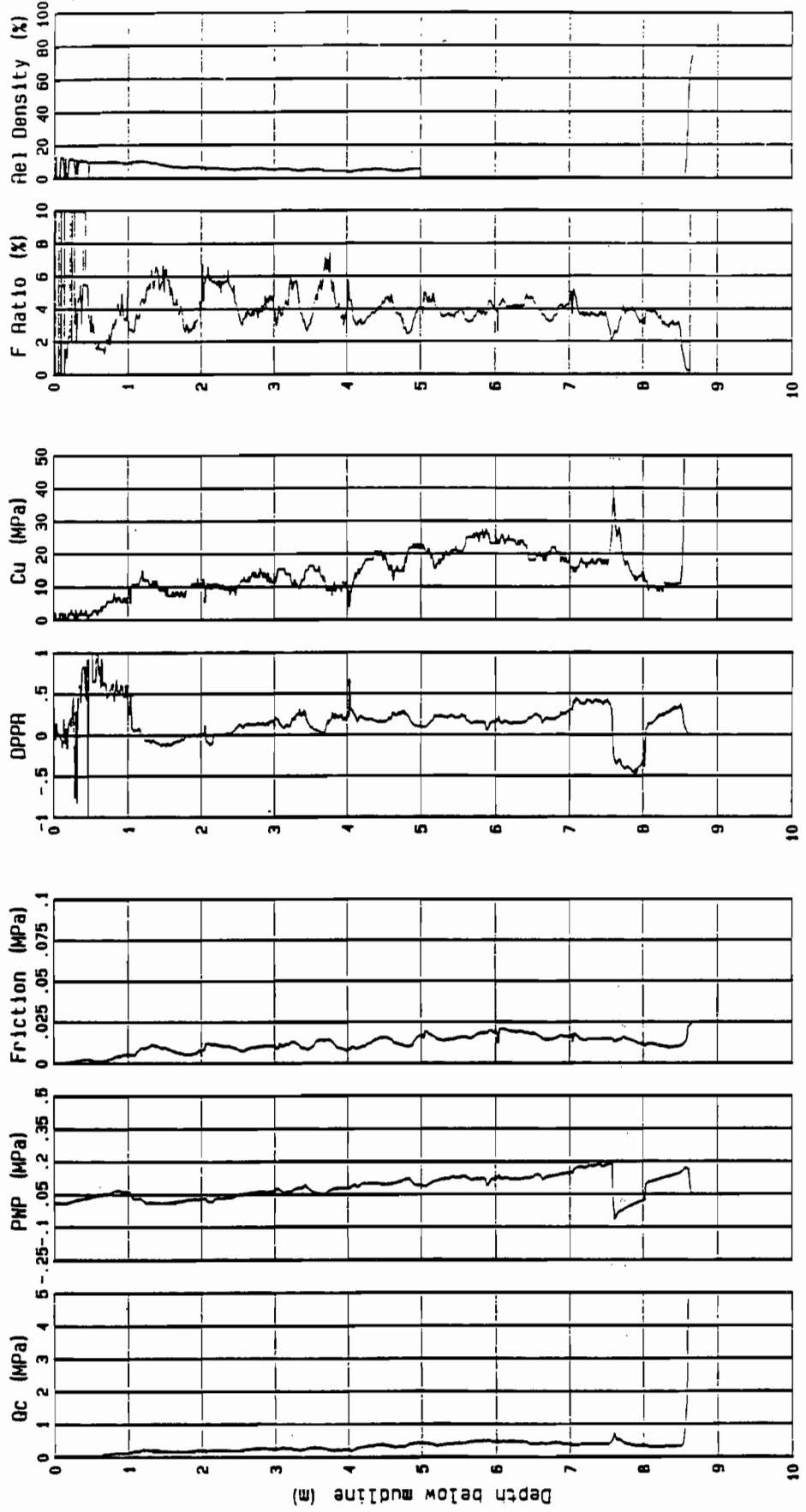
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 31.4

CPT : AMB4CI06

PAGE 1 of 1

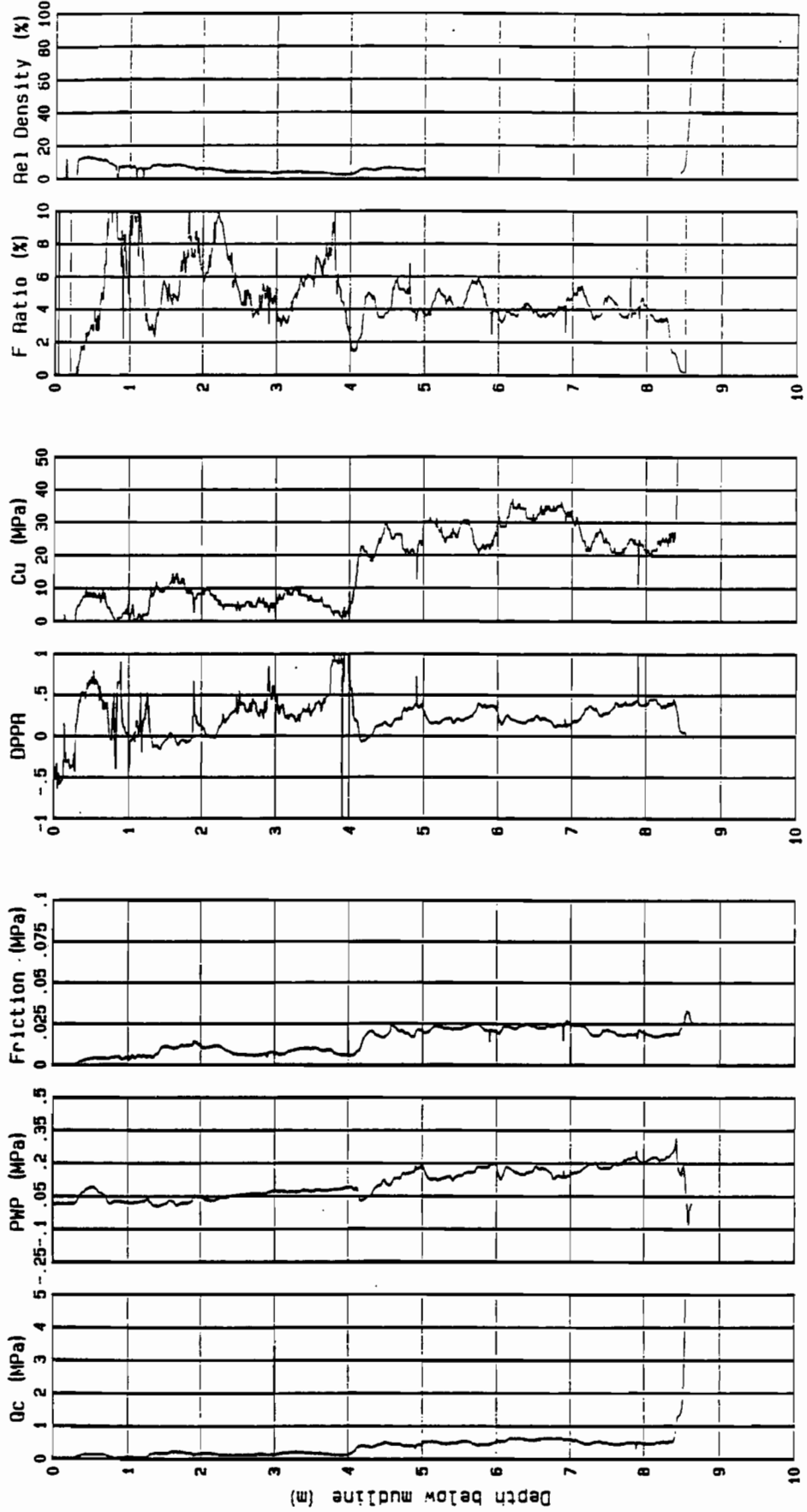


GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION
Water depth (m) : 32.1

CPT : AMB4C107

PAGE 1 of 1



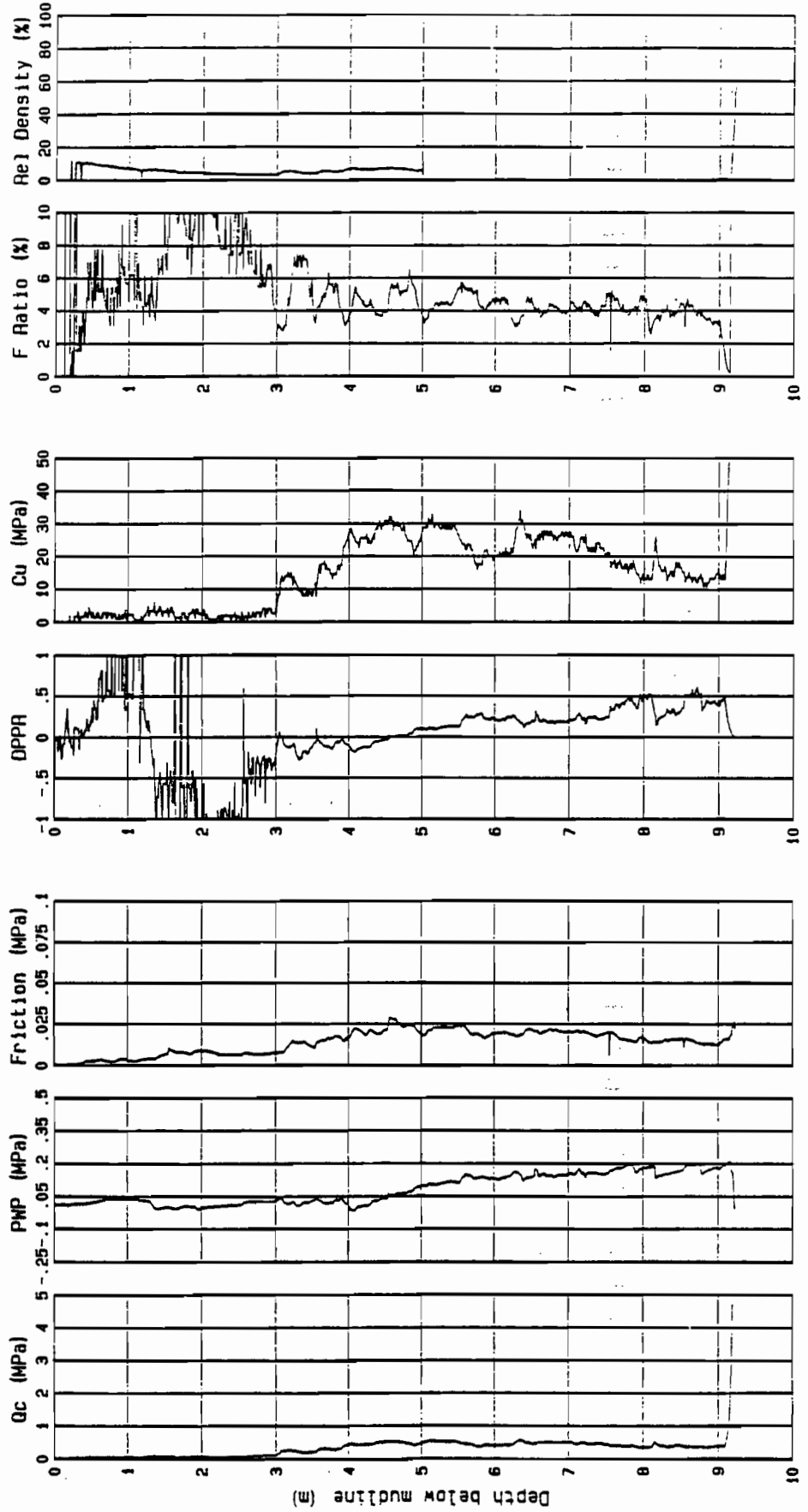
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 31

CPT : AM84CI08

PAGE 1 of 1



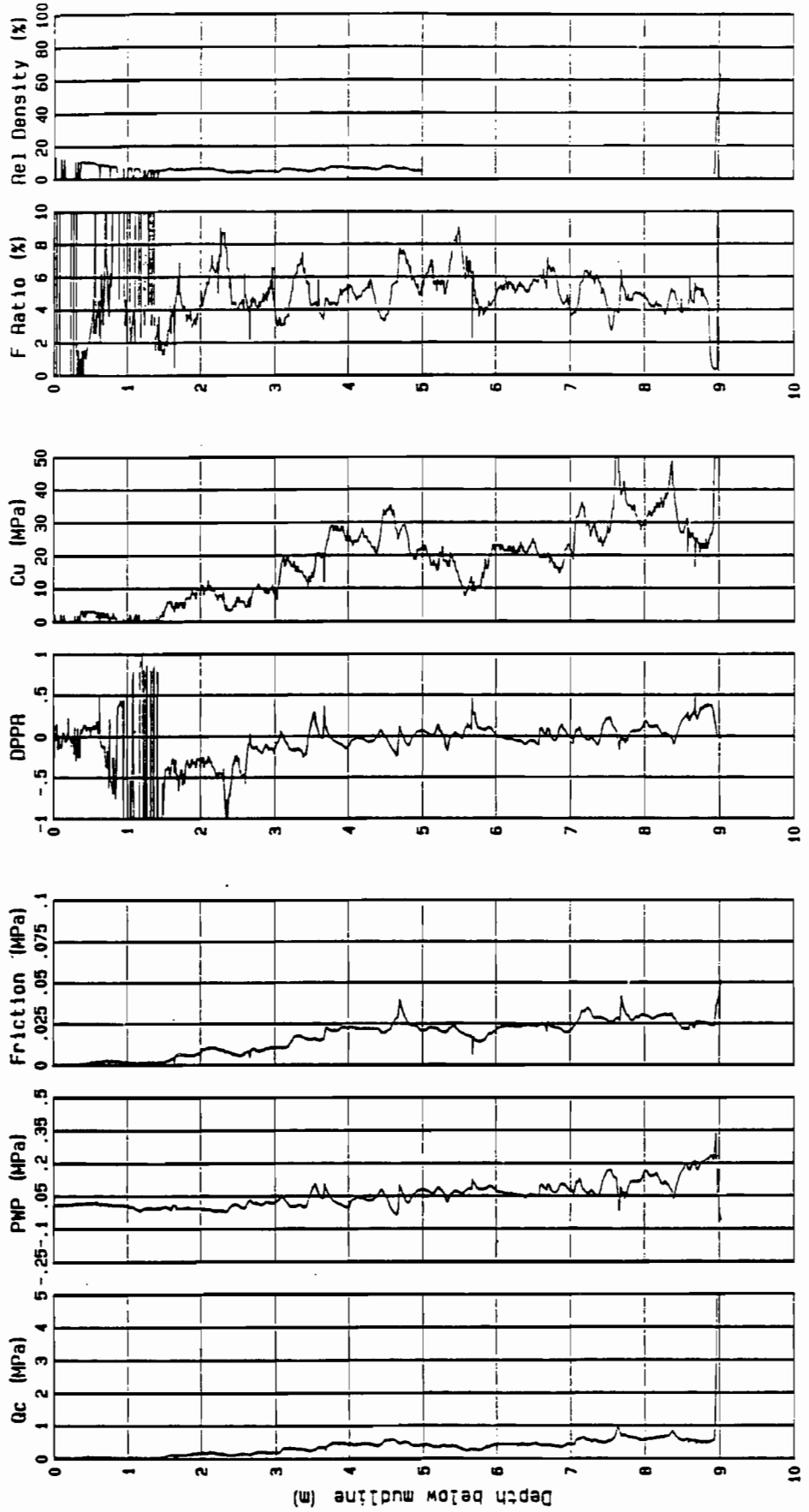
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 31.1

CPT : ADB4C101

PAGE 1 of 1



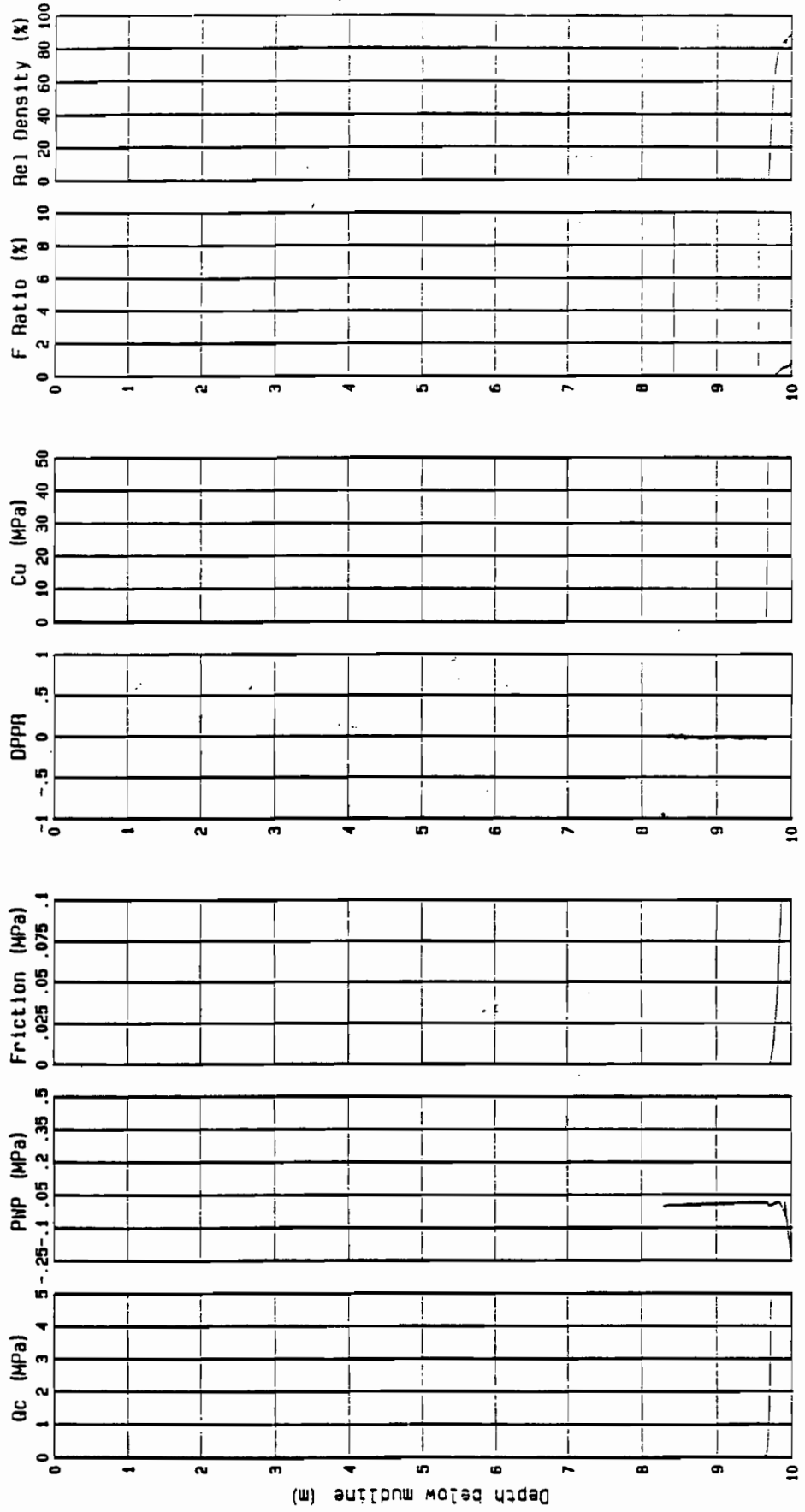
GULF CANADA RESOURCES INC

PAGE 1 of 2

CPT : AD84CI02

Location: AMAULIGAK DELINEATION

Water depth (m) : 31.1



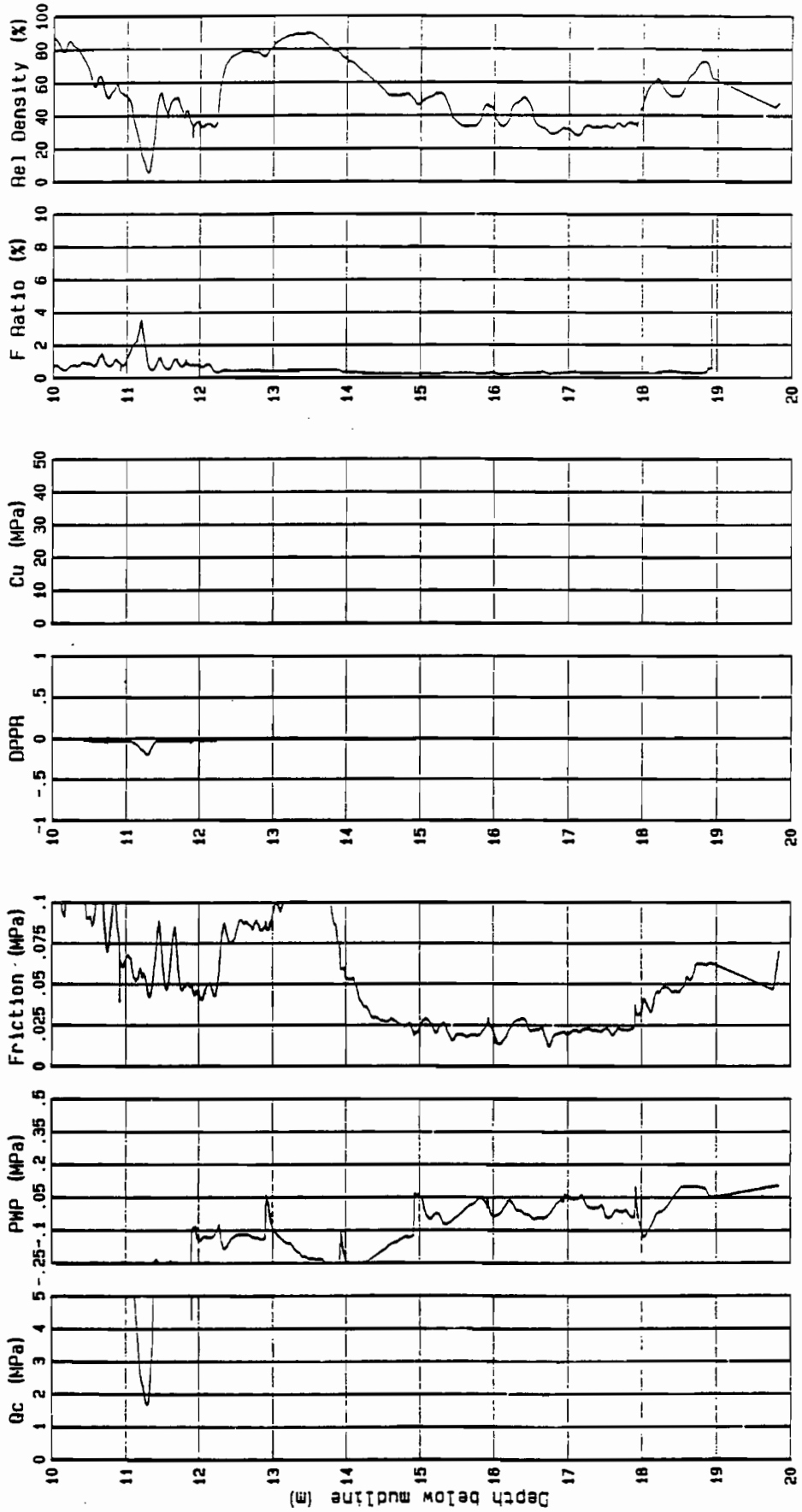
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 31.1

CPT : A084CI02

PAGE 2 of 2



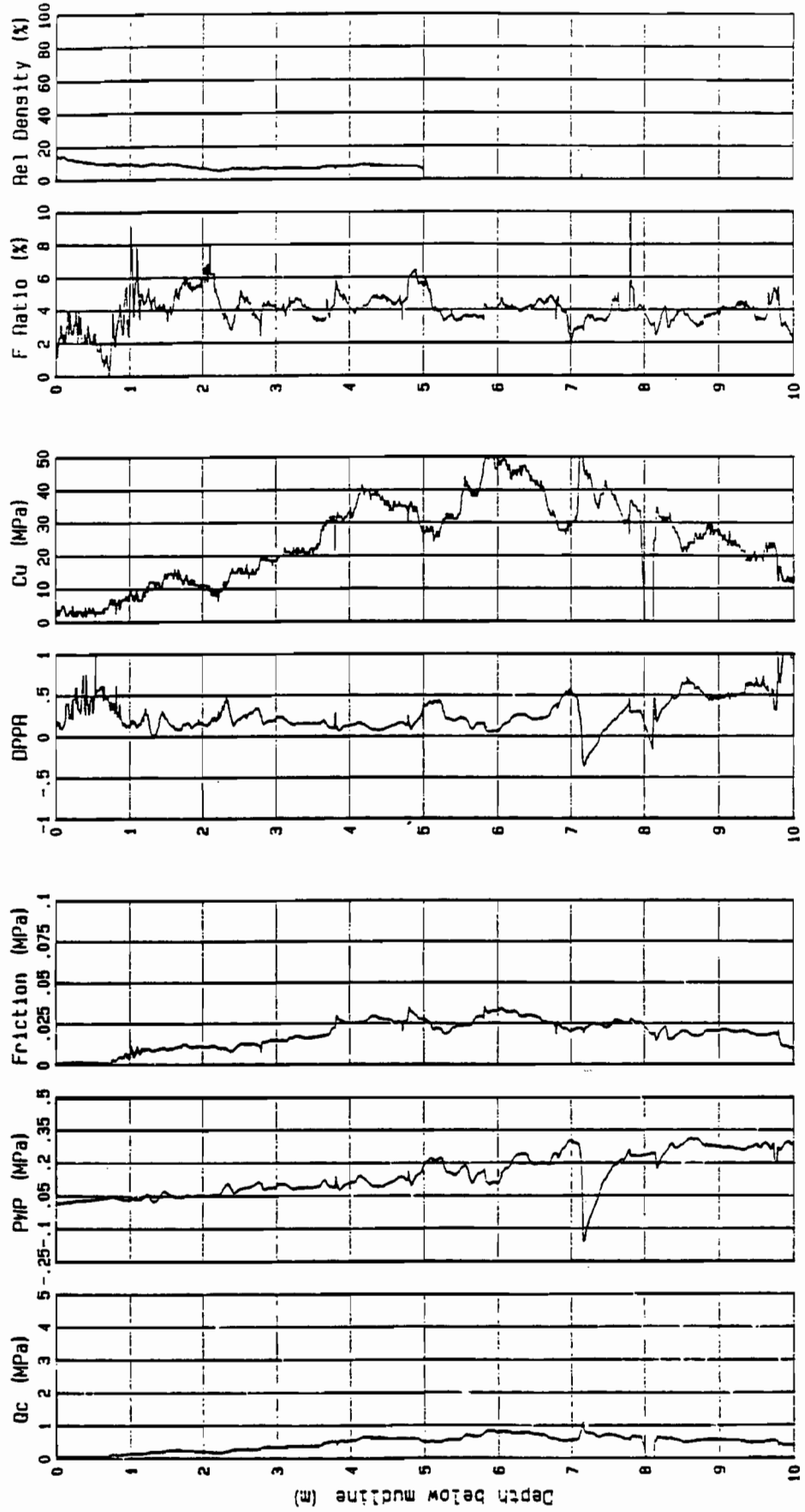
GULF CANADA RESOURCES INC

PAGE 1 of 2

CPT : ADB4C103

Location: ANAULIGAK DELINEATION

Water depth (m) : 30.9



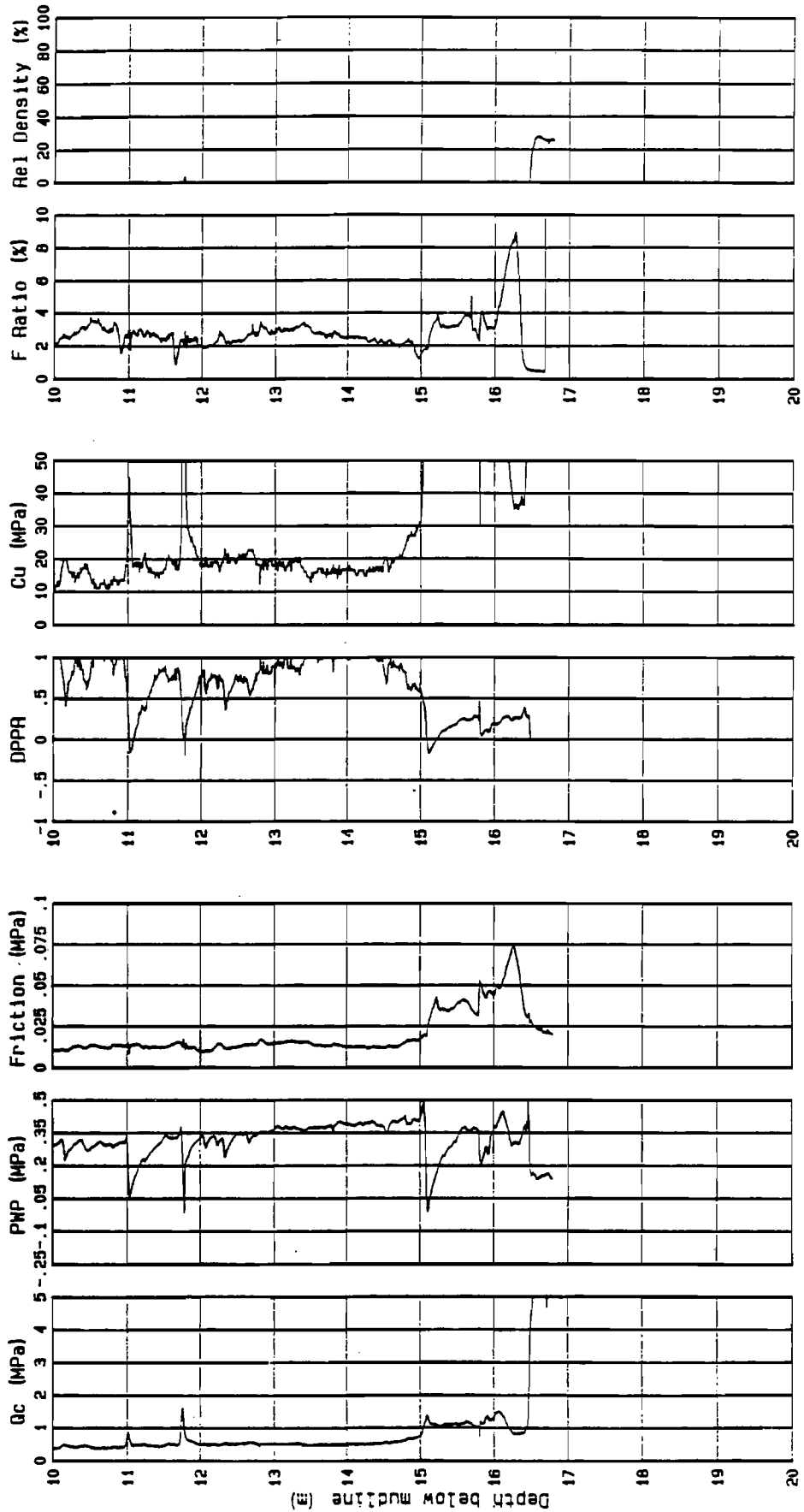
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 30.9

CPT : AB4C103

PAGE 2 of 2



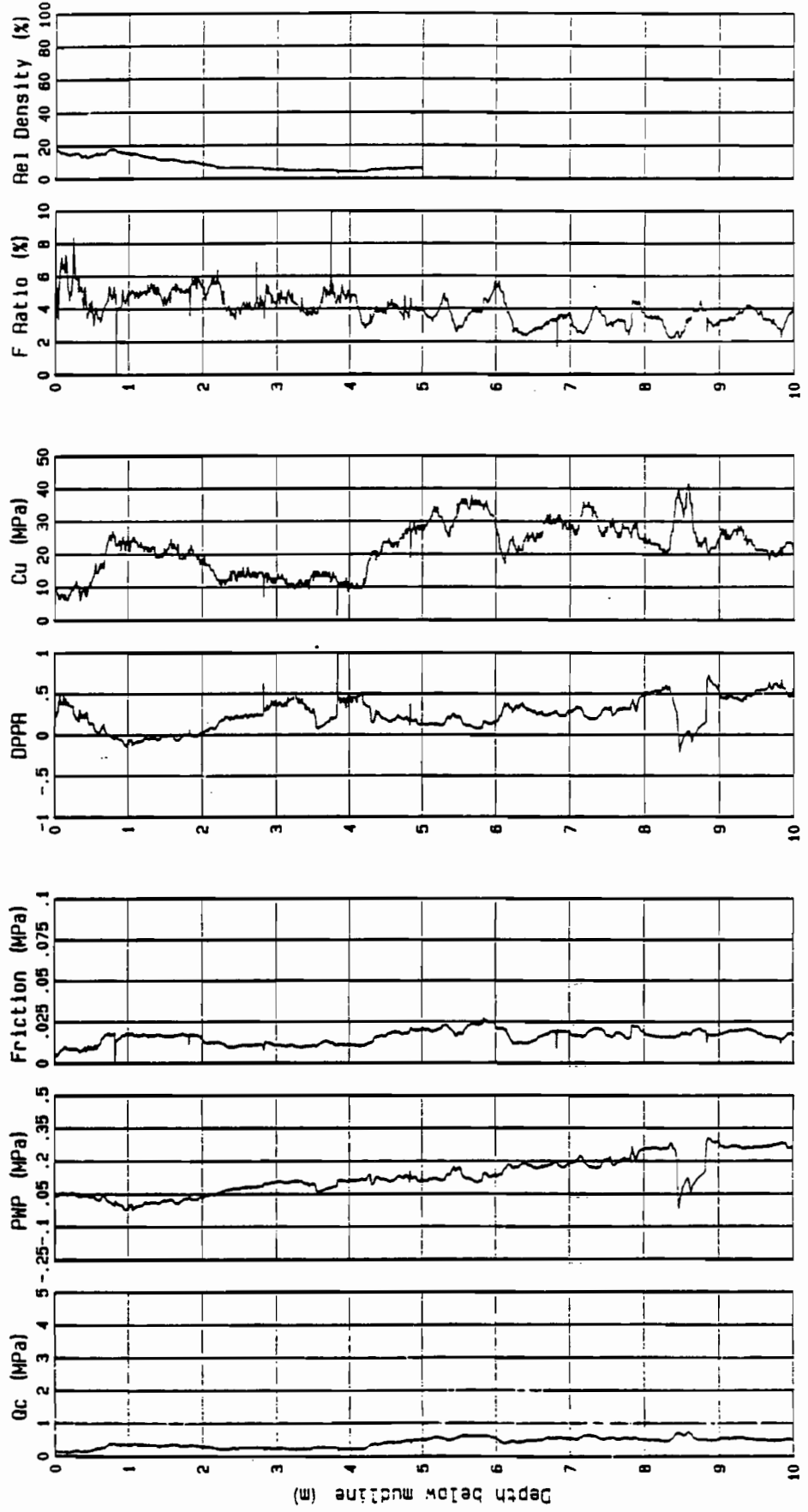
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 30

CPT : ADB4C104

PAGE 1 of 2



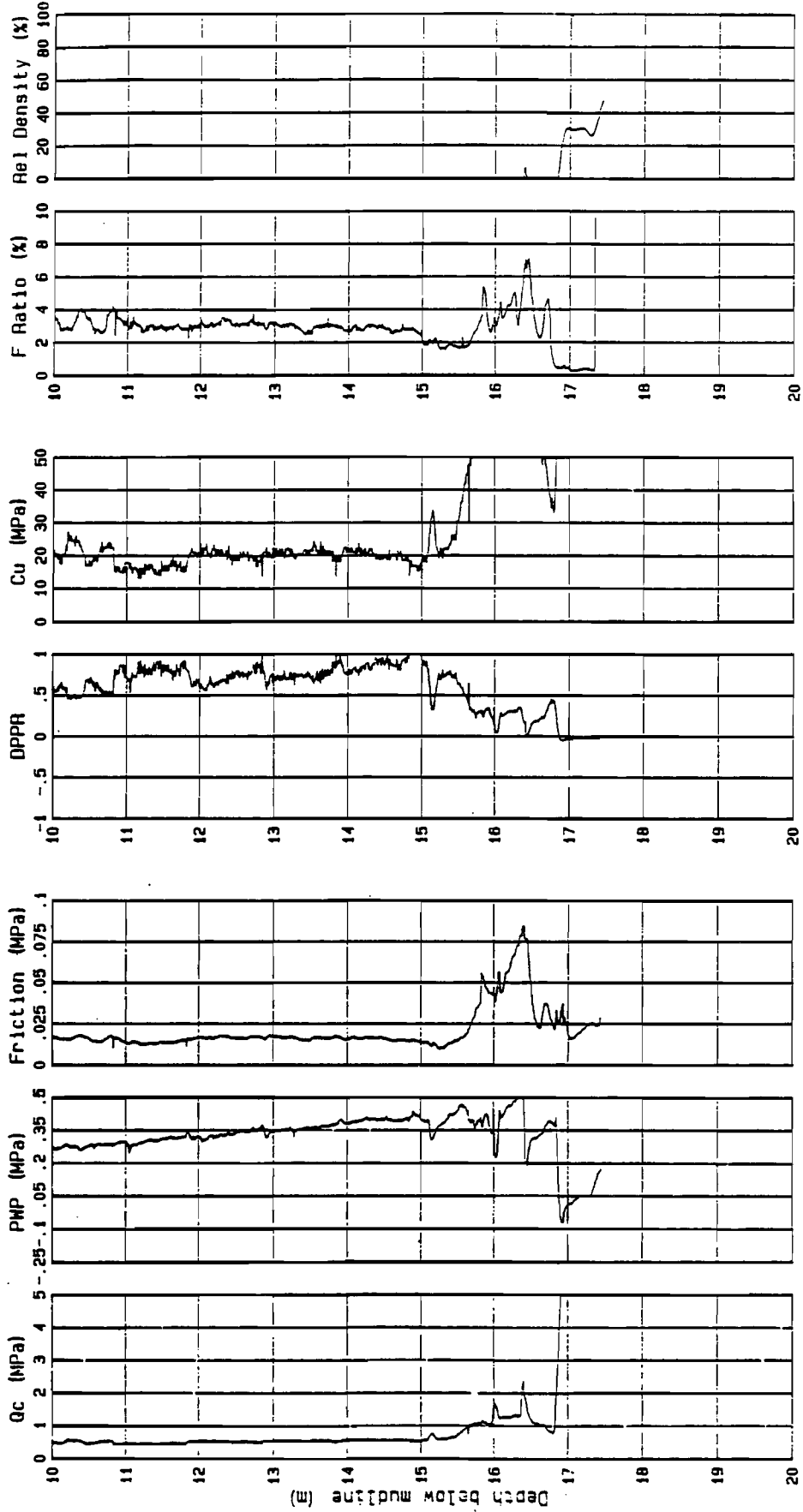
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

CPT : ADB4C104

PAGE 2 of 2

Water depth (m) : 30



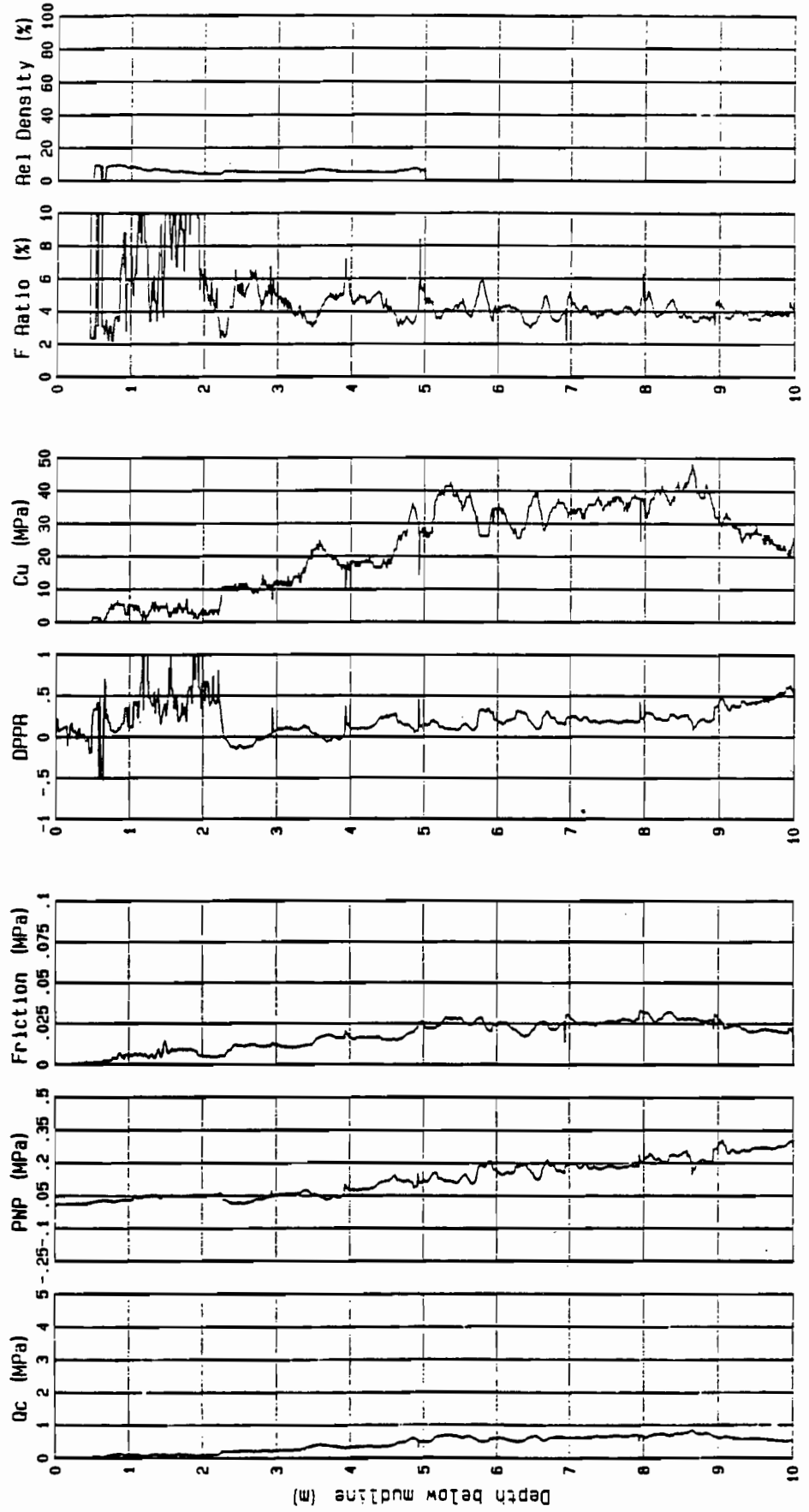
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

CPT : ADB4CI05C

PAGE 1 of 2

Water depth (m) : 30.8



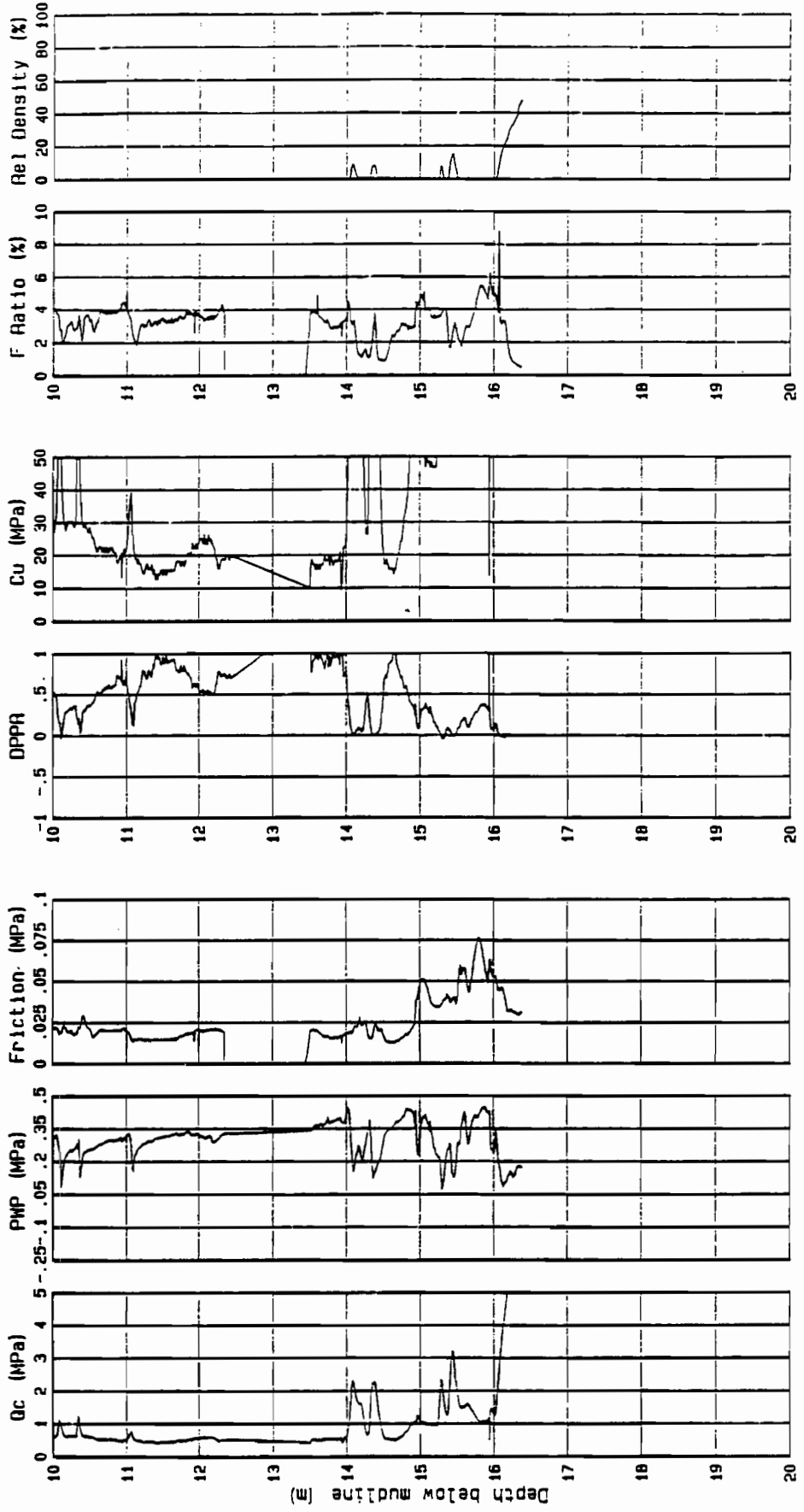
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

CPT : ADB4CI05C

PAGE 2 of 2

Water depth (m) : 30.8

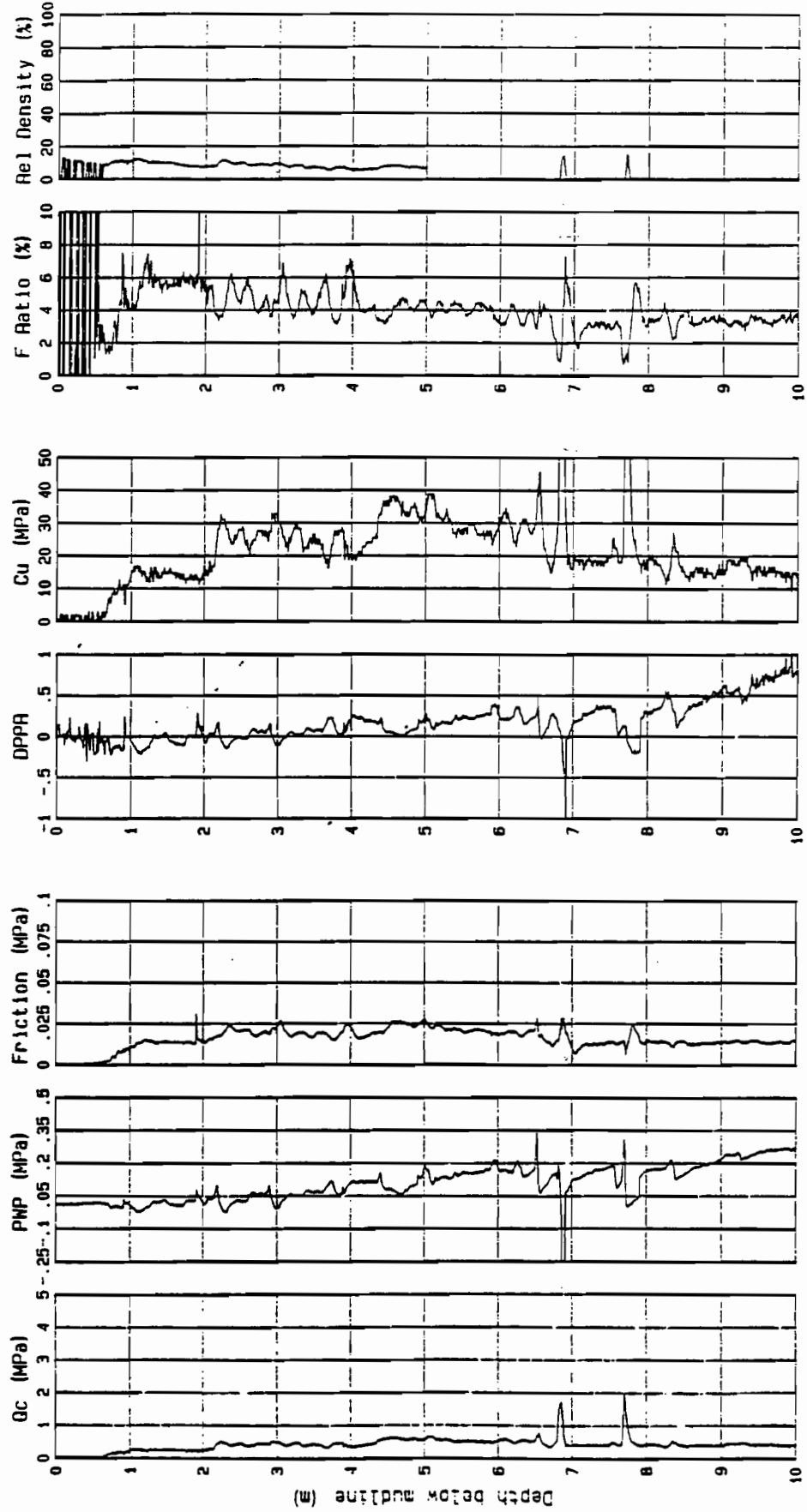


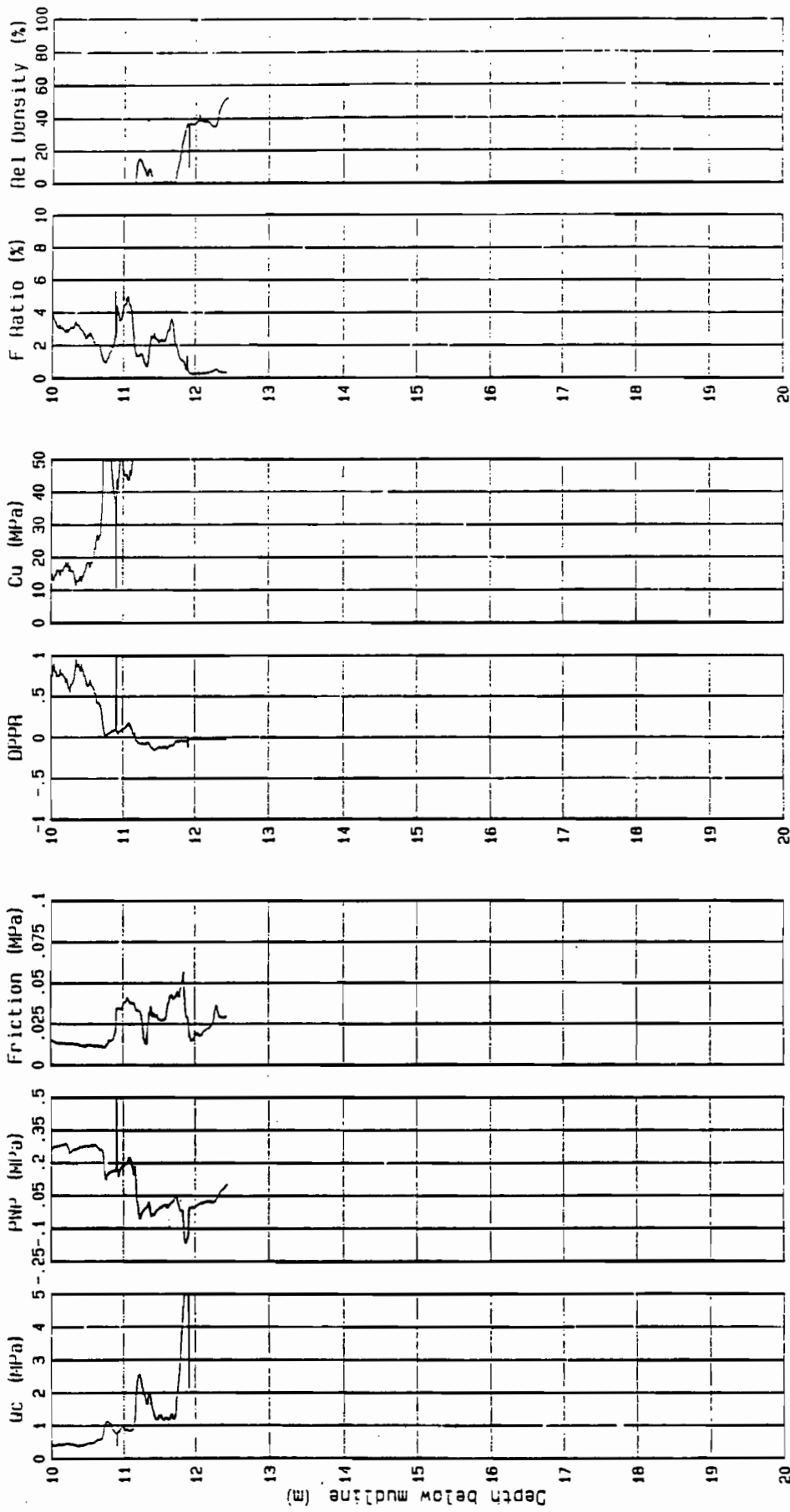
GULF CANADA RESOURCES INC

Location: ANAULIGAK DELINEATION
Water depth (m) : 32.6

CPT : ADB4C106

PAGE 1 of 2





DATE : 30 SEPT 84

cone : 304

file name : AB4C06

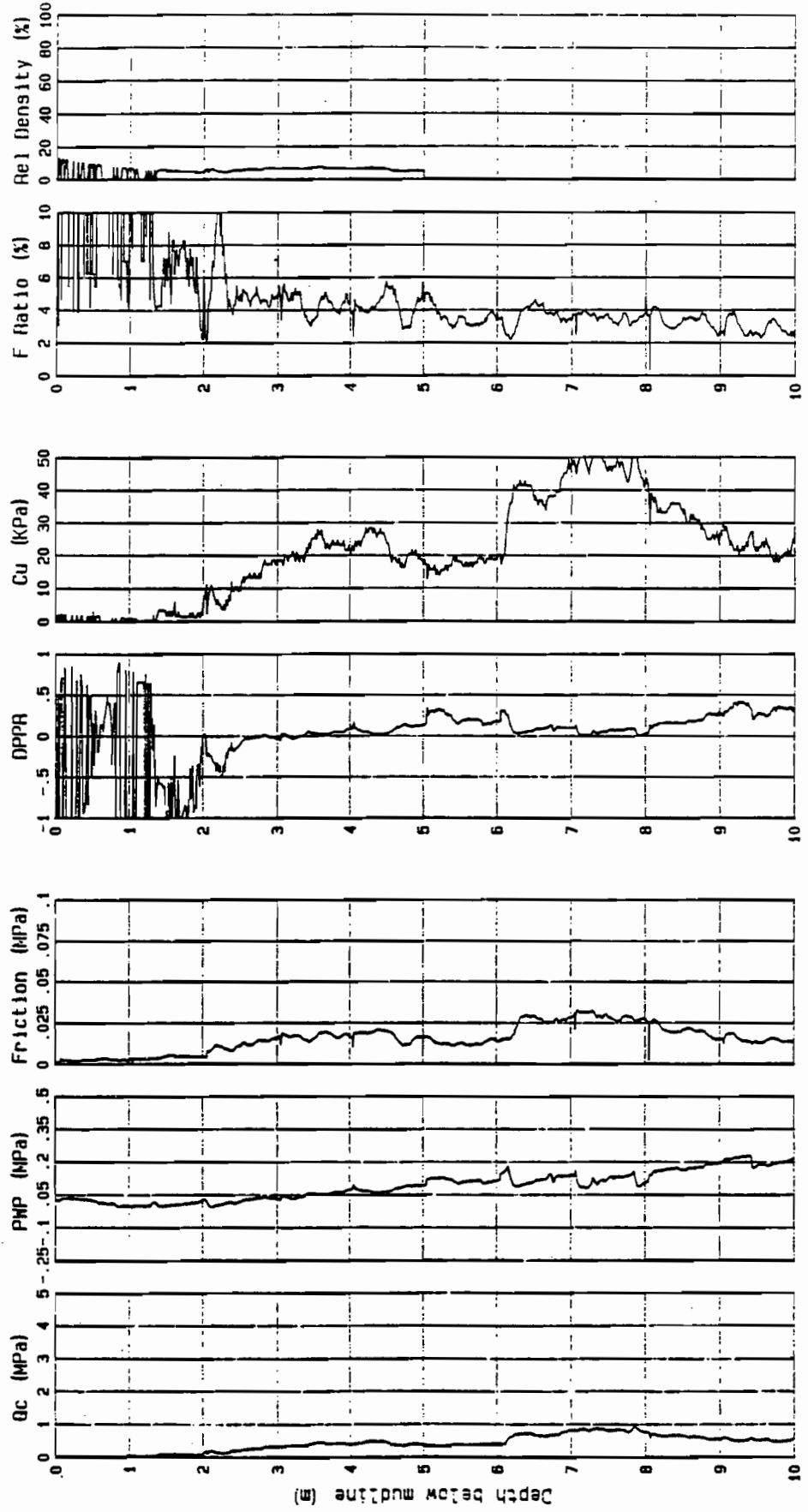
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 30.7

CPT : A084C107

PAGE 1 of 2



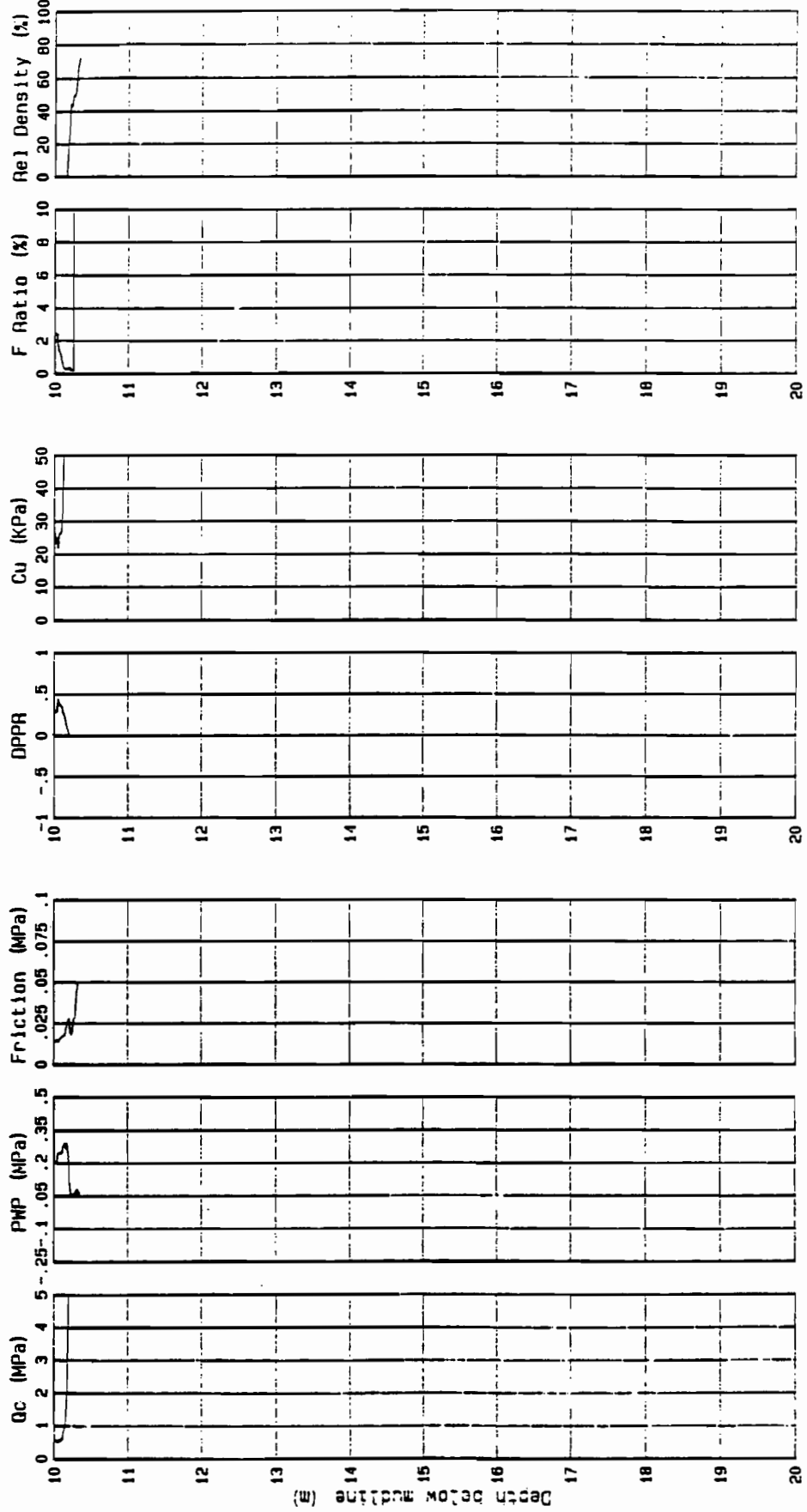
GULF CANADA RESOURCES INC

PAGE 2 of 2

CPT : ADB4CI07

Location: AMAULIGAK DELINEATION

Water depth (m) : 30.7



file name : A8:IC07

cone : 304

DATE : 01 OCT 81

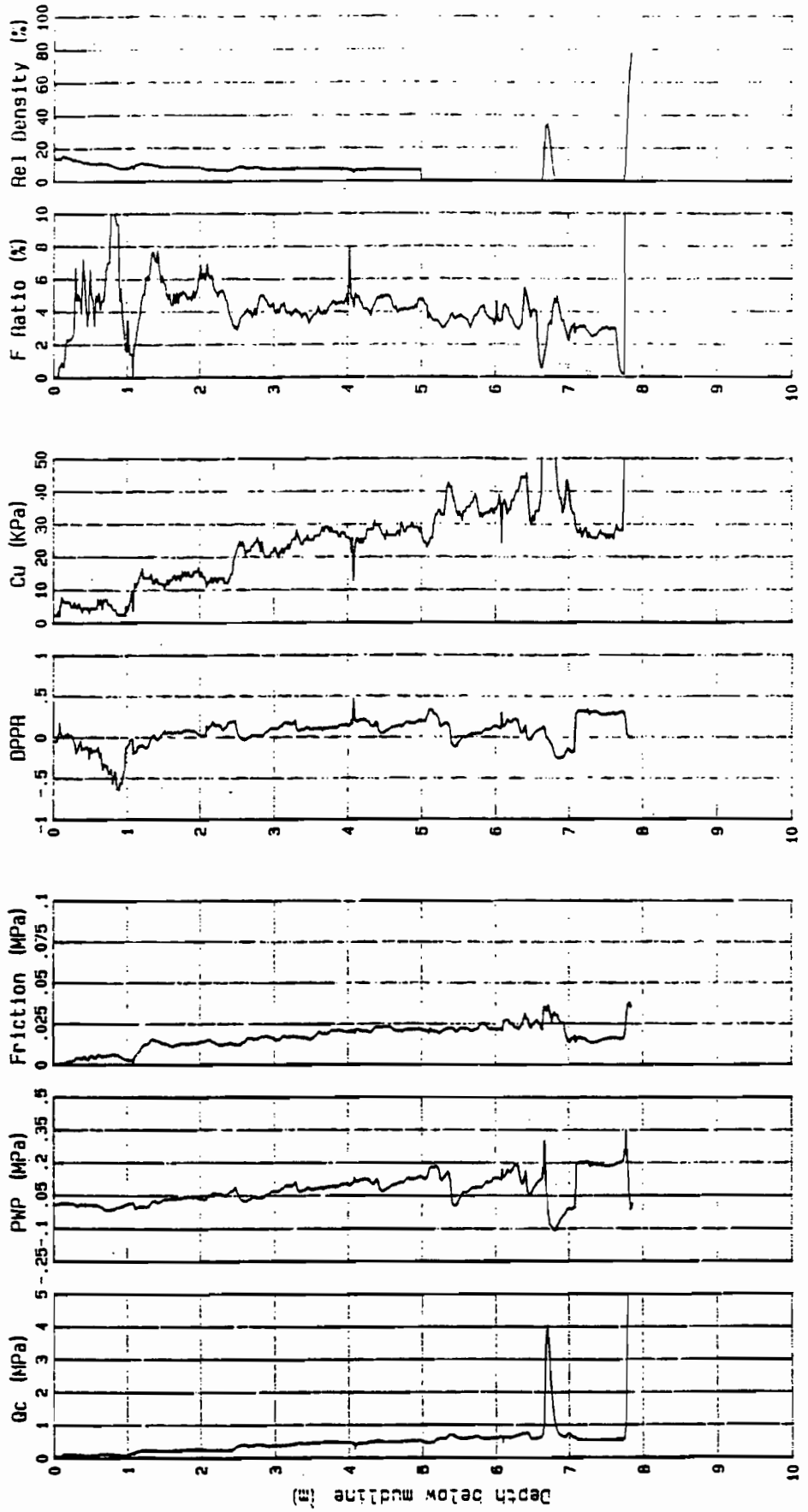
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 32.3

CPT : ADB4C108

PAGE 1 of 1



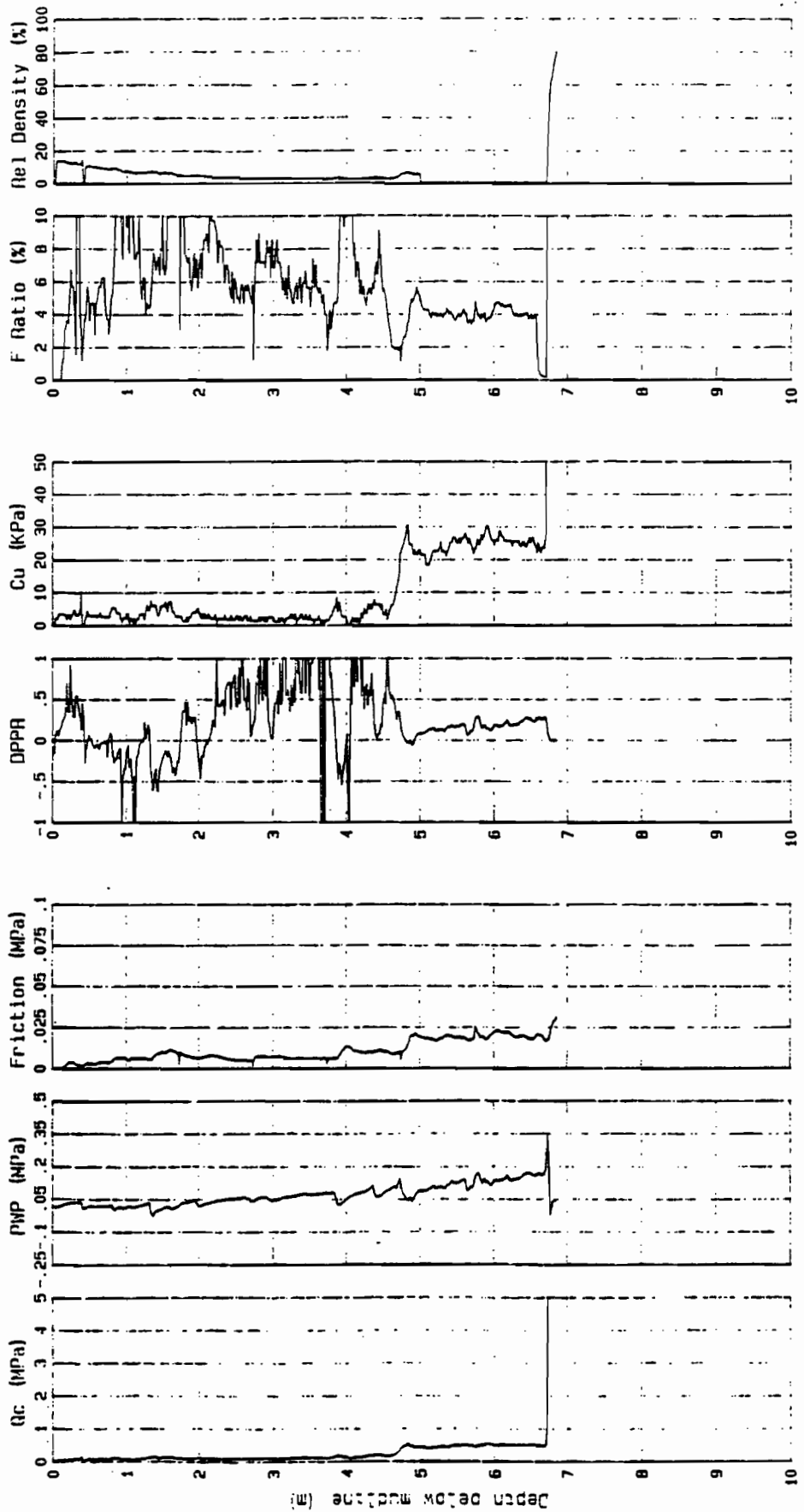
GULF CANADA RESOURCES INC

PAGE 1 of 1

CPT : ADB4C109

Location: AHUJIGAK DELINEATION

Water depth (m) : 33.3



DATE : 1 OCT 84

core : 304

file name : AB4C09

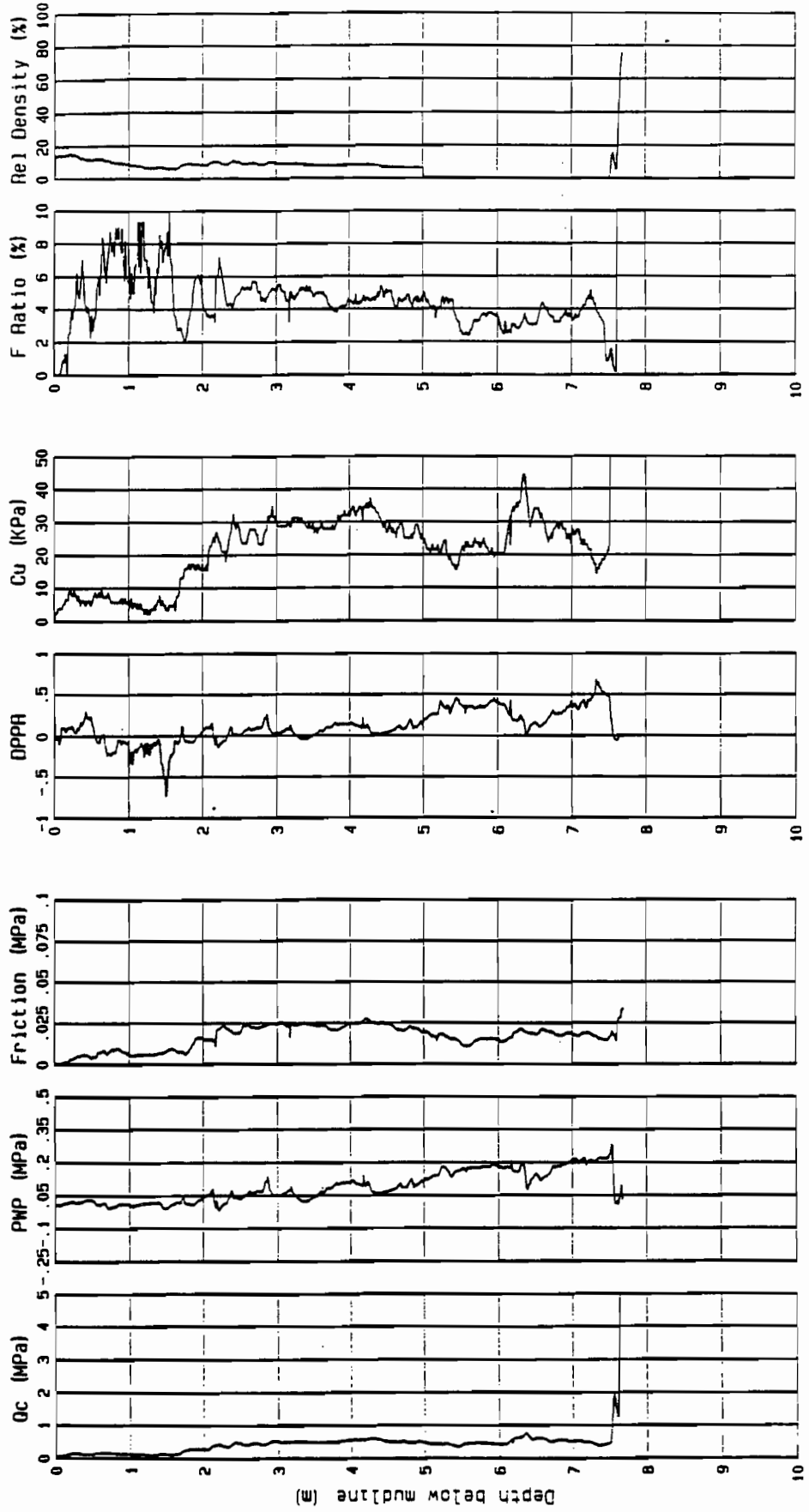
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 32.3

CPT : A084C110

PAGE 1 of 1



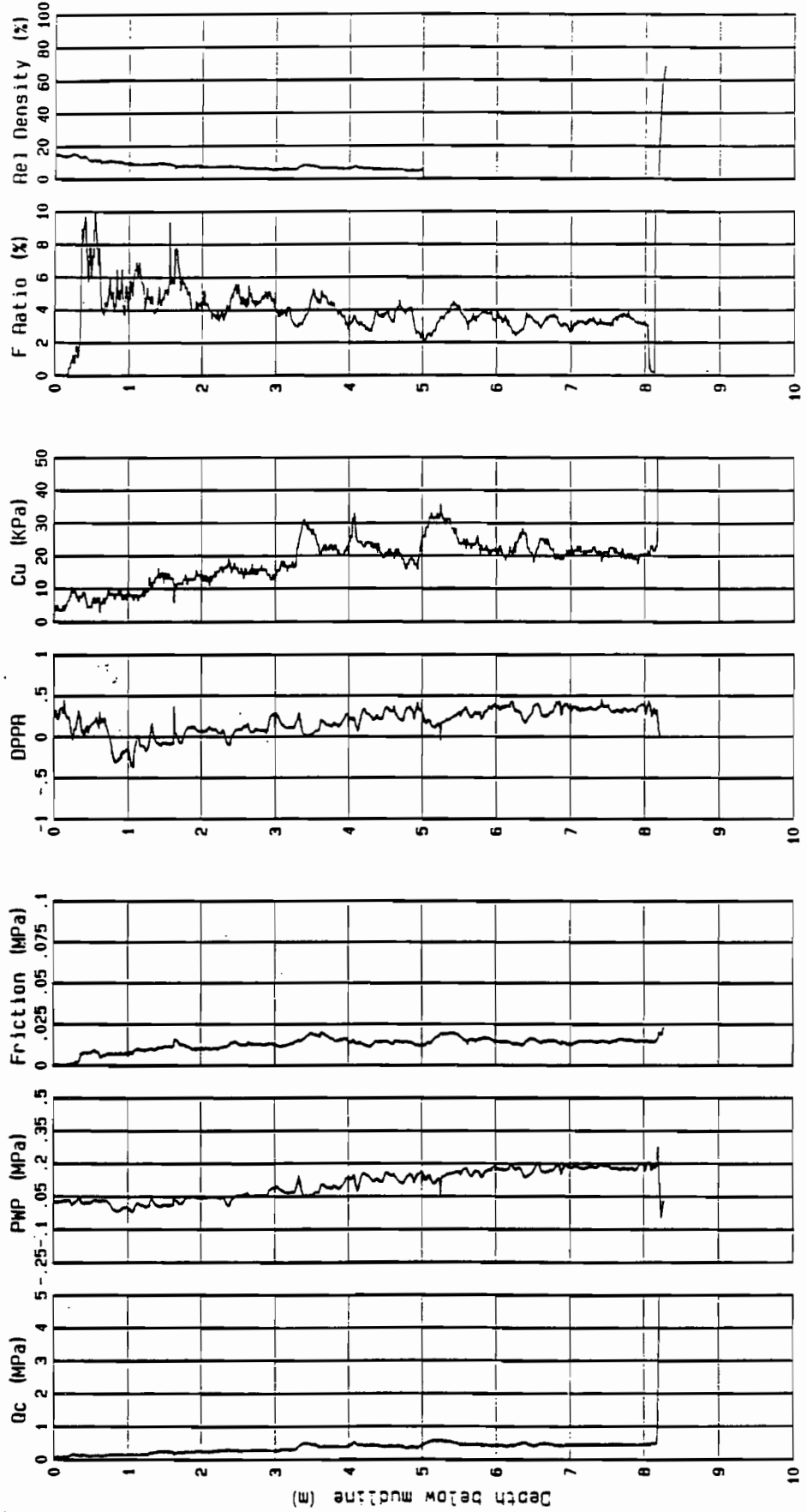
GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 32.1

CPT : ADB4C111

PAGE 1 of 1



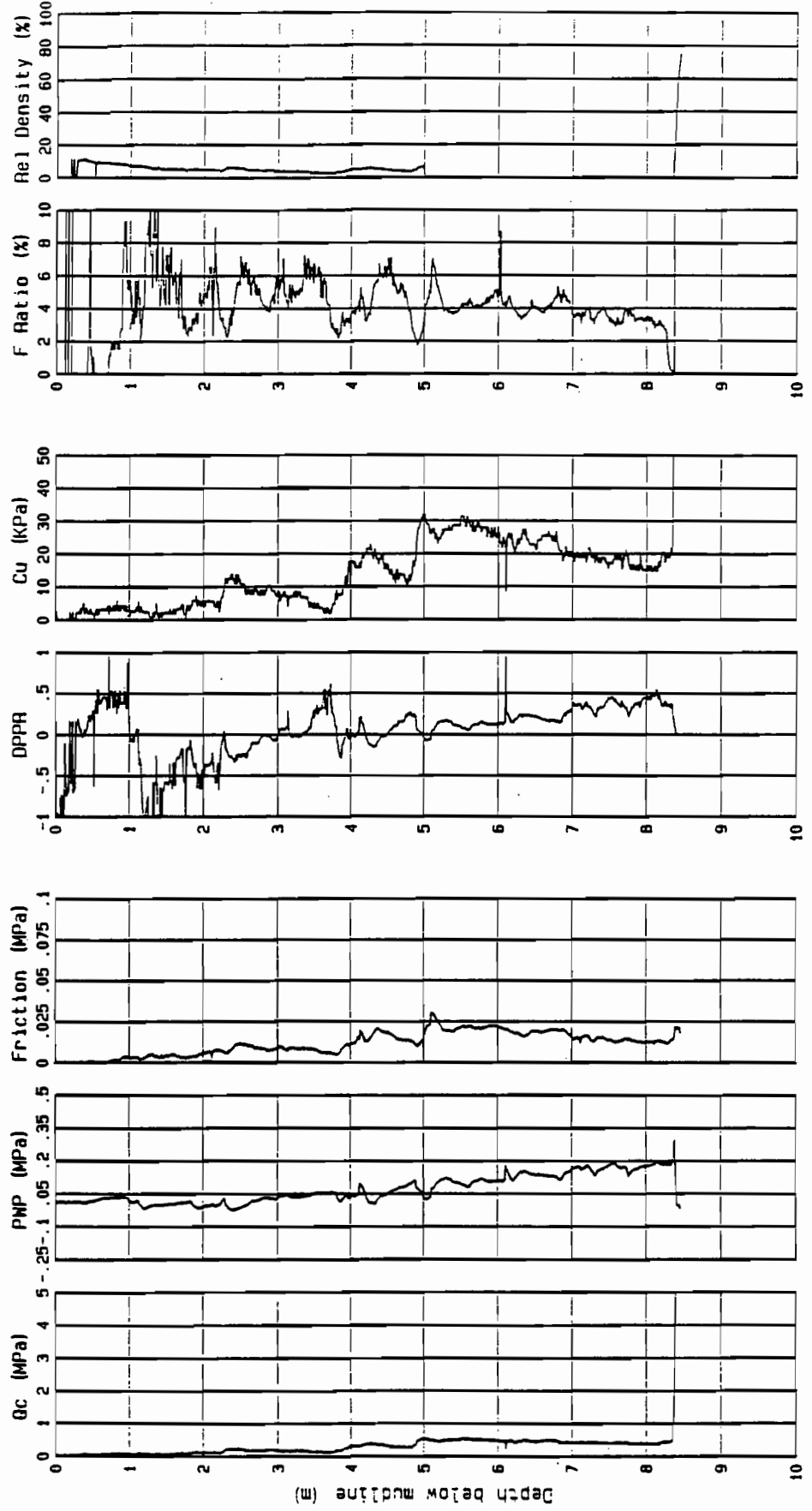
GULF CANADA RESOURCES INC

Location: AMULIGAK DELINEATION

Water depth (m) : 31.4

CPT : A084C112

PAGE 1 of 1



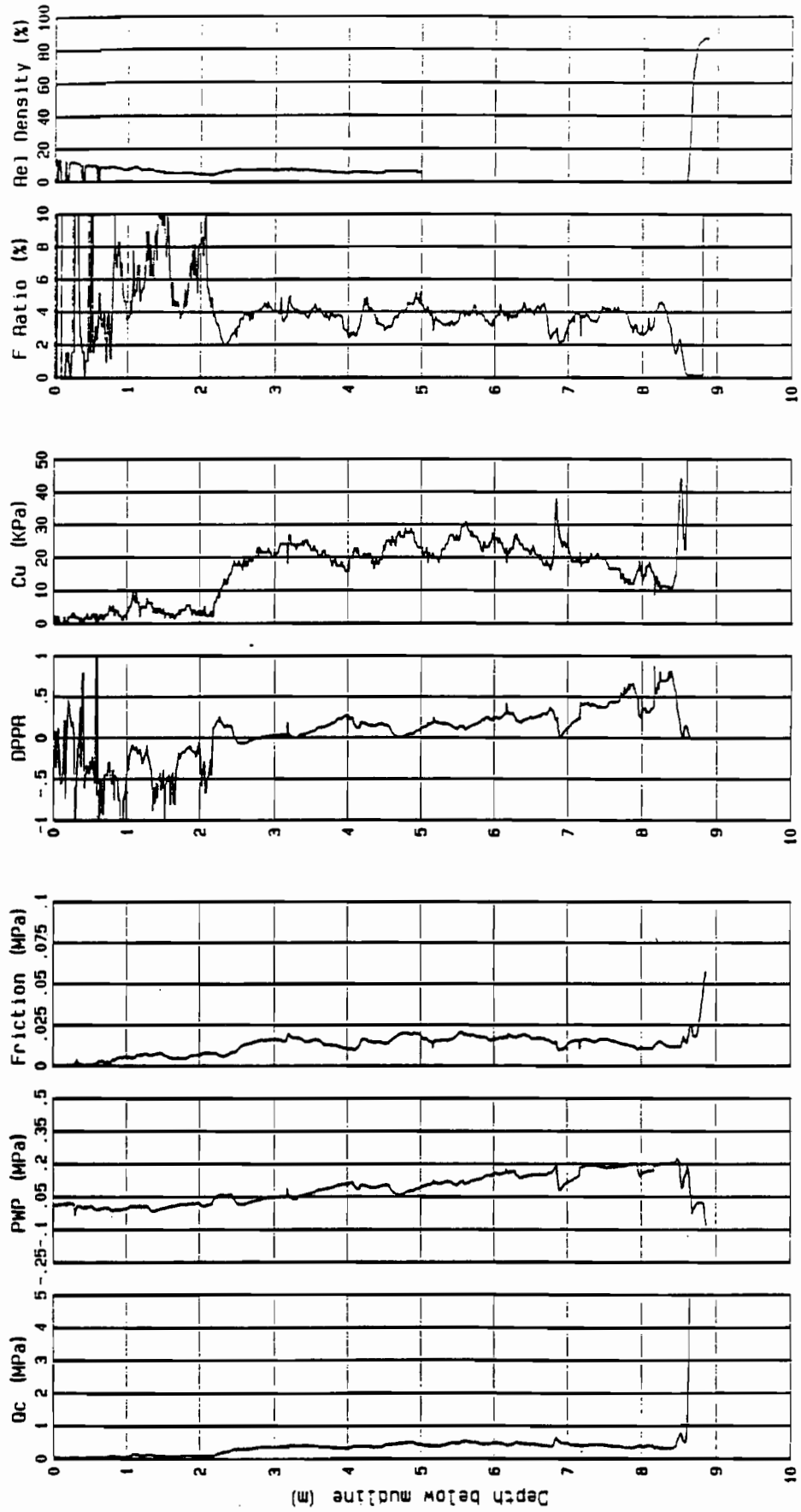
GULF CANADA RESOURCES INC

Location: ANAULIGAK DELINEATION

CPT : ADB4C113

PAGE 1 of 1

Water depth (m) : 31.45



GULF CANADA RESOURCES INC

Location: AMAULIGAK DELINEATION

Water depth (m) : 31.9

CPT : ADB4CI14

PAGE 1 of 1

