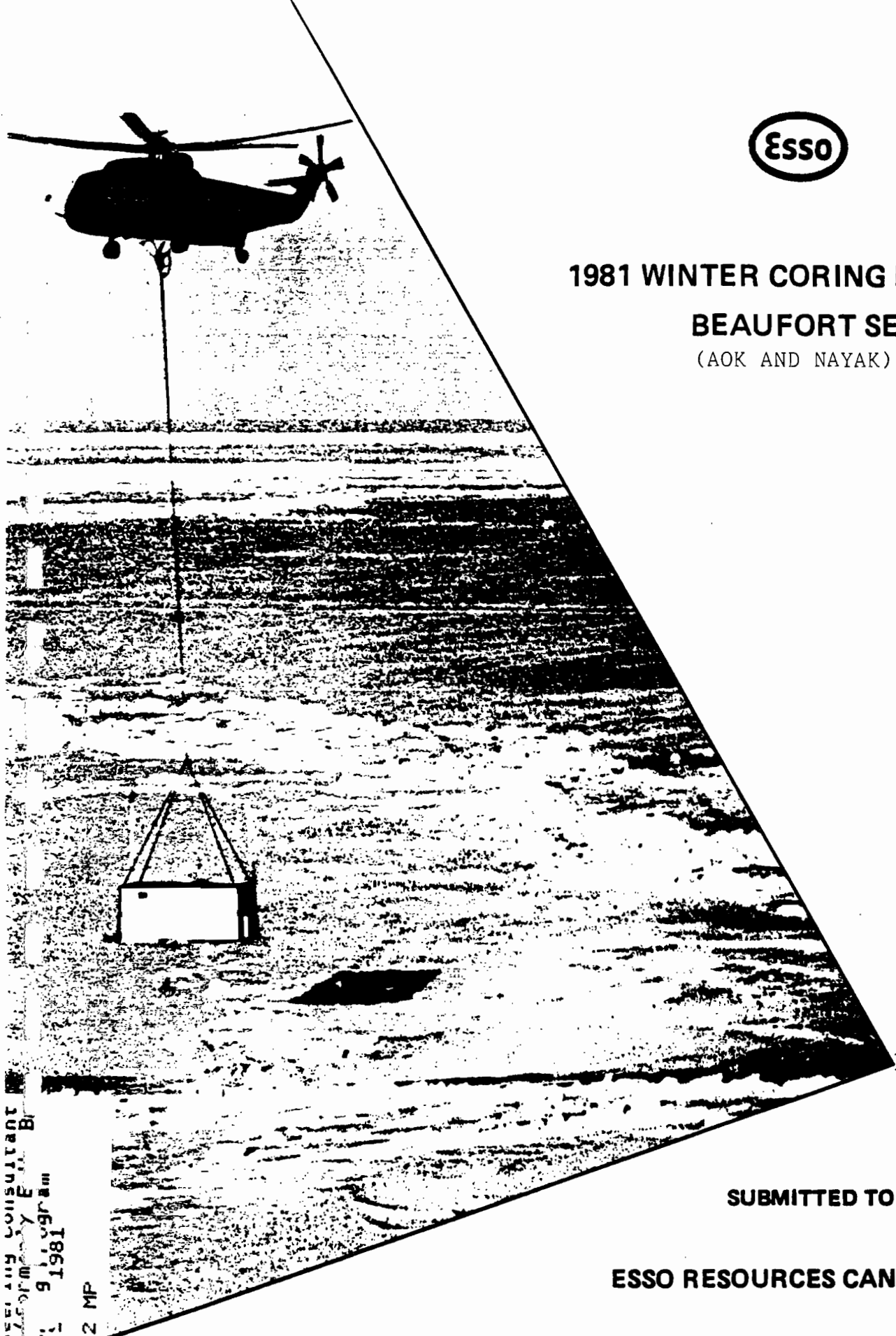




**1981 WINTER CORING PROGRAM  
BEAUFORT SEA  
(AOK AND NAYAK)**



**SUBMITTED TO:**

**ESSO RESOURCES CANADA LTD.**

EBA Engineering Consultants Ltd.  
1500-10th Avenue, Suite 200  
Edmonton, Alberta T6C 1K7  
Beaufort Sea Program  
1981  
EQUF C. 2 MP

**EBA Engineering Consultants Ltd.**  
Arctic Group



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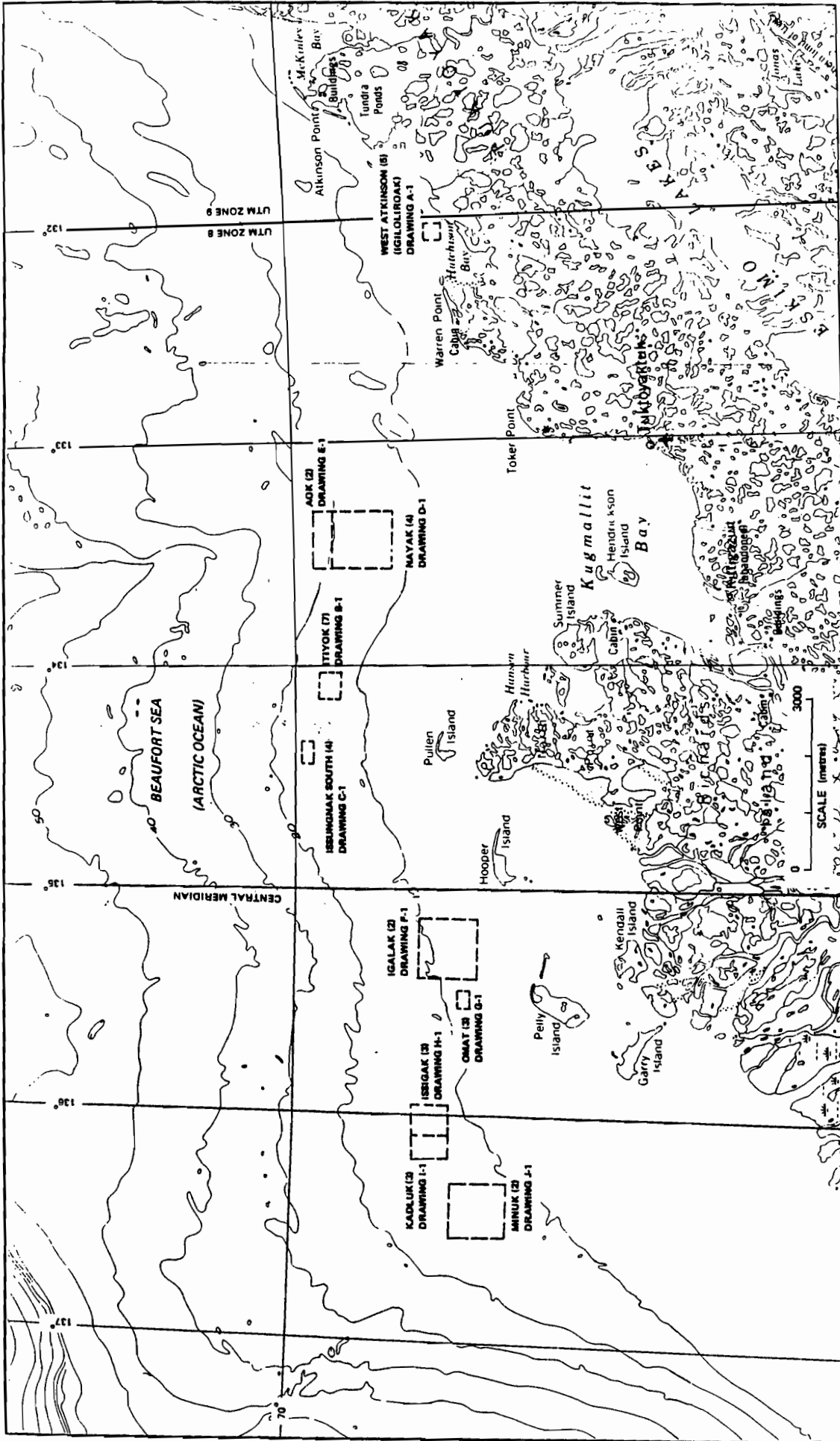
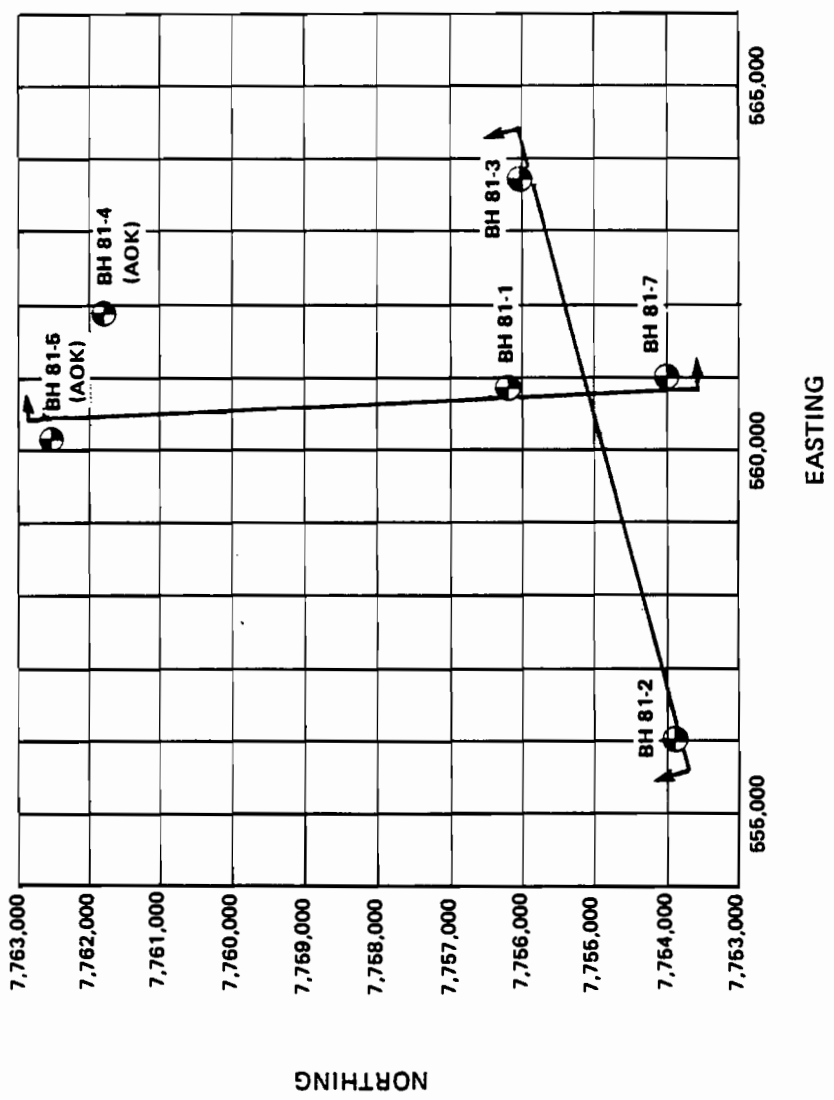


FIGURE 1 GENERAL LOCATION PLAN

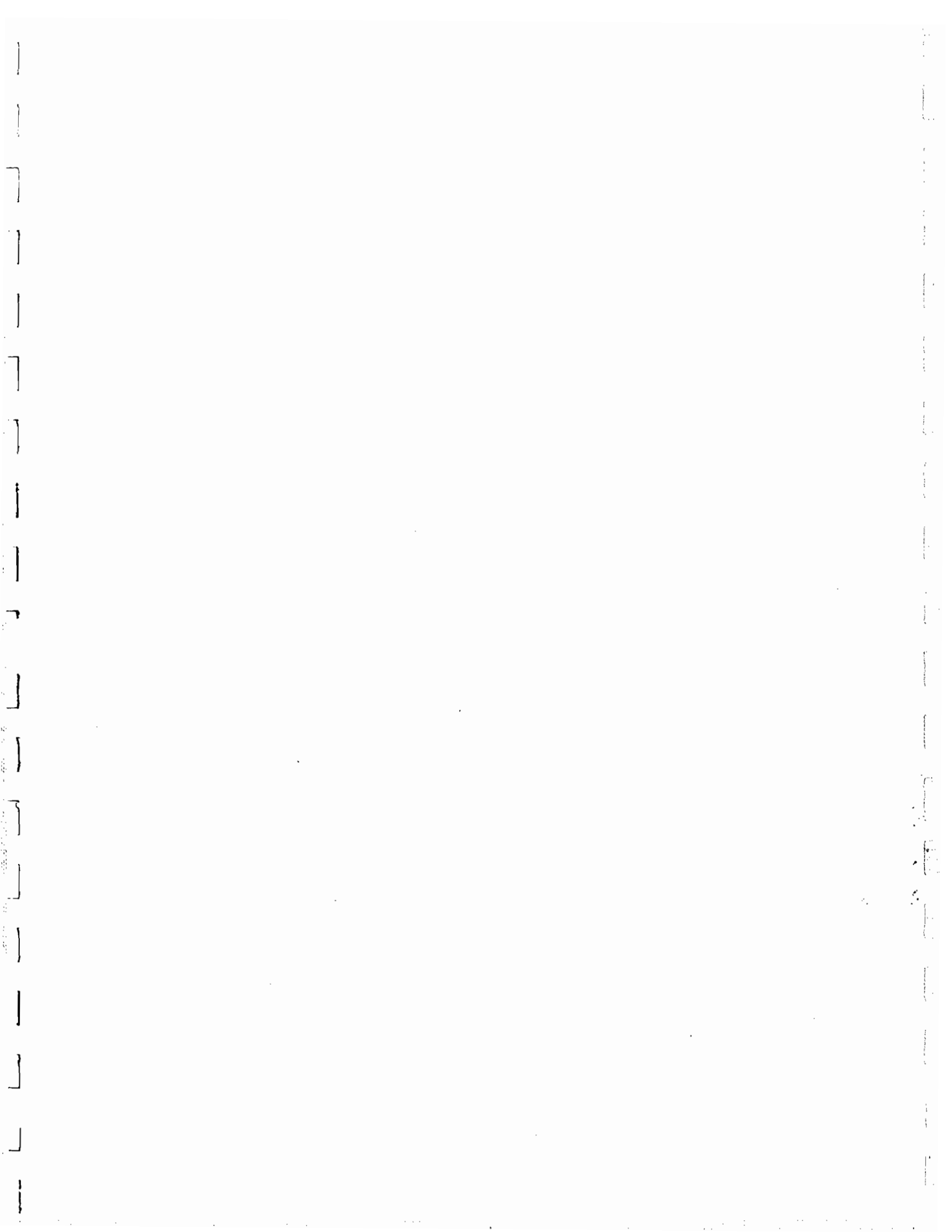


0 3 km  
 SCALE  
 1 : 100,000 (approx.)  
 UTM ZONE 8  
 CM 135°W


LOCATION MAP, AOK AND NAYAK  
 (FIGURE 2)

<b>EBA Engineering Consultants Ltd.</b>	
JOB NO.: 101-3097	DATE: 81/6/22
DRAWN BY: E.B.R.	DRAWING NO.:
REVIEWED BY:	E-1

APPENDIX 1  
BOREHOLE LOGS AND INDEX TEST RESULTS

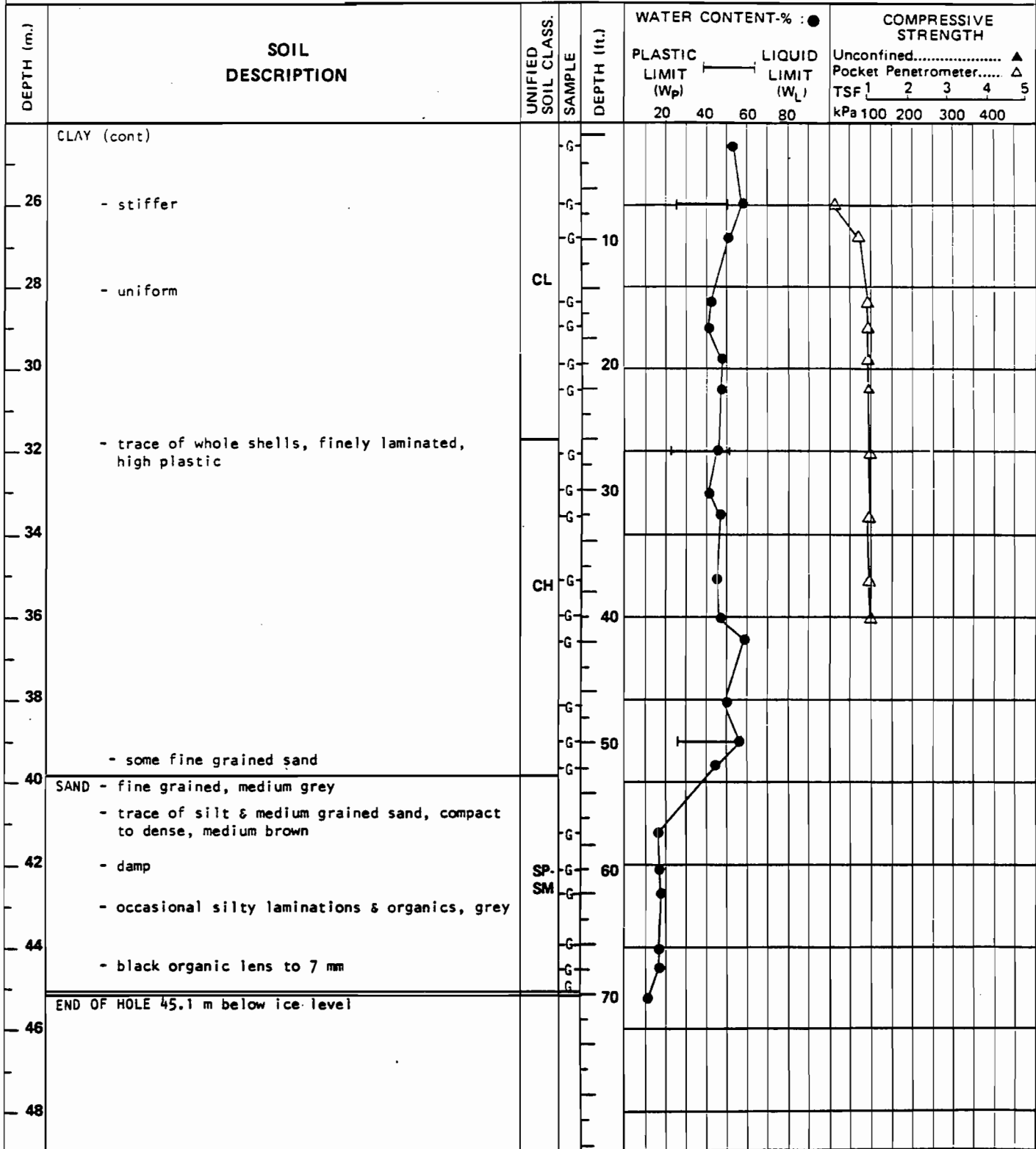





<b>PROJECT:</b> ESSO 1981 WINTER CORING PROGRAM		<b>HOLE NO.:</b> 81-4		<b>PROJECT NO.:</b> 101-3097																		
<b>LOCATION:</b> AOK UTM 7761749N 561729E		<b>SURFACE ELEVATION:</b> Sea Level																				
<b>DRILL:</b> Sonic																						
<b>SAMPLE TYPE:</b> <input checked="" type="checkbox"/> THIN WALLED TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE <input type="checkbox"/> OTHER																						
DEPTH (m.)	SOIL DESCRIPTION	UNIFIED SOIL CLASS.	SAMPLE DEPTH (ft.)	WATER CONTENT-% : ●				COMPRESSIVE STRENGTH														
				PLASTIC LIMIT (W <sub>p</sub> )	LIQUID LIMIT (W <sub>L</sub> )		Unconfined..... ▲ Pocket Penetrometer..... Δ TSF 1 2 3 4 5 kPa 100 200 300 400															
2	ICE																					
2	WATER																					
4																						
6																						
8																						
10																						
12																						
14																						
16																						
18																						
20																						
22	NOTE: No ice or ice bonded sediments encountered																					
24	CLAY - silty to some silt, trace of organics, medium plastic, moist to wet, very soft, dark grey	CL - G	0																			
 <b>THICKNESS OF ICE:</b> (m) 1.0 <b>THICKNESS OF ICE AND WATER:</b> (m) 23.8		<b>WET UNIT</b> $\frac{kN}{m^3}$ 16 18 20 22 <b>WEIGHT-O P.C.F.</b> 100 110 120 130 140 150				<b>Dynamic Cone:</b> 10 20 30 40    Nc - <input type="checkbox"/> <b>Standard Penetration:</b> N - <input checked="" type="checkbox"/>																
		<b>COMPLETION DEPTH:</b> (m) 45.1				<b>DATE DRILLED:</b> 9 April, 1981																
<b>LOGGED BY:</b> GL				<b>DRAWING NO.:</b> E-2a																		

*This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the corehole. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and they may vary with time, geologic conditions, and construction activity.*

PROJECT: ESSO 1981 WINTER CORING PROGRAM	HOLE NO.: 81-4	PROJECT NO.: 101-3097
LOCATION: AOK UTM 7761749N 561729E	SURFACE ELEVATION: Sea Level	
DRILL: Sonic		
SAMPLE TYPE: <input checked="" type="checkbox"/> THIN WALLED TUBE	<input checked="" type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> GRAB
<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE	<input type="checkbox"/> OTHER



	THICKNESS OF ICE: (m) 1.0	WET UNIT $\frac{kN}{m^3}$ 16 18 20 22	Dynamic Cone: Nc - <input type="checkbox"/>
	THICKNESS OF ICE AND WATER: (m) 23.8	WEIGHT-O P.C.F. 100 110 120 130 140 150	Standard Penetration: N - <input type="checkbox"/>
	COMPLETION DEPTH: (m) 45.1	DATE DRILLED: 9 April, 1981	
	LOGGED BY: GL	DRAWING NO. E-2b	

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the borehole. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and they may vary with time, geologic conditions, and construction activity.

PROJECT: ESSO 1981 WINTER CORING PROGRAM HOLE NO.: 81-5 PROJECT NO.: 101-3097

LOCATION: AOK SURFACE ELEVATION: Sea Level

UTM 7762536N 560103E

DRILL: Sonic

SAMPLE TYPE:  THIN WALLED TUBE  SPLIT SPOON  GRAB  NO RECOVERY  CORE  OTHER

DEPTH (m.)	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	UNIFIED SOIL CLASS.	SAMPLE DEPTH (ft.)	WATER CONTENT-%				COMPRESSIVE STRENGTH				
					PLASTIC LIMIT (W <sub>p</sub> )	LIQUID LIMIT (W <sub>L</sub> )		Unconfined..... ▲		Pocket Penetrometer..... Δ			
					20	40	60	80	TSF 1	2	3	4	5
					kPa		100	200	300	400			
0	ICE												
0	WATER												
2													
4													
6													
8													
10													
12													
14													
16													
18													
20													
22													
24													
	CLAY - silty, faintly laminated, high plastic	UNFROZEN	CH	0									



THICKNESS OF ICE: (m) 1.1  
 THICKNESS OF ICE AND WATER: (m) 24.4

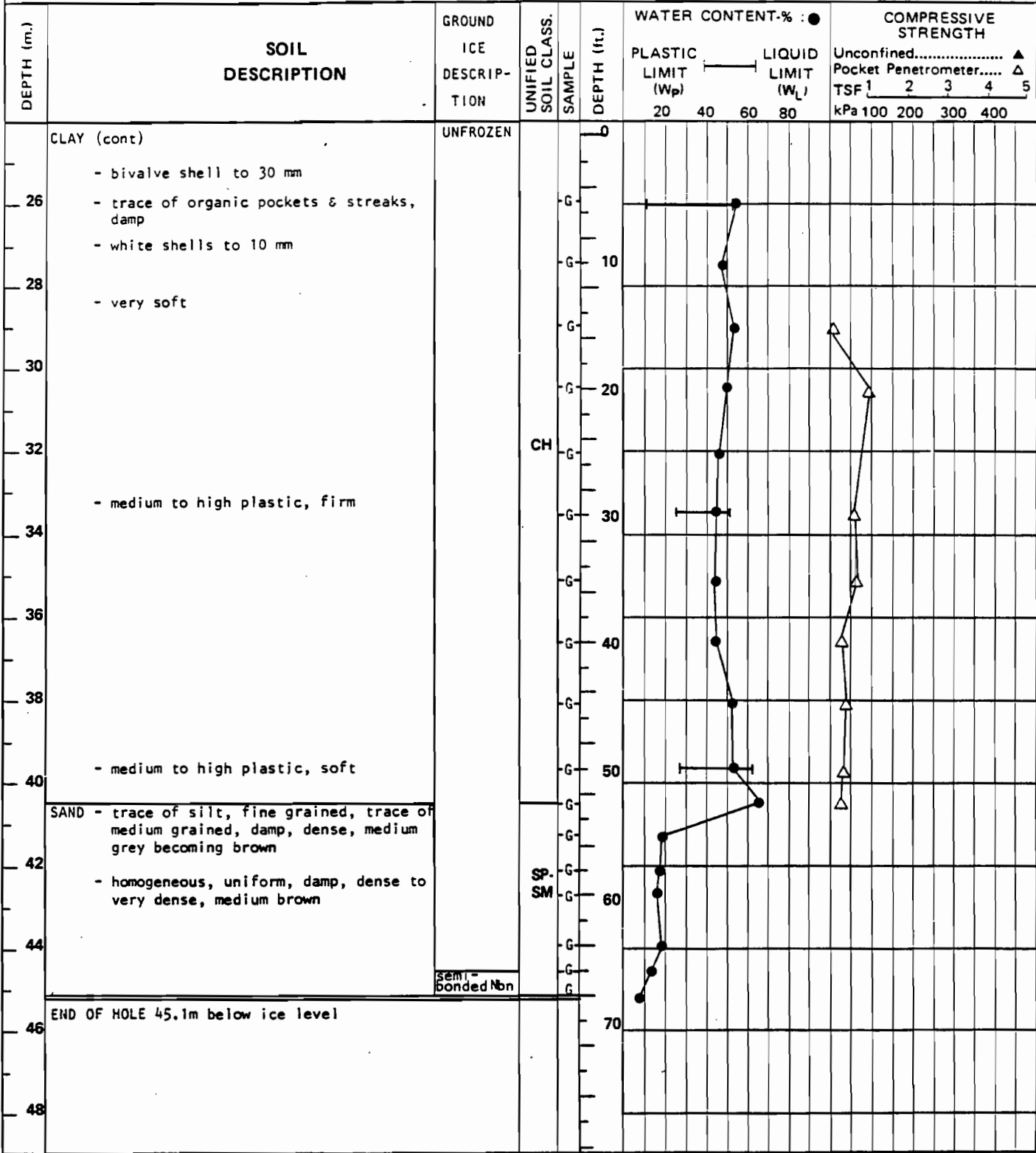
WET UNIT  $\frac{kN}{m^3}$  16 18 20 22  
 WEIGHT-O P.C.F. 100 110 120 130 140 150  
 Dynamic Cone: Nc -   
 Standard Penetration: N -   
 COMPLETION DEPTH:(m) 45.1 DATE DRILLED: 9 April, 1981  
 LOGGED BY: GL DRAWING NO. E-3a

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the corehole. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and they may vary with time, geologic conditions, and construction activity.

PROJECT: ESSO 1981 WINTER CORING PROGRAM HOLE NO.: 81-5 PROJECT NO.: 101-3097

LOCATION: AOK UTM 7762536N 560103E SURFACE ELEVATION: Sea Level DRILL: Sonic

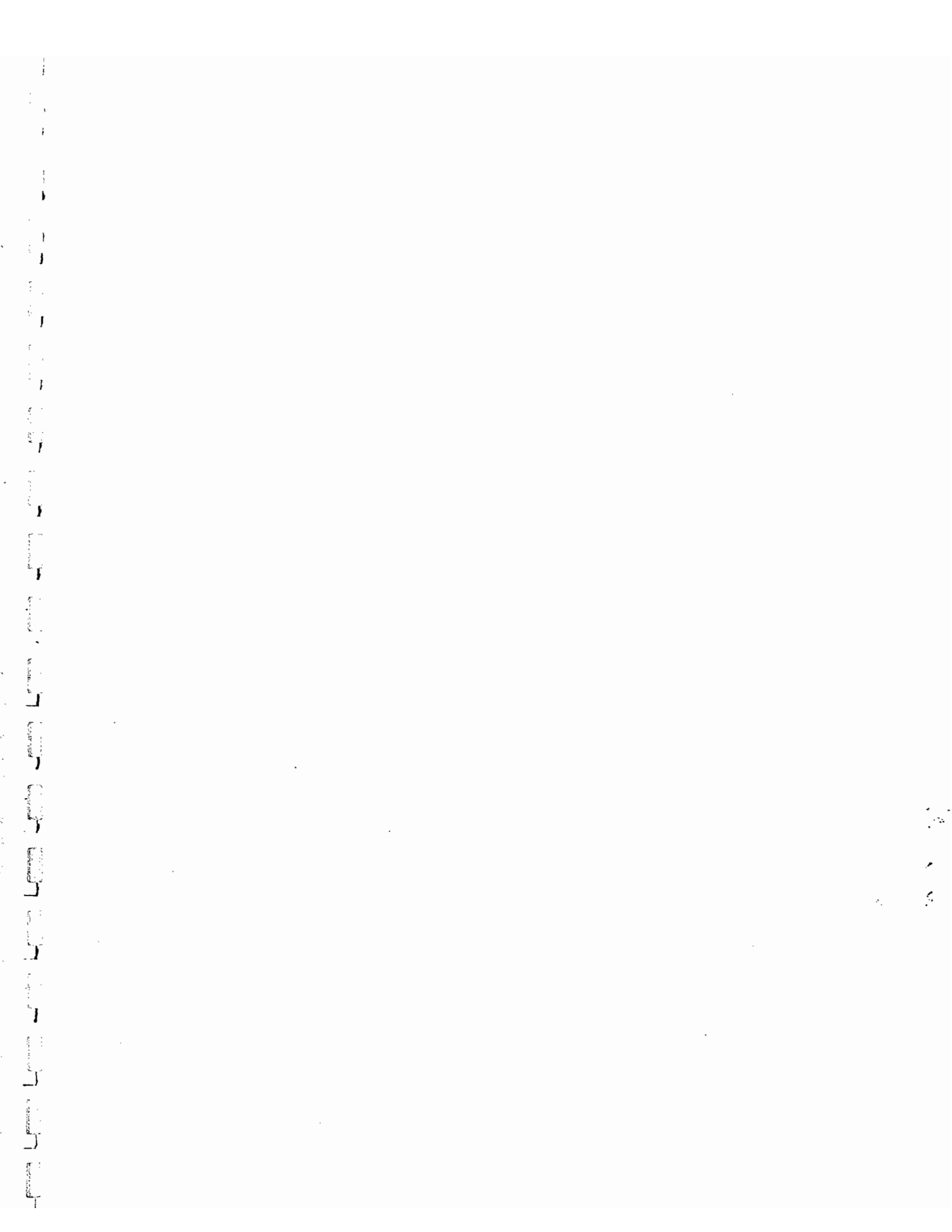
SAMPLE TYPE:  THIN WALLED TUBE  SPLIT SPOON  GRAB  NO RECOVERY  CORE  OTHER



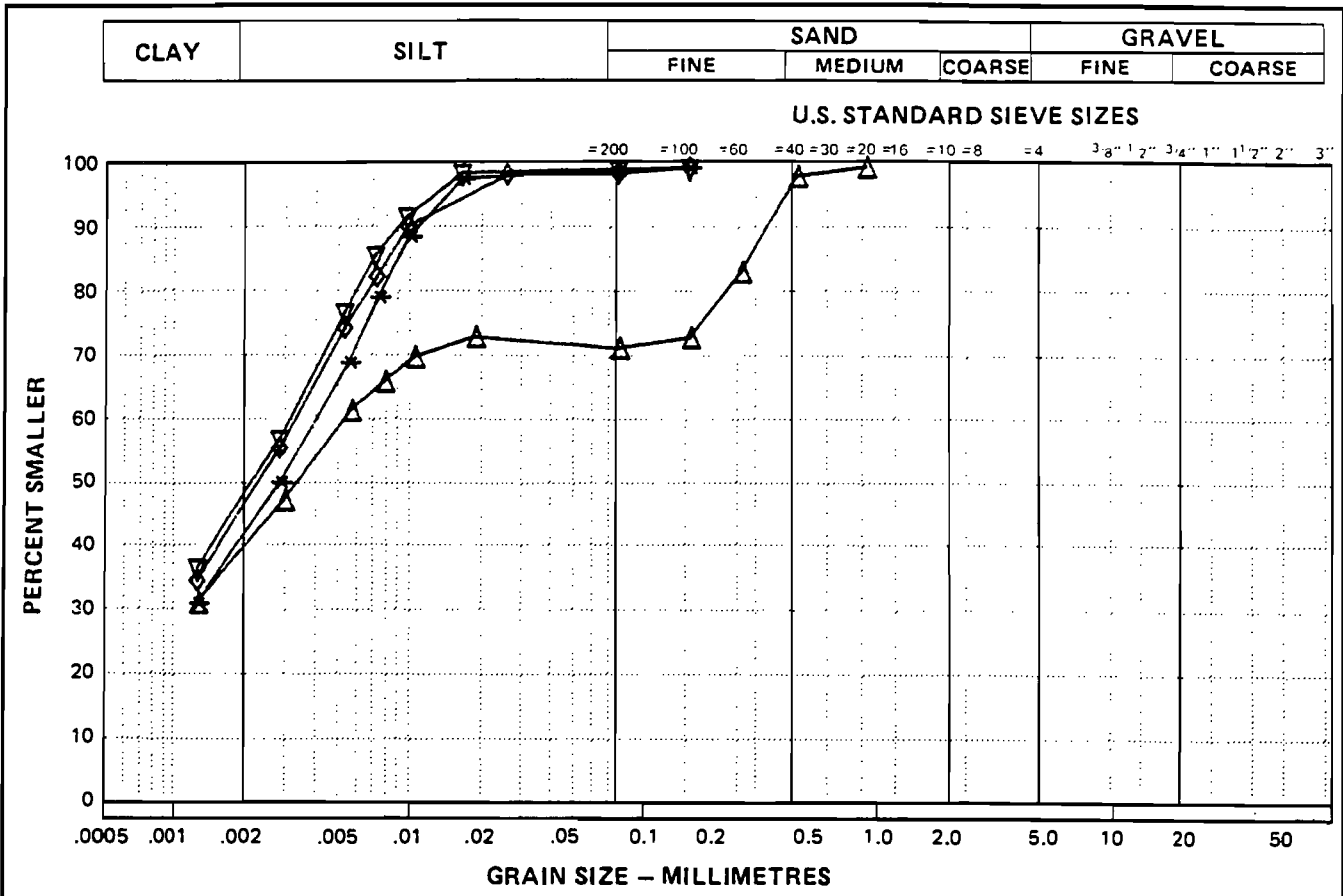
THICKNESS OF ICE: (m) 1.1  
THICKNESS OF ICE AND WATER: (m) 24.4

WET UNIT  $\frac{kN}{m^3}$  16 18 20 22  
WEIGHT-O P.C.F. 100 110 120 130 140 150  
Dynamic Cone: Nc -   
Standard Penetration: N -   
COMPLETION DEPTH:(m) 45.1 DATE DRILLED: 9 April, 1981  
LOGGED BY: GL DRAWING NO. E-3b

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the borehole. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and they may vary with time, geologic conditions, and construction activity.



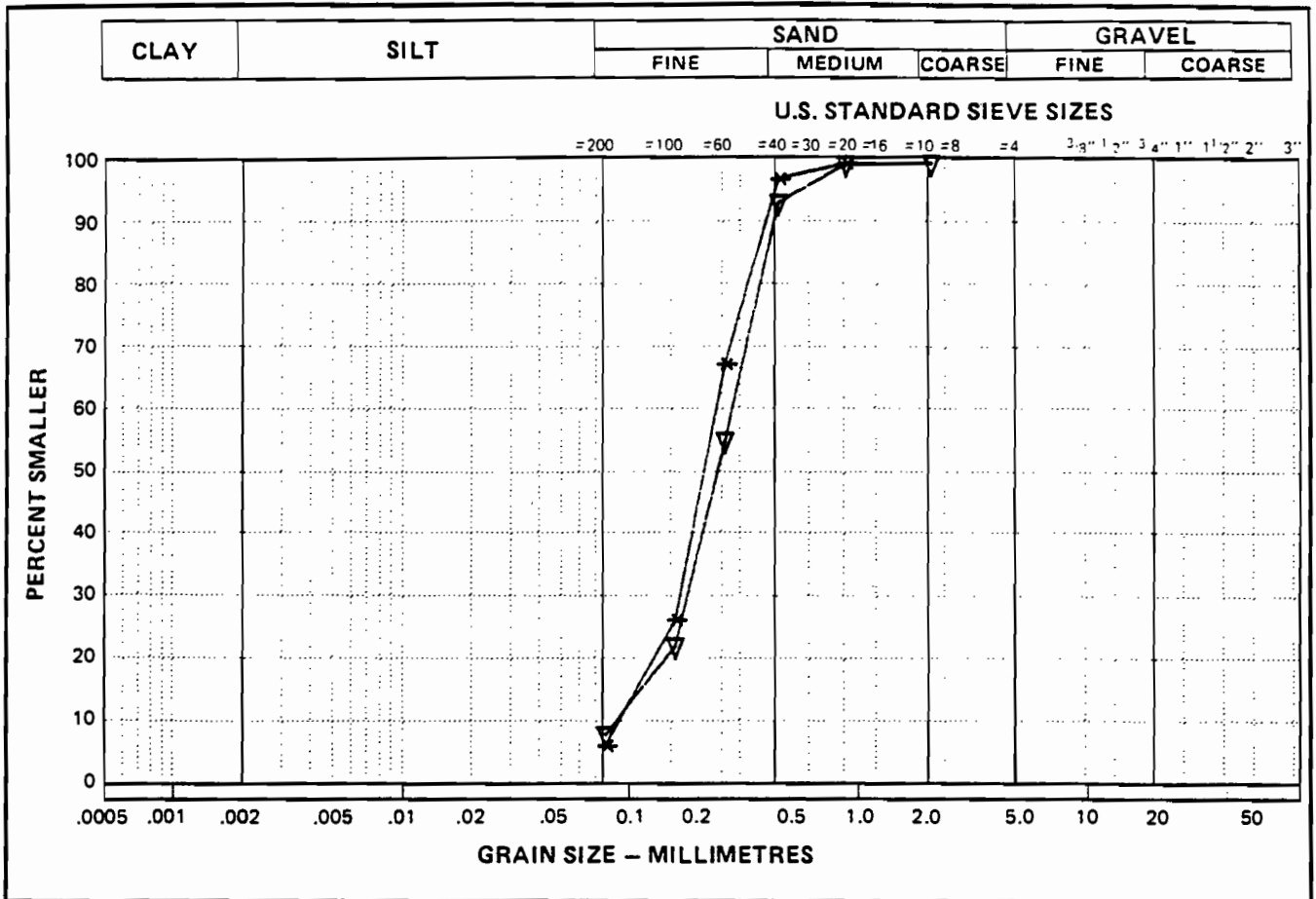
**PARTICLE - SIZE ANALYSIS OF SOILS**



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
✱	AOK 4	25.90- 25.90	43	57	0	0	-	-	CL
▽	AOK 4	32.10- 32.10	50	50	0	0	-	-	CH
◇	AOK 4	39.00- 39.00	40	51	1	0	-	-	CH
△	AOK 4	39.70- 39.70	42	30	28	0	-	-	CH

**JOB NO.** 101-3097      **DATE** 81- 6-18

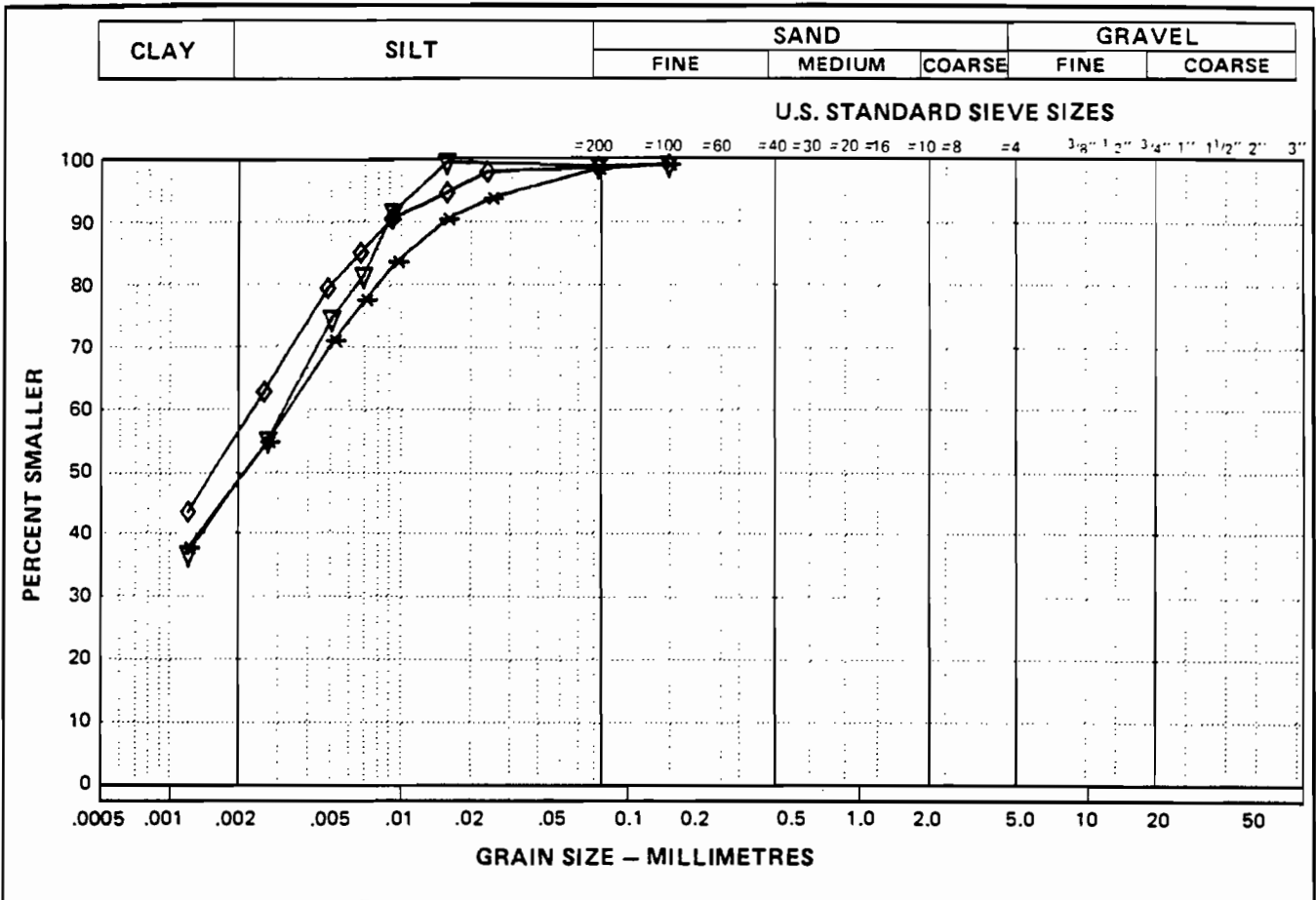
**PARTICLE - SIZE ANALYSIS OF SOILS**



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
*—	AOK 4	42.70- 42.70	-	7	93	0	2.7	1.3	SP-SM
▽—	AOK 4	45.10- 45.10	-	8	92	0	3.3	1.3	SP-SM

**JOB NO. 101-3097      DATE 81- 6-18**

**PARTICLE - SIZE ANALYSIS OF SOILS**

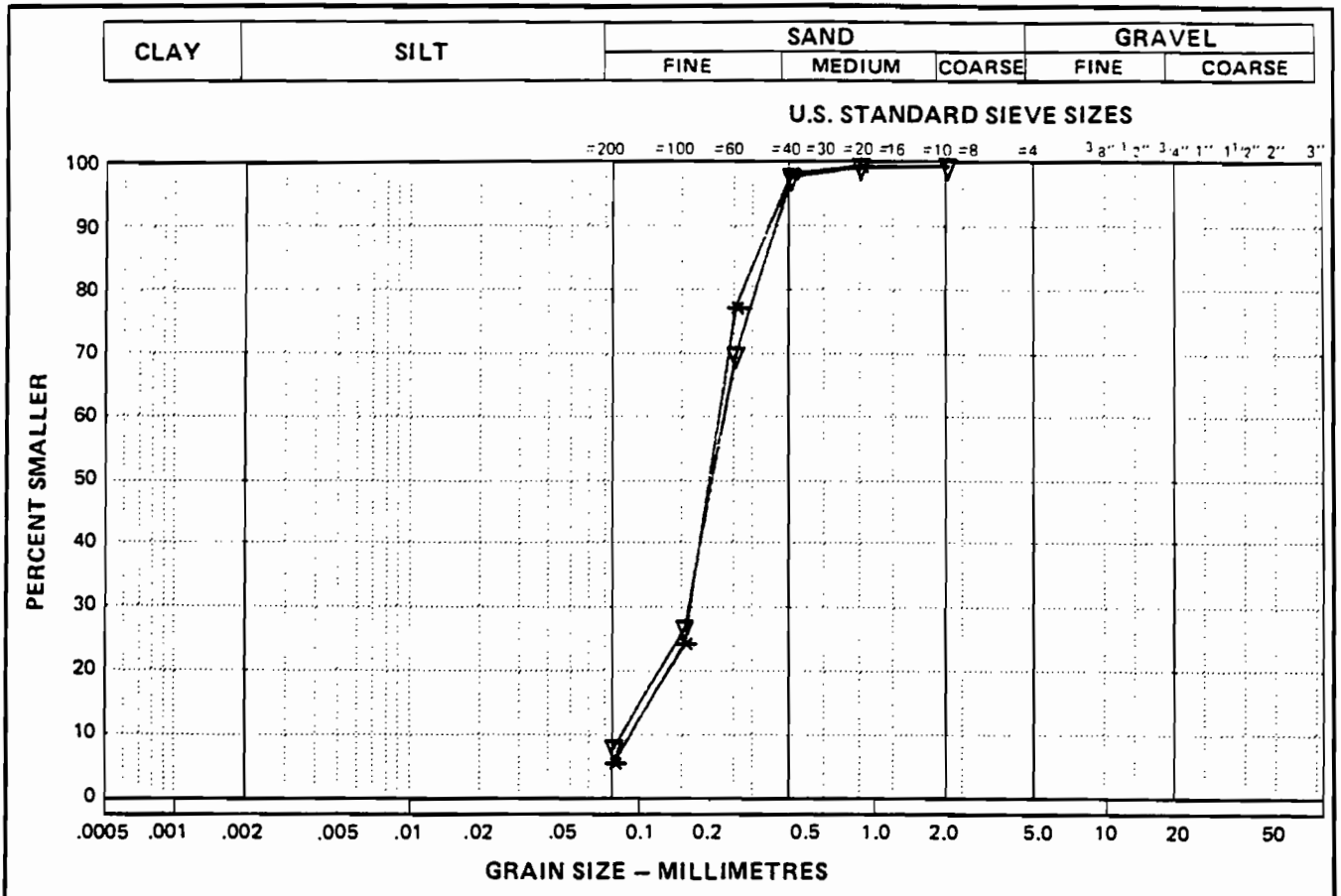


SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
—x—	AOK 5	26.00 - 26.00	50	50	0	0	-	-	CH
—∇—	AOK 5	33.60 - 33.60	49	51	0	0	-	-	CH
—◇—	AOK 5	39.70 - 39.70	50	42	0	0	-	-	CH

**JOB NO.** 101-3097      **DATE** 81-6-18

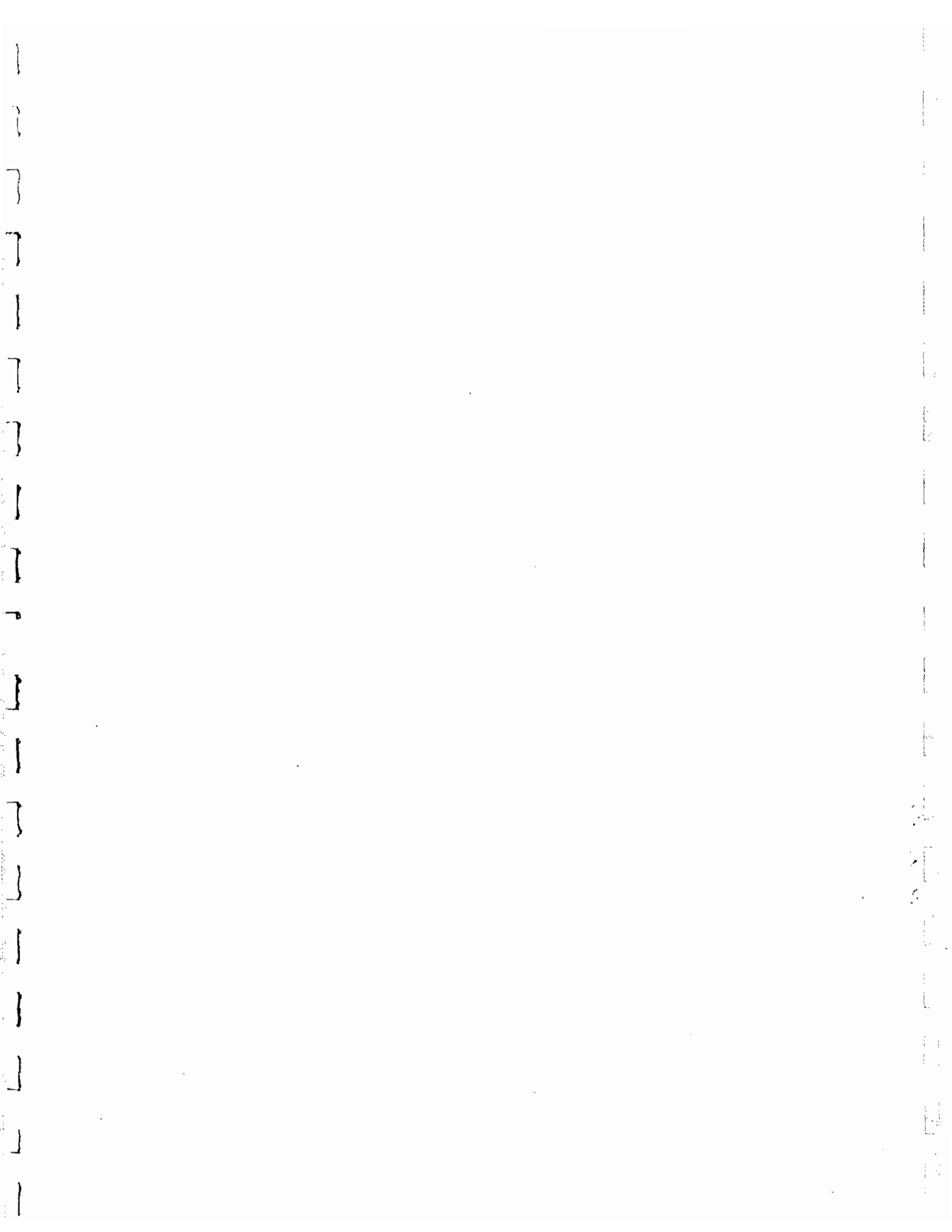


PARTICLE - SIZE ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C.
			CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)			
— x —	AOK 5	42.10 - 42.10	-	8	94	0	2.4	1.4	SP-SM
— v —	AOK 5	44.80 - 44.80	-	8	92	0	2.8	1.4	SP-SM

JOB NO. 101-3097      DATE 81-6-18



# EBA Engineering Consultants Ltd.



14535 118th AVENUE  
EDMONTON, ALBERTA  
Phone (403) 451-2121

5663 BURLEIGH CRES S.E.  
CALGARY, ALBERTA  
Phone (403) 253-7121

## SUMMARY OF LABORATORY TEST RESULTS

PROJECT: ESSO 1981 WINTER CORING PROGRAM PROJECT No.: 101-3097 DATE: \_\_\_\_\_

BOREHOLE	DEPTH (m)	MOISTURE CONTENT (%)	ATTERBERG LIMITS				GRAIN SIZE DISTRIBUTION				DESCRIPTION		
			LL (%)	PL (%)	PI (%)	Clay (%)	Silt (%)	Sand (%)	Gravel (%)				
81-4	24.4	53.2											
A0K	25.9	57.2	50	26	24	43	57	0	0				CLAY (CL)
	26.8	50.3											
	28.3	42.8											
	29.0	40.2											
	29.9	48.2											
	30.5	47.2											
	32.1	45.9	51	22	29	50	50	0	0				CLAY (CH)
	32.9	40.9											
	33.5	47.4											
	35.0	46.6											
	36.0	45.9											
	36.6	58.4											
	38.1	48.5											
	39.0	57.1	57	26	31	48	51	1	0				CLAY (CH)
	39.7	45.0				42	30	28	0				CLAY (CH)
	41.2	15.8											
	42.1	16.6											
	42.7	18.4				-	7	93	0				SAND (SP-SM)
	43.9	16.6											



**SUMMARY OF LABORATORY TEST RESULTS**

PROJECT: ESSO 1981 WINTER CORING PROGRAM PROJECT No.: 101-3097 DATE: \_\_\_\_\_

BOREHOLE	DEPTH (m)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			GRAIN SIZE DISTRIBUTION			DESCRIPTION	
			LL (%)	PL (%)	PI (%)	Clay (%)	Silt (%)	Sand (%)		Gravel (%)
81-4	44.5	17.0								
A0K	45.1	15.4				-	8	92	0	SAND (SP-SM)

# EBA Engineering Consultants Ltd.



14535 118th AVENUE  
EDMONTON, ALBERTA  
Phone (403) 451-2121

5664 BURLEIGH CRES S.E.  
CALGARY, ALBERTA  
Phone (403) 253-7121

## SUMMARY OF LABORATORY TEST RESULTS

PROJECT: ESSO 1981 WINTER CORING PROGRAM PROJECT No.: 101-3097 DATE:

BOREHOLE	DEPTH (m)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			GRAIN SIZE DISTRIBUTION				DESCRIPTION
			LL (%)	PL (%)	PI (%)	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	
81-5	26.0	56.3	52	11	41	50	50	0	0	CLAY (CH)
A0K	27.4	44.1								
	29.0	47.8								
	30.5	50.1								
	32.0	46.7								
	33.6	44.8	51	25	26	49	51	0	0	CLAY (CH)
	35.0	44.1								
	36.6	44.7								
	38.1	52.3								
	39.7	52.9	62	28	34	58	42	0	0	CLAY (CH)
	40.5	66.7								
	41.2	18.8								
	42.1	18.8				-	6	94	0	SAND (SP-SM)
	42.7	16.6								
	43.9	18.4								
	44.6	16.5				-	8	92	0	SAND (SP-SM)
	45.1	14.4								

TABLE #2

SUMMARY OF BOREHOLE COORDINATES

BH No.	Location	Date drilled	Final depth metres below mudline	UTM Coordinates		Geographic Coordinates	
				Northing CM 135° Zone 8	Easting	LONGITUDE	LATITUDE
81-1	West Atkinson	22:03:81	30.5	7742956	612553	132°04'57"	69°46'19"
81-2	West Atkinson	23:03:81	30.2	7742953	612990	132°04'16"	69°46'18"
81-4	West Atkinson	24:03:81	45.4	7743436	612772	132°04'34"	69°46'34"
81-4A	West Atkinson	25:03:81	38.4	7743433	612772	132°04'34"	69°46'34"
81-5	West Atkinson	25:03:81	29.3	7743242	613257	132°03'50"	69°46'27"
#81-3	not drilled						
81-3	Issigak	28:03:81	25.6	7741373	462321	135°58'36"	69°46'45"
81-1	Issigak	29:03:81	12.2	7743456	462107	135°58'59"	69°47'52"
81-2	Kadluk	30:03:81	24.5	7743532	454892	136°10'13"	69°47'51"
81-1	Kadluk	31-03:81	15.9	7745135	457181	136°06'42"	69°48'44"
81-4	Kadluk	01:04:81	27.8	7742670	456658	136°07'27"	69°47'24"
81-4	Issigak	02:04:81	25.3	7741806	459621	136°02'49"	69°46'58"
#81-3	Kadluk & 81-2 Issigak not drilled						
81-3	Nayak	04:04:81	26.5	7756081	563690	133°20'20"	69°54'22"
81-2	Nayak	07:04:81	29.6	7753935	556004	133°32'26"	69°53'19"
81-1	Nayak	08:04:81	25.6	7756186	560851	133°24'46"	69°54'27"
81-7	Nayak	08:04:81	25.3	7753970	561003	133°24'37"	69°53'16"
81-4	Aok	09:04:81	21.3	7761749	561729	133°23'10"	69°57'26"
81-5	Aok	09:04:81	20.7	7762536	560103	133°25'41"	69°57'53"
#81-6	not drilled						
81-6	Iliyok	11:04:81	30.8	7760142	535365	134°04'33"	69°56'52"
81-1	Iliyok	12:04:81	30.8	7760141	534353	134°06'08"	69°56'52"
81-5	Iliyok	13:04:81	30.0	7761497	535366	134°04'31"	69°57'36"
81-2	Iliyok	14:04:81	27.8	7759766	536595	134°02'38"	69°56'39"
81-3	Iliyok	14:04:81	32.0	7758671	533823	134°07'00"	69°56'05"
81-7	Iliyok	15:04:81	27.4	7759561	533796	134°07'01"	69°56'34"
81-8	Iliyok	16:04:81	27.8	7759578	534641	134°05'42"	69°56'34"
#81-4, 81-9, 81-10 & 81-11	not drilled						
81-3	Omat	18:04:81	36.0	7736812	481076	135°29'23"	69°44'25"
81-4	Omat	19:04:81	36.0	7737632	482330	135°27'27"	69°44'52"
81-5	Omat	19:04:81	31.7	7738012	480195	135°30'46"	69°45'04"
#81-1 & 81-2	not drilled						
81-4	Issungnak South	21:04:81	26.6	7763203	524553	134°21'27"	69°58'35"
81-5	Issungnak South	21:04:81	23.8	7763194	523918	134°22'27"	69°58'35"
81-6	Issungnak South	08:05:81	20.8	7763315	523270	134°23'28"	69°58'39"
81-7	Issungnak South	10:05:81	10.6	7763903	522228	134°25'05"	69°58'59"
#81-1, 81-2 & 81-3	not drilled						
81-1	Igalak	23:04:81	30.8	7737854	491622	135°13'01"	69°45'01"
81-2	Igalak	24:04:81	22.2	7742502	489378	135°16'32"	69°47'30"
81-3	Minuk	25:04:81	23.5	7733597	443684	136°27'18"	69°42'22"
81-2	Minuk	25:04:81	21.1	7734576	443747	136°27'14"	69°42'54"