ECO-10-001

MONTREAL ENGINEERING CO. LTD. ANCX 2

021225

TESTHOLE FIELD LOG

66693

105-K-3,6

(to accompany Group # 2 & 3)

HOLE NO. BH-77-3 DD-158

LOCATION Shrimp Lake

CLIENT Kerr-CNRL W.O. NO. 6163-0

GR'D. ELEV.

PROJECT Grum joint venture

G.W.L.

SITE Faro, Yukon VANGORDA CREEK AREA

PURPOSE Foundations for tailings disposal dams

DRILLED BY A. S pilchin LOGGED BY M. Mallette DATE 20th July '77

DEPTH FT. 0	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	TYPE & BLWS/FT.	RECOVERY		TESTS
		Olive green till: Gravelly sand and silt with some clay, Plastic, well graded, semi-angular to semi-rounded particles. Dense	2.1 # 1 4.1	N.B. Permafrost encountered in SS sample # 1. SS, 85% recovery blows/6" ⇒ 18, 22, 20, 21 N = 42			
			6.5 # 2 8.5	SS, 65% recovery blows/6" ⇒ 3, 11, 12, 18 N = 23			
		Olive green till: Remolded sand, silt and gravel, high water content organic material present. Not plastic, well graded, semi-angular to semi-rounded particles. Average density.	11.5 # 3 13.5	SS, 30% recovery blows/6" ⇒ 10, 9, 11, 12 N = 20			
		Olive green till: Sand silt and gravel with traces of clay. Seems less remolded, slightly plastic. Well graded, semi-angular to semi-rounded particles. Average density.	17.6 # 4 19.6	SS, 70% recovery blows/6" ⇒ 9, 14, 15, 12 N = 29			
24.9			22.9 # 5 24.9	SS, 40% recovery blows/6" ⇒ 3, 4, 6, 12 N not shown for only 0.8' of length of tube was in undisturbed soil			
		End of hole at 24.9		N.B. The remolded samples are typical of a zone in the area where the borehole is located.			

START 7:30 FINISH 17:30 DELAYS ETC.

MONTREAL ENGINEERING CO. LTD.

DD-158

TESTHOLE FIELD LOG

HOLE NO. BH 77-3
LOCATION Shrimp Lake
GR'D. ELEV.
G.W.L.
PURPOSE Foundations for ... [illegible]

CLIENT Kerr - CNRL W.O. NO. 6163-0
PROJECT Grum joint venture
SITE Faro, Yukon

DRILLED BY A. [illegible] LOGGED BY M. [illegible] DATE 26th July

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	TYPE & BLWS/FT	RECOVERY	SAMPLING & DRILLING DETAILS	TESTS
						The site of BH-77- was stripped of its moss, organic material and black dirt cover by a caterpillar D6 bulldozer so as to facilitate access to the site in question. The cover was one foot in depth. All depths logged do not take into account this stripped portion of land.	
						N.B. No boulders or cobbles encountered during drilling.	

START 7:30 FINISH 17:30 DELAYS ETC.

MONTREAL ENGINEERING CO. LTD.

TESTHOLE FIELD LOG

DD-158

HOLE NO. BH-77-3

LOCATION Shrimp Lake

CLIENT Kerr-CNRL W.O. NO. 6163-0

PROJECT Grum joint venture

GR'D. ELEV.

G.W.L. 12.9'

SITE Faro, Yukon

PURPOSE Foundations for tailings dissection dam

DRILLED BY A. Stilchen LOGGED BY M. Mallette DATE July 21st

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT	RECOVERY	TESTS
24						
24.9				We had to case the hole at a depth of 32 feet as the walls were caving in continuously.		
		Olive green till: Gravelly and sandy silt with some clay. Well graded, slightly plastic, semi-angular to semi-rounded particles, dense	30.4 / # 6 / 32.4	SS 85% recovery blows/6" = 6, 13, 17, 31 N = 30		
		Olive green till: Gravelly sand and silt with some clay. Plastic, dense	34.3 / # 7 / 36.3	SS 70% recovery blows/6" = 11, 16, 23, 33 N = 41		
37.9						
		Dark grey till: Gravelly sand and sandy silt with some clay. Plastic, very dense to dense, semi-angular to semi-rounded particles. Well graded.	39.5 / # 8 / 41.5	SS 75% recovery blows/6" = 8, 25, 32, 32 N = 57		
			43.9 / # 9 / 45.9	SS 70% recovery blows/6" = 11, 22, 33, 43 N = 55		
			49.1 / # 10 / 51.1	SS 95% recovery blows/6" = 17, 17, 29, 39 N = 46		
54						

START 7:30 FINISH 17:30 DELAYS ETC.

MONTREAL ENGINEERING CO. LTD.

TESTHOLE FIELD LOG

HOLE NO. BH-77-3 **DD-158**

LOCATION Shrimp Lake

CLIENT Kerr - ENRL W.O. NO. 6163-0

GR'D. ELEV.

PROJECT Grum joint venture

G.W.L. 12.9'

SITE Faro, Yukon

PURPOSE Foundations for tailings disposal dam

DRILLED BY A. Srilchan LOGGED BY M. Mallette DATE July 21st

DEPTH FT. 54'	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT	RECOVERY	TESTS
		Dark grey till: Gravelly, sand and sandy silt with some clay. Very dense	54' #11 56.5	SS, 90% recovery blows/6" => 19,38,58,84 N = 96		
57.4	—					
		Olive green till: Gravelly, sandy and clayey silt. Very dense	59.4' #12 61.4	SS, 100% recovery blows/6" => 47,58,81,81 N = 139		
61.4		End of shift.				
				N.B. The clay content is difficult to evaluate throughout the bore hole. It could very well be higher than the estimated "some" listed in certain samples.		
				No boulders or cobbles encountered during drilling.		

START 7:30 FINISH 17:30 DELAYS ETC.

TESTHOLE FIELD LOG

HOLE NO. BH 17-3 DD-158
LOCATION Shingle Lake
GR'D. ELEV.
G.W.L. 13.1'
PURPOSE Foundations for tailings disposal

CLIENT Kerr-CNRL W.O. NO. 6163-0
PROJECT Gruen joint venture
SITE Faro, Yukon

DRILLED BY A. Sritchon LOGGED BY M. Mallette DATE July 77

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT	RECOVERY	TEST
61.4		Olive green till: Sandy, gravelly and clayey silt, Well graded, plastic, dense, semi-angular to semi-rounded particles. Average water content	13.9 / #13 / 65.7	SS, 60% recovery, blows/6" = 17, 16, 18, 26 N = 34		
		Dark grey till: Very dense	69.4 / #14 / 71.4	SS, 100% recovery, blows/6" = 19, 32, 44, 50 N = 76		
71.4		End of hole at 71.4'		N.B. No boulders or cobbles encountered.		

START 7:30 FINISH 14:30 DELAYS ETC.

MONTREAL ENGINEERING CO. LTD.

TESTHOLE FIELD LOG

(to accompany GROUP #2 & 3)

001228

HOLE NO. BH-77-5 DD-158

LOCATION Shrimp Lake

CLIENT Kerr - CNRL W.O. NO. 6163-0

GR'D. ELEV.

PROJECT Grum joint venture

G.W.L.

SITE Faro, Yukon

PURPOSE Foundations for [illegible] bldgs. design data

DRILLED BY A. Spilchen LOGGED BY M. Mallett DATE July 26 '77

DEPTH FT. 0	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	TYPE & BLWS/FT	RECOVERY	SAMPLING & DRILLING DETAILS	TESTS
n.L.		Moss, organic material, volcanic ash, black earth	2.7				
			#1			SS, 50% recovery	
		Olive green till: Gravelly sandy silt with some clay Becoming a gravelly silt and sand with depth.	4.2			blows/6" => 5, 21, 55, 60 N = 76	
			7.5				
			#2			SS, 60% recovery blows/6" => 25, 40, 45, 65	
9.5		End of shift	9.5			N = 85	

N.B. The till is very dense, slight plasticity to none whatsoever, well graded, angular to semi-rounded particles. No permafrost observed in any sample up to date in BH-77-5

The set up is situated on a stabilized portion of land so the till is at surface. The depths do not take into account the foot or so of overburden bulldozed away. The organic cover is included in the description although not present on site.

START 13:00 FINISH 17:00 DELAYS ETC.

MECO-10 001

SHEET 1 OF 1

MONTREAL ENGINEERING CO. LTD.

TESTHOLE FIELD LOG

DD-158

HOLE NO. BH-77-5

LOCATION Slrimp Lake

GR'D. ELEV.

G.W.L 2.0'

PURPOSE Foundations for tailings dam

CLIENT Kerr-CNRL W.O. NO. 6163-0

PROJECT Grum joint venture

SITE Faro, Yukon

DRILLED BY A. Spilchen LOGGED BY M. Mallette DATE July 27th '77

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT.	RECOVERY	TESTS
9.5				N.B. RC drilled with wireline of BQ calibre. Casing was fried due to high density of till.		
		Brownish to olive green till: Gravelly silt and sand. Very dense, well graded, low water content, angular to semi-rounded particles. A few cobbles and boulders	13.6	SS, 88% recovery		
			# 3	Blows/1" = 38, 60, 142, 75 with refusal after 0.2' penetration. N = 202		
			15.3			
			19.0	SS, no penetration after 100 blows, refusal on cobble at 19.0'		
			19.1			
			# 5	RC #5, 19.1' to 24.1' recovered 1.2' of till, gravel and cobbles (24% recovery)		
			24.1			
			# 6	RC #6, 24.1' to 29.2' recovered 0.5' of gravel (10% recovery)		
			29.2			
			30.2			
			# 7	SS, 100% recovery		
			31.1	Blows/1" = 71, 202 with refusal after 0.4' of penetration		
			34.1			
			# 8	SS, 90% recovery		
35.1		End of shift	35.1	Blows/1" = 110, 215, 55 with no penetration. N = 325		
				P.S. Traces of clay in sample #8, slightly plastic		

7:00 FINISH 17:00 RELAYS ETC

MONTREAL ENGINEERING CO. LTD.

TESTHOLE FIELD LOG

HOLE NO. BH 77-5 DD-158

LOCATION Shrimp Lake

GR'D. ELEV.

G.W.L. 7.5'

PURPOSE Foundations for tailings disposal. Dams

CLIENT Kerr-CNRL W.O. NO. 6163-0

PROJECT Grum joint venture

SITE Faro, Yukon

DRILLED BY A. Spilchen LOGGED BY M. Mallette DATE July 22th

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT	RECOVERY	TESTS
35						
35.1				N.B. SS#9, some clay observed in till, slightly plastic.		
		Olive green till: Gravelly sand and silt. Very loose, well graded, angular to semi-rounded particles. Some cobbles and boulders	39.0	SS, 100% recovery		
			#9	Blows/6" => 78, 125 for 0.2' penetration with refusal on cobble or boulder.		
			39.8			
			43.8	SS, 0% recovery		
			#10	Blows/6" => 118, 206, 75 per 0.2' penetration before refusal.		
			45.0			
			47.9	N = 324		
			#11	SS, 100% recovery		
			49.4	Blows/6" => 40, 47, 71, 98		
				N = 118		
			53.7	SS, 10% recovery		
			#12	Blows/1" => 88, 109, 139, 154		
55.7		End of shift	55.7	N = 248		
				P.S. SS#9 was only sample where clay was noted as being a constituent of the till.		

START 7:00 FINISH 17:00 DELAYS ETC.

MECO-10-001

SHEET 1 OF 1

MONTREAL ENGINEERING CO. LTD.

DD-158

TESTHOLE FIELD LOG

HOLE NO. BF 77-5

LOCATION Shrimp Lake

CLIENT Kerr-CNRL W.O. NO. 6163-0

PROJECT Grum joint venture

GR'D. ELEV.

G.W.L. 6.8'

SITE Faro, Yukon

PURPOSE Foundations for tailings dams

DRILLED BY A. Spilchen LOGGED BY M. Mallette DATE July 29th '77

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT	RECOVERY		TESTS
55.7				N.B. Some cobbles and boulders present in till			
		Dark grey till: silt and sand with some gravel and some clay. Very dense well graded, angular to sub-rounded particles low water content slightly plastic.	58.8 #1 / 13	55.75% recovery. Blows/1" ⇒ 30, 43, 155/0.2' of penetration with refusal on cobble or boulder N = 73			
60.0		End of Hole at 60.0'	60.0				

START 7:00 FINISH 9:00 DELAYS ETC

SHEET 1 OF 1

(to accompany Geop # 243)

DD-158

MONTREAL ENGINEERING CO. LTD.

001225

TESTHOLE FIELD LOG

HOLE NO. BH-77-6

LOCATION Shrimp Lake

GR'D. ELEV.

G.W.L.

PURPOSE Foundations for tailings disposal dam

CLIENT Kerr-CNRL W.O. NO. 6163-0

PROJECT Grum joint venture

SITE Faro, Yukon

DRILLED BY A. Szilchin LOGGED BY M. Mallette DATE July 29

DEPTH FT. 0	GROUP	FIELD CLASSIFICATION DESCRIPTION	SAMPLE NO/DEPTH	TYPE & BLWS/FT	RECOVERY		TESTS
0.4		~~Non mate fin~~					
		Moss, organic material, black earth	2.1	SS, 65% recovery			
2.7			#1	Blows/6" ⇒ 3, 6, 9, 10 N = 15			
		Greenish to brown till:	4.1				
		Gravelly and sandy silt. Well graded angular to semi-rounded particles, no permafrost observed. Compact to dense material.	7.8	SS, 65% recovery			
			#2	Blows/6" ⇒ 7, 8, 11, 15 N = 19			
			9.8				
			13.6	SS, 50% recovery			
			#3	Blows/6" ⇒ 7, 16, 23, 42 N = 39			
15.6		End of shift.	15.6				

N.B.

SS#1, low water content.

SS#2, gravelly sand and silt (till). High water content, slightly granular appearance.

SS#3, gravelly and sandy silt with some clay. Plastic, average water content.

P.S. Fill made by Caterpillar D6C preparing site.

START 9:00 FINISH 17:00 DELAYS ETC.

MONTREAL ENGINEERING CO. LTD.

TESTHOLE FIELD LOG

DD-158

HOLE NO. B1-77-6

LOCATION Shrimp Lake

GR'D. ELEV.

G.W.L.

PURPOSE Foundation for tailings disposal dam

CLIENT Kerr-CNRL W.O. NO. 6163-0

PROJECT Grum joint venture

SITE Faro, Yukon

DRILLED BY A. Sgilchen LOGGED BY M. Mallette DATE July 30 '77

DEPTH FT. 15	GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS (TYPE & BLWS/FT, RECOVERY, TESTS)
15.6		Greenish to brown till.		N.B. Tried to core bedrock with BQ calibre wireline, poor recovery.
17.3		~~Bedrock.~~		
		Grey calcite phyllite, black graphite phyllite and green chlorite phyllite interbanded.	18.9 #4 20.8	SS, 95% recovery. Blows/6" => 43, 38, 30, 77 with refusal after 0.4' of penetration. N = 68
			#5 21.8	SS#5, 100% recovery
		Fine grained, rusty zones, tender not fully consolidated rock.	#6	Blows/6" => 111, 70 N = 181
			25.2	RC#6, 9% recovery (0.3')
			#7 27.2	RC#7, 15% recovery (0.3')
		The rock quality can be safely presumed as very poor.	#8	RC#8, 3% recovery (0.1')
			30.7 #9 31.4	RC#9, 11% recovery (0.1')
			32.1 #10 34.1	SS, 65% recovery. Blows/6" => 26, 24, 38, 76 N = 62
			38.8 #11 40.5	SS, 65% recovery. Blows/6" => 35, 51, 122, 75 with refusal after 0.2' of penetration. N = 173
40.5		End of shift		
				P.S. SS#5, first foot of sample discarded for [illegible]. Had caved in, [illegible] falsifying the blow counts.

START 7:00 FINISH 17:00 DELAYS ETC.

MONTREAL ENGINEERING CO. LTD.

DD-154

TESTHOLE FIELD LOG

HOLE NO. BH-77-6

CLIENT Kerr-CNRL W.O. NO. 6163-0

LOCATION Shrimp Lake

PROJECT Grum joint venture

GR'D. ELEV.

G.W.L. 18.8'

SITE Faro, Yukon

PURPOSE Foundations for tail disposal dams.

DRILLED BY A. Stilchen LOGGED BY M. Mallette DATE July 31, 77

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT	RECOVERY	TESTS
40.5						
		Grey calcite phyllite, black graphite phyllite with bands and veinlets of white quartz. Grey chlorite phyllite in traces only. The calcite phyllite is fine grained, rusty, patches tender, not fully consolidated in general. Very poor rock quality! The calcite phyllite is distinguished by its bands of white calcite and by the presence of fine disseminated calcite.		SS#12, 100% recovery		
			43.6	Blows/1" => 150 with refusal after 0.3' penetration.		
			#13	RC#13, 10% recovery (0.1)		
			45.9			
			#14	RC#14, 65% recovery (1.3)		
			47.9			
			#15	RC#15, 52% recovery (1.1)		
			50.4			
			#16	RC#16, 55% recovery (1.1)		
			52.4			
			#17	RC#17, 20% recovery (0.4)		
			54.4			
			#18	RC#18, 0% recovery		
			56.5	RC#19, 0% recovery		
			#20	SS, 88% recovery		
			#21	Blows/1" => 51, 115 with refusal after 0.3' penetration		
			59.2			
			60.7	RC#21, 0% recovery		
			#22	SS#22, 0% recovery		
			#23	Blows/1" => 25, 75 with refusal after no penetration		
			#24			
			63.9			
			#25	RC#23, 40% recovery (0.4)		
			#26	RC#24, 0% recovery		
66.8				RC#25, 44% recovery (0.4)		
		End of hole at 66.8	66.8	RC#26, 25% recovery (0.5)		
				N.B. Bedrock does not core well due to its excessive tenderness.		

START 7:00 FINISH 17:00 DELAYS ETC.

MONTREAL ENGINEERING CO. LTD.

TESTHOLE FIELD LOG

DD-158

HOLE NO. BH-77-6

LOCATION Shrimp Lake

GR'T ELEV.

G.W.L. 18.8'

PURPOSE Foundations for tailings disposal dam

CLIENT Kerr-C.N.R.L. W.O. NO. 6163-0

PROJECT Grum joint venture

SITE Faro, Yukon

DRILLED BY A. Spilchen LOGGED BY M. Mallette DATE July 31st

DEPTH FT.	FIELD CLASSIFICATION GROUP	DESCRIPTION	SAMPLE NO/DEPTH	SAMPLING & DRILLING DETAILS TYPE & BLWS/FT	RECOVERY	TESTS
		P.S. The rock description is sketchy at best due to the poor rate of recovery, it is impossible to establish the contacts between the different varieties of phyllite in question				

N.B. Bedrock was evaluated at 17.3 feet since SS#4 and 5 recovered in all 2.9' of phyllite. The rock coring that followed was a very poor recovery rate that could be due to the excessive tenderness of the rock. All the other SS that followed commencing at a depth of 32'1" recovered 3.4 feet of phyllite.

The rock core recovered was phyllite from top to bottom although many varieties were present: graphite, calcite, quartz, sericite and chlorite phyllite. Since bedrock outcrops close by on the road cut leading to the borehole in question it is assumed with a fair degree of confidence that the estimated depth of 17.3 is correct.

START 7:00 FINISH 17:00 DELAYS ETC.