

UTAH MINES LTD.

ISLAND COPPER MINE

SOUTH WALL EXPANSION STUDY

FAME GRANT REPORT

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**15,707**

**PART 30FG**

FILMED

R.B. Findlay

February 25, 1987

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BEACH DUMP PLAN (Portion) 1" = 1000'	pocket
DRILL LOGS:     D-97-B	
D-96-A	
D-101	
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## SOUTH WALL EXPANSION STUDY

### SUMMARY

The opportunity may exist to extend the life of the Island Copper orebody by as much as 3-5 years. Realizing this extension is contingent on the development of a method to mine past the original shoreline of Rupert Inlet. At present the south wall of the open pit daylights about 60-100 feet north of the original shoreline. Run of mine waste rock has been disposed of in a marine dump which extends as much as 3,500 feet south of the shoreline. The extension would require moving the pit's south wall about 800-1000 feet south of the shoreline.

A method of rendering the waste dump and underlying tills impermeable must be developed. Further we must be sufficiently assured of our ability to develop and maintain a stable rock slope along the profile of the relocated south wall. A field program aimed at resolving some of these questions has been conducted during the period June 1986 to January 1987 and is described herein.

### Dump Permeability

The dump has been developed in a series of near parallel, concentric layers or passes. Run of mine waste is end dumped near the current dump crest and subsequently dozed over the crest. Dump composition includes a variety of waste rock types and glacial tills from the early overburden removal. There are zones or layers of the dump with essentially no till and other areas with high till content. Size distribution ranges from the clay and silt fraction to boulders 10-15 feet in dimension. Historical measurements indicate that the angle of repose for the submarine portion of the dump averages about  $31^{\circ}$ . It was expected there would be some variation in dump permeability from area to area as a consequence of the above.

The original program had been based on the execution of 1-3 pump tests to determine permeability. Prior to performing the pump tests it was recommended that we excavate and map a series of surface trenches in order to confirm the zoned and variable nature of the dump. This would then allow pump tests to be executed at optimal locations.

In fact, a series of test pits were excavated during August and September. Each pit was approximately 100 feet long, 30 feet wide and 25-30 feet deep. The pits were typically excavated 3-5 feet below water level. The pits evidenced the expected variations in grain size, till content, inclined bedding or layering, etc. They also exhibited an apparent response to tidal activity.

Monitoring the tidal responses in the test pits and comparing them to the tides in the inlet, both with respect to magnitude and delay or time lag permitted a determination of hydraulic conductivity. Results ranged from 0.002-1.110 cm/sec and confirmed that a seepage barrier would be required to render the dump sufficiently impermeable.

#### Technical Solution

Historical studies had indicated there were three possible solutions for controlling seepage through the dump. These were:

- a) slurry or diaphragm wall
- b) grouting
- c) excavation and replacement.

Individual discussions with consultants and contractors that specialize in the aforementioned techniques provided no clear consensus as to which solution was optimal. Further, there was no obvious format for a field program. Therefore, during early October a 3 day panel type discussion was held at the Island Copper minesite. The discussion was attended by personnel from:

ECO Geochemical Consulting Ltd.  
Franki Foundation Company  
GKN Keller Canada Ltd.  
ICOS Corporation of America  
Steffen Robertson and Kirsten (B.C.) Inc.  
Woodward-Clyde Consultants

About one half of the participants had made previous visits to the site regarding the problem. All personnel received a data package in advance of their arrival.

The first day was dedicated to a detailed field tour of the site followed by a discussion of the data package. The second day involved a series of specific presentations by members of the various teams. The third day completed the presentations. This was followed by an open forum discussion of the presentations.

Finally the participants were asked to indicate which method appeared to offer the best technical and economic solution based on the current level of knowledge. The response was nearly unanimous. The optimal solution appeared to be construction of a slurry wall keyed into the tills to render the marine dump impermeable. This would be followed by grouting of the underlying tills. The grouting would be effected via pipes embedded in the slurry wall during its construction.

The next obvious step was to determine the geometry of the slurry wall and the nature of the underlying tills.

#### Geotechnical Drilling

##### Summary of Work Performed:

<u>Hole</u>	<u>Dip</u>	<u>Length (ft)</u>	<u>Status</u>	<u>Core Size</u>
D-96	40°	132	Abandoned	-
D-97	45°	196	"	-
K-1	90°	165	"	N/A
D97A	47°	175	"	-
D97B	46.5-50.5°	1048	Completed	NQ3
D96A	40-45°	947	"	NQ3
D101	46-50°	963	"	NQ3
V-6	90°	281	"	HQ3
V-3	90°	249	"	HQ3

Core from the angle holes was geotechnically oriented by temporary employees as drilled. All drill core was logged, photographed and measured for recovery, RQD and magnetic susceptibility. All core is stored on racks in the upper core shack on the mine site. The core was logged by Mikko O. Nyssonen, M. Eng., P. Eng., a contract geotechnical engineer. During the time that V-6 and V-3 were being drilled, Mr. Nyssonen and J.L. Rotzien, B.A. Sc., P. Eng., also a contract geotechnical engineer, were utilized to monitor the drilling and log the till samples as they were recovered.

The floor of Rupert Inlet dips southward at about 10-15%. The current south wall of the pit has been excavated at a shallow angle ( $38^{\circ}$ ) due to slope stability problems. There was evidence (D-88 drilled in 4th Qtr. '85) of better rock slope conditions in the area of the proposed location for the new south wall. Improving the rock slope, that is, steepening the wall moves the daylight location of the proposed extension towards the shoreline. This diminishes the depth and length of the slurry wall, thereby reducing capital investment and facilitating construction. It also has the potential to reduce the overall stripping ratio of the extension.

A program of three 1,000 foot "NQ-3" diamond drill holes had been outlined. The holes were oriented such that they would essentially parallel the proposed new slope. They were drilled at  $45^{\circ}$ - $50^{\circ}$  to allow the core to be oriented for geotechnical analysis. Drilling commenced in mid-October and was completed in mid-January. Logs for the holes (D-96A, D-97B & D-101) are attached. They represent a total of 2,958 feet of successfully completed holes.

Drilling shallowly inclined holes through the loosely consolidated marine dump proved to be extremely difficult. Two holes, D-96 & D-97, were attempted during October 11-24, 1986. The holes were abandoned at depths of 132 and 196 feet respectively. Both failed to successfully penetrate the dump and underlying tills. The holes were being drilled with a combination of HW and NW sized tricones. Following their failure the program was temporarily suspended. In early November a single hole was attempted utilizing a different drilling technique. The drill was a Krupp HB103. The drill features a hydraulic hammer that imparts energy to a center airtrack string and simultaneously advances a casing string by rotation. The intent had been to drill to bedrock with the HB103 and then lower "BQ" casing through the Krupp drill's casing. The technique worked, that is, the hole, K-1, was advanced 165 feet in 4 hours. Unfortunately it ran out of power at that depth and once again we had not reached bedrock. In late November we recommissioned the Longyear 44 diamond drill. On this occasion we were drilling with PW and HW sized tricones and also with more experienced drillers. The hole, D-97-A, near the site of the previously abandoned D-97 was easily advanced to 175 feet.

Unfortunately a failure of the drilling equipment resulted in the loss of this hole. We had however, demonstrated a successful drilling method. In early December D-97-B was collared and completed. Subsequently D-96-A was collared and advanced to bedrock before a Christmas shutdown. In January, this hole was completed and followed by D-101.

The holes have now been fully logged, all structural details recorded and point load tests completed. At present the data from these holes is being combined with that from historical drill holes plus mapping of the existing south wall. Once the results, in terms of design slope angle, are known the existing bench mine plans will be updated.

Originally it was assumed that a seepage barrier would be located approximately 200 feet south of the daylight trace of the relocated wall. There has been some suggestion that this distance maybe ultra-conservative. In anticipation of some overall improvement of the rock slope and a slight reduction in the aforementioned stepout the location of the seepage barrier has been moved 200 feet towards the shoreline. (Portions of the current pit's wall stand as steep as  $47^{\circ}$ . An increase in slope angle from  $38^{\circ}$  to  $43^{\circ}$  would move the crest 200 feet.)

At the conclusion of the previously discussed drilling program it was deemed appropriate to conduct a program of short vertical drill holes. The holes were located on the proposed profile for the seepage barrier. Three holes were planned but the program was concluded after the second hole.

The holes were targeted at identifying the geometry of the seepage barrier. Specifically there is a need to determine the location of the marine dump-till interface and the till-bedrock interface. There is also a need to determine how uniform or predictable these contacts may be. Finally the nature of the tills in terms of in situ strength, permeability, etc. is of interest.

The holes (V-3 and V-6) were completed using PW and HW tricones in the dump and "HQ-3" in the tills and underlying bedrock. The holes were 249 and 281 feet respectively. Additional equipment was mobilized to perform S.P.T.'s and packer tests. Geotechnical engineers were contracted to monitor the drilling on a continuous basis. Logs are attached.

The program was concluded after two holes because diamond drilling with HQ-3 equipment does not appear to be the best method of securing till samples. Although quite dense, based on the S.P.T.'s, the tills tended to be quite sandy and thus lacked cohesion. As a result the sample recovery was relatively low. Results of the holes are being incorporated into an update on the project's feasibility.

#### Feasibility

The conclusions of the seminar and results of the two drilling programs are being utilized to reassess the project's technical feasibility. This will involve revisions to the bench mine plans as a result of the redesigned slope and definition of the barrier geometry. It will also include the definition of the next stage of field work. It is expected this work will be conducted over the next 1-2 months.



COST SUMMARYDrilling

Drilling (per attached) (B.C.)	\$148,192.99
Contract Geotechnical Engineers (B.C.)	10,801.06
Temporary Employees (Core Orientors)	4,986.23
Utah - Labour	2,163.71
Warehouse Issues	232.55
Direct Orders	<u>3,200.58</u>
Drilling Related Total:	\$169,577.12

Test Pit Excavation

Utah - Labour	1,050.99
Equipment	120.42
Direct Orders	<u>40.00</u>
Test Pit Related Total:	\$ 1,211.41

On-Going Consultants

Geotechnical (B.C.)	\$ 1,432.70
Grouting (Outside)	4,415.51
Slurry Wall (Outside)	<u>1,591.10</u>
Consultant Related Total:	\$ 7,439.31

Seminar

Consultants (B.C.)	\$ 4,990.69
Consultants (Outside)	12,004.53
Contractors (Outside)	11,244.03
Accommodation in Port Hardy	2,089.78
Utah - Direct Orders	<u>999.33</u>
Seminar Related Total:	\$ 31,328.36

PROGRAM TOTAL: \$209,556.20

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DRILLING COST SUMMARY

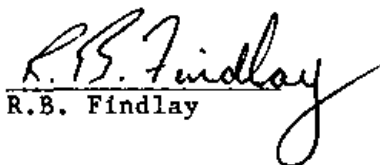
<u>Hole #</u>	<u>Footage Charges</u>	<u>Hourly Charges</u>	<u>Consumables</u>	<u>Misc. Charges</u>	<u>Total Cost</u>	<u>Depth (Feet)</u>
D-96	\$ 2,478.00	\$ 4,300.00	\$ 2,544.78	\$ -	\$ 9,322.78	132
D-97	-	10,560.00	4,800.40	2,281.07	17,641.47	196
D-97-A	3,636.25	3,345.00	2,867.27	106.88	9,955.40	175
D-97-B	17,557.75	3,652.50	3,275.72	932.19	25,418.16	1048
D-96-A	15,987.50	3,727.50	1,587.33	-	21,302.33	947
D-101	15,871.50	2,985.00	3,412.60	828.15	23,097.25	963
V-6	4,107.25	5,230.00	7,450.47	161.26	16,948.98	281
V-3	3,525.50	4,715.00	6,385.81	161.26	14,787.57	249
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Sub. Total:	63,163.75	38,515.00	32,324.38	4,470.81	138,473.94	3991
Mob/Demob				1,266.02	1,266.02	-
Misc. Equipment				274.24	274.24	-
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Sub. Total:	63,163.75	38,515.00	32,324.38	6,011.07	140,014.20	3991
K-1	-	5,415.00	500.00	393.79	6,308.79	165
Mob/Demob				1,870.00	1,870.00	-
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total:	\$63,163.75	\$43,930.00	\$32,824.38	\$8,274.86	\$148,192.99	4156
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
				Cost/Ft.	\$35.66	
				Cost/M.	\$116.98	

STATEMENT OF QUALIFICATIONS

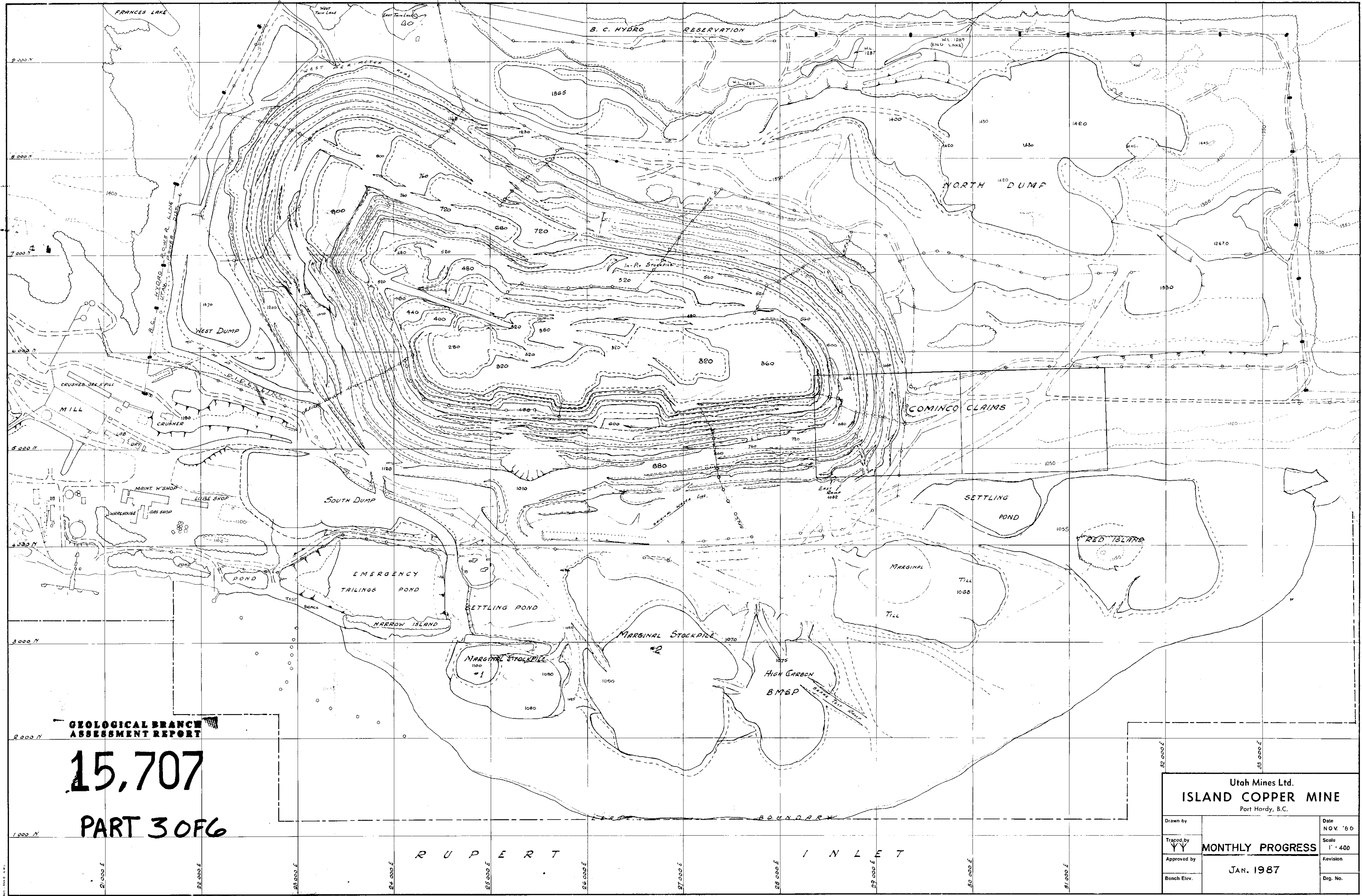
I submit that I am qualified to prepare and present this report. My qualifications are as follows:

R.B. Findlay - Senior Engineer - Island Copper Mine, Utah Mines Ltd.

- 1) B.A. Sc. Geological Engineering 1969, U.B.C.
- 2) B.C.P. Eng., Registered October, 1972.
- 3) B.A. Sc. Mineral Engineering 1976, U.B.C.
- 4) Employed continuously as a geological engineer from May, 1969, to June, 1975, as a supervisor in a Cu/Zn concentrator from July, 1976 to November, 1978, and continuously at Utah Mines Ltd. since December, 1978, as a mining engineer in a variety of capacities. I am presently under the supervision of R.B. Robertson.

  
R.B. Findlay

Date: February 25, 1987.



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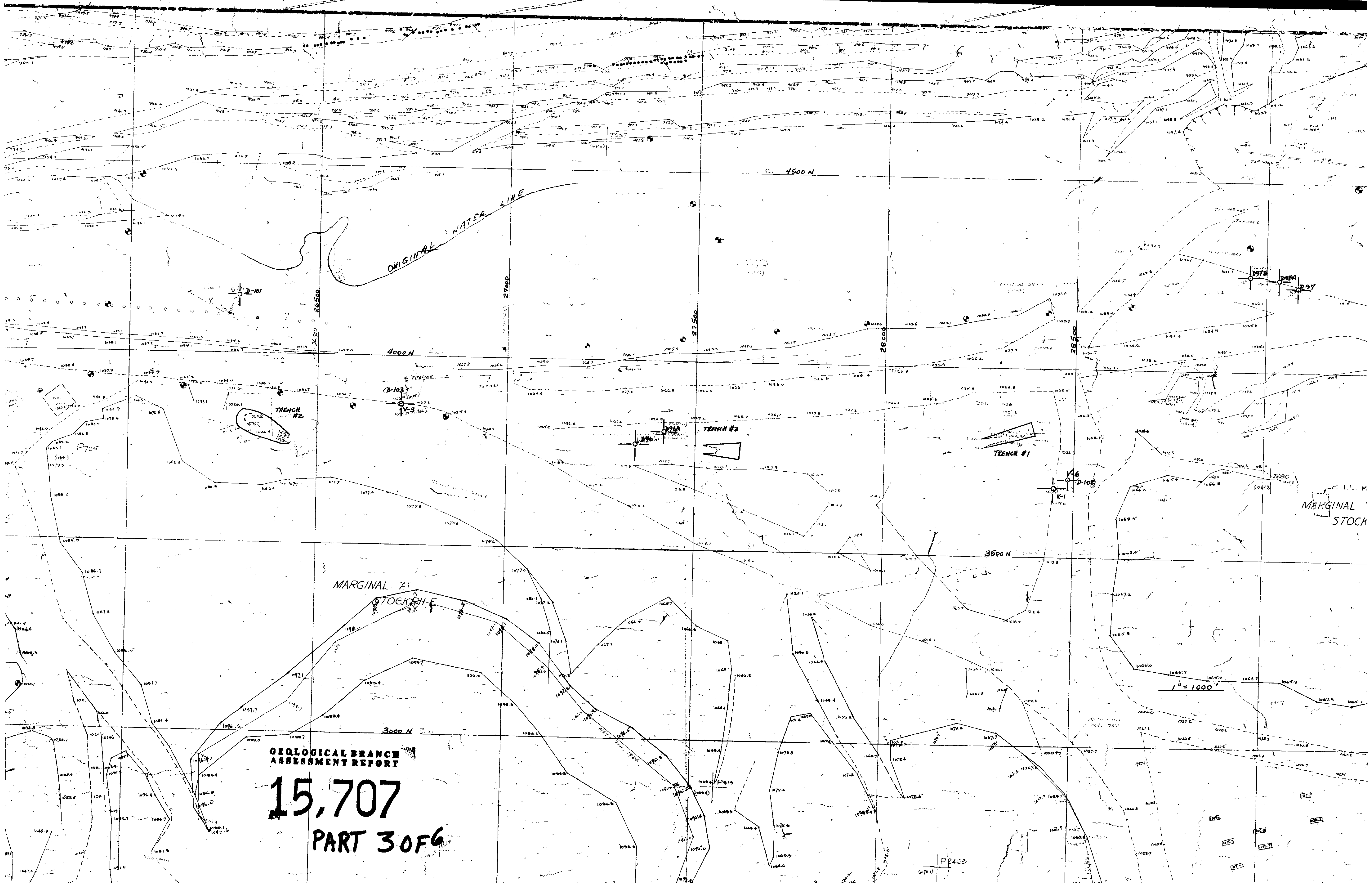
**PART 3 OF 6**

Utah Mines Ltd.  
**ISLAND COPPER MINE**  
Port Hardy, B.C.

Drawn by	YY	Date	NOV. '60
Traced by	YY	Scale	1" = 400'
Approved by		Revision	
Bench Elev.		JAN. 1967	Drg. No.

R U P E R T I N L E T





ORIGINAL WATER LINE

4500 N

4000 N

TRENCH #1

TRENCH #3

TRENCH #2

3500 N

MARGINAL A STOCKPILE

MARGINAL STOCK

3000 N

1" = 1000'

GEOLOGICAL BRANCH  
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P2463





HOLE NO. **D908**  
 CASING COLLAR ELEV.:  
 COORDINATES:  
 INCLINATION:

GROUND ELEV.:  
 N. E.  
 BEARING:

PROJECT:  
 DATE STARTED:  
 DATE FINISHED:  
 TOTAL DEPTH: **1048.0**

PAGE NO: **2** OF **20**  
 REF. TO CLAIM CORNER:  
 SCALE:  
 LOGGED BY: **MIN**

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED
							<b>QUICK LOG.</b>								
							<p>232.0'-232.5' - CRUMBLES EASILY            232.5'-233.5' - CRUMBLES            235.8'-237.0' - (SOFT) CRUMBLES VERY EASILY            237.5'-238.0' - CRUMBLES VERY EASILY            238.0'-240.0' - PY MIN. 3% + TRACE OF CPY            241.0'-243.4' - SERICITE ENVELOPE - (BLEACHED)</p> <p><u>244.3'-258.5' CHLORITE ALTERED ANDESITE TUFF</u>            DK-LT GREY, 4% PY MIN, TRACE OF CPY            244.3-255.7 - EPIDOTE ALT ALONG ZEPHYRUS CARBONATE VENS            246.5-248.5 - HIGH DENSITY FRACTURING.            255.7-256.0' - INTENSE SERICITE ALT (SOFT)            CRUMBLES VERY EASILY            256.7'-258.5' - INTENSE SERICITE ALT-(SOFT)            CRUMBLES VERY EASILY</p> <p><u>258.5'-381.2' BRECCIA (VOLCANIC?)</u>            SERICITE CHLORITE ALT, DK-LT GREY, GREENISH GREY            PY MIN. 4-6%; TRACES OF CPY            ROUNDED + ANGULAR FRAGMENTS VARYING            FROM 2MM-6CM, FRAGMENTS ARE            POORLY SORTED</p>								























HOLE NO. **107B**

PROJECT:

PAGE NO: **12** OF **20**

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH: **1048.0**LOGGED BY: **MN**

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE. CORE REC'Y/HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI- MATED
							DESCRIPTIVE GEOLOGY								
							<p>590.6-591.5, 594.6-595.2, 596.0-599.0 - trace of cpy  599.0-599.5 - SERICITE ENVELOPE (BLEACHED)  599.6 - GOUGE SEAM (1/8") - WITH SERICITE ALT.  599.5'-599.9', 605.5-606.0' - INTENSE SERICITE  ALT. WITH GOUGE - FRACTURED + CRUMBLES  613.3-613.4, 615.7-616.1, 618.0-618.3 - SERICITE  ENVELOPE (BLEACHED)  620.8-620.9 - trace of cpy  622.3-628.4 - SERICITE ENVELOPE (BLEACHED)  622.3-622.8, 627.4, 628.4 - trace of cpy  629.2-629.3 - trace of cpy  630.3-631.0 - cpy MIN. 5%  632.0, 632.5, 634.0 - trace of cpy.  636.6-637.7 - SERICITE EPIDOTE ALT (BLEACHED)  639.0-640.5 - SERICITE ALT  644.0, 644.1 - trace of cpy  646.0-648.6 - VEINS - ZEOLITE, CARBONATE  SERICITE, CHLORITE (BLEACHED) + FRACTURED  ALONG VEINS  648.7, 648.9 - trace of cpy  648.9-649.2 - HIGH DENSITY FRACTURING  649.0-650.0 - trace of cpy</p>								











HOLE NO. D913

CASING COLLAR ELEV.:

COORDINATES:

INCLINATION:

GROUND ELEV.:

N. E.

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: 1048.0

PAGE NO: 18 of 20

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: MN

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI- MATED
							QUICK LOG								
							<p>842.3-842.5' - SERICITE ENVELOPE - (BLEACHED)</p> <p>841.6-841.7 - DOUSE SEAM WITH SERICITE, CHLORITE ALT., 5% PY MIN, 1% CPY</p> <p>853.3-853.5 - SERICITE, CHLORITE, EPIDOTE ALT</p> <p>855.7-856.2 - INTENSE SERICITE ALT (BLEACHED) (VERY SOFT)</p> <p>857.5-874.5 - CHLORITE SERICITE ALT. ORANGE ZEPHYRUS VEINING, SOME EPIDOTE ALT., 2-4% PY MIN., TRACE OF CPY FRACTURES EASILY</p> <p>880.0-901.0 - ZEPHYRUS VEINING, 4% PY MIN, TRACE OF CPY</p> <p>882.0 - DOUSE SEAM (1/16") - WITH SERICITE ALT.</p> <p>886.0-886.2, 888.7-889.5 - SERICITE ENVELOPE - (BLEACHED)</p> <p>891.3-891.5 - DOUSE SEAM WITH SERICITE ALT.</p> <p>893.4 - DOUSE SEAM (1/4") - WITH SERICITE ALT, TRACE OF CPY</p> <p>894.7 - DOUSE SEAM (1/8") WITH SERICITE ALT, TRACE OF CPY</p>								



HOLE NO. D5715

PROJECT:

PAGE NO: 19 OF 20

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

R. P. TO CLAIM CORNER:

COORDINATES:

N.:

E.:

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH: 1048.0LOGGED BY: MN

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT	ESTI-MATED
							Quick LOG								
							DESCRIPTIVE GEOLOGY								
							<p>896.3-896.7 - SERICITE ENVELOPE (BLEACHED) 4% PY MIN, 2% CPY</p> <p>900.3-907.0 INTENSE SERICITE ALT.</p> <p>901.0-907.0 - SHATTERED ZONE OF SERICITES GOUGE, 5% PY, trace of CPY, (SOFT) CRUMBLES VERY EASILY</p> <p>909.0-917.8 - ZEOLITE VEINING - HIGH DENSITY FRACTURING</p> <p>917.6 - trace of CPY</p> <p>921.0-928.0 - ZEOLITE VEINING - HIGH DENSITY FRACTURING</p> <p>928.0-935.0 - INTENSE SERICITE - CHLORITE ALT., SOME GILSONITE ALT., 5% PY MIN, trace of CPY, ORANGE ZEOLITE VEINING. CRUMBLES VERY EASILY</p> <p>935.0-950.5 - HIGH DENSITY ZEOLITE VEINING WITH SERICITE + GILSONITE ALT., FRACTURES VERY EASILY 936.0-937.0 FRACTURED + BROKEN UP 949.5-950.5 - FRACTURED + BROKEN UP</p> <p>950.5-979.5 - 5% PY MIN, trace of CPY</p> <p>964.5 - trace of CPY</p>								



# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # D-97-B

DATE Dec 11<sup>th</sup> / 86

LOGGED BY: MB

FOOTAGES (FT)		INTERVAL		CORE REC. # (IN)	%	CUMUL. LENGTH OF PIECES (INCHES)	R. Q. D.		# OF PIECES	FRAC INT.
FROM	TO	INCHES	CUM. INCHES				4"	4"		
190	193 1/2	42	42	42	100	11		26		
193 1/2	197 1/2	48	90	42	87.5	23		48		
197 1/2	202 1/2	60	150	58	97	27		45		
202 1/2	207 1/2	60	210	60	100	50		83		
207 1/2	208 1/2	12	222	12	100	10		83		
208 1/2	210	18	240	23	128	12		67		
210	215 1/2	66	306	61	92	48		73		
215 1/2	217 1/2	24	330	27	112	27		112		
217 1/2	222 1/2	60	390	60	100	50		83		
222 1/2	228	66	456	62	94	48		73		
228	233	60	516	56	93	23		38		
233	238	60	576	57	95	55		92		
238	243	60	636	58	97	44		73		
243	248	60	696	56	93	4 1/2		16		
248	253	60	756	55	92	28		47		
253	257	48	804	48	100	22		46		
257	262	60	864	56	93	31		52		
262	267	60	924	58	97	44		73		
267	272	60	984	60	100	48		80		
272	277	60	1,044	60	100	53		88		
277	282	60	1,104	58	97	46		77		
282	287	60	1,164	60	100	38		63		
287	292	60	1,224	60	100	41		68		
292	297	60	1,284	60	100	46		77		
297	302	60	1,344	60	100	56		93		
302	307	60	1,404	57	95	39		65		
307	312	60	1,464	60	100	48		80		
312	317	60	1,524	58	97	30		50		
317	322	60	1,584	59	98	23		38		
322	327	60	1,644	60	100	24		40		
327	332	60	1,704	60	100	40		67		
332	337	60	1,764	56	93	8		13		
337	342	60	1,824	58	97	38		63		
342	347	60	1,884	60	100	36		60		
347	352	60	1,944	60	100	42		70		

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D-97-B

DATE : Dec 12/86

LOGGED BY : MB

FEET/FEES (FT)		INTERVAL		CORE	%	EQUAL LENGTH OF		R. Q. D.	# OF	FRAG.
FROM	TO	INCHES	CM. INCHES	REC <sup>2</sup> (IN)	REC <sup>2</sup>	PIECES	(INCHES)		PIECES	
						74	4"			
352	353	12	1,956	12	100	11 1/2		96		
353	358	60	2,016	57	95	38		63		
358	361	36	2,052	36	100	9		25		
361	366	60	2,112	58	97	36		60		
366	371	60	2,172	61	102	48		80		
371	375 1/2	54	2,226	45	83	25		46		
375 1/2	380 1/2	60	2,286	58	97	26		43		
380 1/2	385 1/2	60	2,346	58	97	43		72		
385 1/2	390 1/2	60	2,406	62	103	56		93		
390 1/2	395 1/2	60	2,466	58	97	48		80		
395 1/2	400 1/2	60	2,526	62	103	45		75		
400 1/2	405 1/2	60	2,586	58	97	38		63		
405 1/2	410 1/2	60	2,646	58	97	38		63		
410 1/2	416	66	2,712	60	91	34		51.5		
416	421	60	2,772	60	100	49		82		
421	426	60	2,832	60	100	49		82		
426	431	60	2,892	60	100	51		85		
431	436	60	2,952	59	98	57		95		
436	441	60	3,012	61	102	40		67		
441	444	36	3,048	36	100	14		39		
444	448	48	3,096	48	100	33		69		
448	453	60	3,156	60	100	52		87		
453	458	60	3,216	62	103	54		90		
458	463	60	3,276	59	98	54		90		
463	468	60	3,336	58	97	41		68		
468	473	60	3,396	56	93	46		77		
473	478	60	3,456	60	100	44		73		
478	483	60	3,516	61	102	47		78		
483	488	60	3,576	60	100	52		87		
488	493	60	3,636	63	105	55		92		
493	498	60	3,696	57	95	55		92		
498	503	60	3,756	58	97	50		83		
503	508	60	3,816	59	98	58		97		
508	513	60	3,876	57	95	49		82		
513	518	60	3,936	60	100	51		84		

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D-97B

DATE: Dec 12/86

LOGGED BY: MB

ROCK (FT)		INCL	VAL	CORE	%	SPALL	R. Q. D.	F of	SP
FROM	TO	INCL	CUM	REC. (ft)	ROCK	INCL	INCL	SPALL	INCL
518	523	60	3996	60	100	41	68		
523	528	60	4056	57	95	49	82		
528	533	60	4116	61	102	39	65		
533	538	60	4176	58	97	48	80		
538	543	60	4236	60	100	52	87		
543	548	60	4296	60	100	47	78		
548	553	60	4356	60	100	43	72		
553	558	60	4416	57	95	51	85		
558	563	60	4476	62	103	41	68		
563	568	60	4536	58	97	51	85		
568	573	60	4596	60	100	33	55		
573	578	60	4656	58	97	40	67		
578	583	60	4716	59	98	54	90		
583	588	60	4776	60	100	49	82		
588	593	60	4836	59	98	43	72		
593	596	36	4872	36	100	23	64		
596	601	60	4932	60	100	37	62		
601	606	60	4992	60	100	51	85		
606	611	60	5052	60	100	44	73		
611	616	60	5112	60	100	43	72		
616	621	60	5172	58	97	23	38		
621	626	60	5232	63	105	37	62		
626	631	60	5292	60	100	47	78		
631	636	60	5352	59	98	32	53		
636	641	60	5412	64	107	50	83		
641	646 1/2	66	5478	60	91	32	48		
646 1/2	651 1/2	60	5538	61	102	37	62		
651 1/2	656 1/2	60	5598	60	100	42	70		
656 1/2	661 1/2	60	5658	60	100	34	57		
661 1/2	666 1/2	60	5718	59	98	48	80		
666 1/2	671 1/2	60	5778	57	95	39	65		
671 1/2	673 1/2	24	5802	20	83	8	33		
673 1/2	678	54	5856	30	93	32	59		
678	683	60	5916	61	102	25	42		
683	688	60	5976	59	98	35	58		

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D-97 B

DATE : Dec 16/86

LOGGED BY : MB

ROCK (FI)		ELEVATION		CORE REC. (ft)	% RQY	L. (ft)	R. Q. D.	# of FRACT'S	FRAC. 100'
From	To	INCHES	COM. METERS						
688	692	48	6024	36	75	5	104		
692	697	60	6084	53	88	28	47		
697	702	60	6144	60	100	42	70		
702	707	60	6204	60	100	50	83		
707	712	60	6264	57	95	37	62		
712	717½	66	6330	62	103	28	42		
717½	722½	60	6390	59	98	30½	51		
722½	727½	60	6450	60	100	45	75		
727½	732½	60	6510	64	107	37	62		
732½	737½	60	6570	57	95	25	42		
737½	742½	60	6630	65	108	44	73		
742½	748	66	6696	60	91	44	67		
748	753	60	6756	60	100	38	63		
753	758	60	6816	62	103	24	40		
758	763	60	6876	57	95	52	87		
763	768	60	6936	57	95	30	50		
768	773	60	6996	61	102	30	50		
773	778	60	7056	60	100	35	58		
778	783	60	7116	62	103	29	48		
783	788	60	7176	63	105	36	60		
788	793	60	7236	60	100	50	83		
793	798	60	7296	60	100	21	35		
798	803	60	7356	55	92	40	67		
803	808	60	7416	60	100	41	68		
808	813	60	7476	59	98	37	62		
813	818	60	7536	57	95	52	87		
818	823	60	7596	60	100	19	32		
823	828	60	7656	58	97	26	43		
828	833	60	7716	61	102	41	68		
833	836½	42	7758	42	100	23	55		
836½	841½	60	7818	60	100	49	82		
841½	846½	60	7878	62	103	25	42		
846½	851½	60	7938	60	100	12	20		
851½	856½	60	7998	60	100	25	42		
856½	861½	60	8058	60	100	31	52		

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D-97B

DATE : Dec 16/86

LOGGED BY : MB

Footings (Feet)		INTERVAL		CORE Recovery (%)	% R.Q.D.	PULVERIS (grains) #/4	%		F.O.F Grains	FR.
FROM	TO	INCHES	FEET				R.	Q.		
861 1/2	867	66	870 1/2	60	91	33		55		
867	872	60	878 1/2	65	92	27		45		
872	877	60	884 1/2	61	102	19		32		
877	882	60	890 1/2	57	95	25		42		
882	887	60	896 1/2	56	93	27		45		
887	892	60	902 1/2	60	100	16		27		
892	897	60	908 1/2	58	97	23		38		
897	902	60	914 1/2	60	100	21		35		
902	907	60	920 1/2	60	100	8		0		
907	912	60	926 1/2	53	88	21		35		
912	917	60	932 1/2	60	100	5		8		
917	922	60	938 1/2	57	95	30		50		
922	927	60	944 1/2	60	100	4 1/2		7.5		
927	932	60	950 1/2	60	100	4		7		
932	937	60	956 1/2	60	100	6 1/2		11		
937	942	60	962 1/2	58	97	19		32		
942	947	60	968 1/2	62	103	18		30		
947	952	60	974 1/2	66	110	16		27		
952	956	48	980 1/2	40	83	9		19		
956	961	60	986 1/2	54	90	40		67		
961	966	60	992 1/2	60	100	37		62		
966	971	60	998 1/2	57	95	45		75		
971	976	60	1004 1/2	60	100	42		70		
976	977 1/2	18	1005 1/2	17	94	13		72		
977 1/2	982 1/2	60	1010 1/2	60	100	36		60		
982 1/2	987 1/2	60	1015 1/2	67	112	56		93		
987 1/2	992 1/2	60	1020 1/2	57	95	21		35		
992 1/2	997 1/2	60	1025 1/2	60	100	32		53		
997 1/2	1002 1/2	60	1030 1/2	58	97	25		42		
1002 1/2	1007 1/2	60	1035 1/2	60	100	29		48		
1007 1/2	1012 1/2	60	1040 1/2	63	105	24		40		
1012 1/2	1017 1/2	60	1045 1/2	60	100	30		50		
1017 1/2	1018	6	1046 1/2	6	100	0		0		
1018	1023	60	1051 1/2	60	100	39		65		
1023	1028	60	1056 1/2	56	93	27		45		





MAGNETIC SUSCEPTIBILITY

HOLE: D-97-B

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE (CGS UNITS)
0 - 10	.				
- 20					
- 30					
- 40					
- 50					
- 60					
70					
80					
90					
100					
110					
120					
130					
140					
150					
160					
170					
180 START					
190) 5.1	.98	4.6	1.3	.07	2.41
200) 30	.19	.20	1.5	.06	.45
210) .02	.0	.01	.02	.03	.01
220) 0	.0	.0	.03	.0	.01
230) 0	.12	.08	.0	.0	.04
240) .06	.01	1.0	.62	.30	.40
250) .04	.08	.07	.02	.03	.05
260) 0	0	.02	.02	.04	.02
270) .04	.08	.0	.09	.08	.06
280) .12	.08	.19	.25	.11	.15
290) .13	.12	.11	.98	.84	.44
300) 4.4	.17	.12	.14	.04	.97
310) .13	.25	.45	.54	.02	.28
320) .39	.07	.02	.17	.02	.13
330) .02	.02	.08	.17	1.0	.26
340) .06	.45	1.3	.07	.03	.38
350) .02	.03	.05	.18	.31	.59
360) .02	.03	.02	.05	.04	.03
370) .05	.05	.04	.02	.0	.03

MAGNETIC SUSCEPTIBILITY

HOLE: D-97-B

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE (CGS UNITS)
380) .03	.0	0	0	.05	.02
390) .05	.03	.03	.02	.01	.03
400) 0	0	.0	.04	0	.01
410) .0	.03	0	0	0	.01
420) 0	0	0	0	0	.00
430) 0	0	0	0	0	.00
440) .01	0	.0	.01	.04	.01
450) .01	.02	.0	.0	0	.00
460) .01	.01	.01	.01	.04	.03
470) .07	.04	.04	.02	.46	.43
480) .03	3.0	.02	.04	.04	.63
490) .04	.02	.01	0	0	.01
500) .01	0	.03	.02	.03	.02
510) .04	.02	1.3	.88	.02	.56
520) .05	.03	0	.02	.02	.02
530) .01	.0	0	0	.07	.02
540) .0	.01	.03	.02	.02	.02
550) .13	.08	2.8	2.6	1.7	1.50
560) 4.4	.28	.38	1.9	1.0	1.60
570) .43	.45	1.	.02	1.2	.62
580) .25	.32	1.0	.27	.1	0.40
590) 2.4	2.4	.84	3.6	1.0	2.05
600) .01	.02	.05	.25	.42	0.15
610) 4.0	.10	1.05	.09	2.5	1.64
620) .38	.05	.0	.0	.0	.09
630) .04	.02	.03	.02	.15	.26
640) .25	1.6	3.0	.09	.49	1.09
650) 1.5	.03	.02	.69	1.0	.65
660) .05	.12	.33	.09	.05	.13
670) 2.0	2.8	2.0	4.4	6.3	3.5
680) 2.7	.21	3.5	.60	1.4	1.68
690) 1.7	1.2	.29	2.9	8.1	2.64
700) 7.2	4.8	3.8	10.0	8.6	6.88
710) 8.3	2.2	4.3	5.4	4.9	5.02
720) 6.0	.23	.01	.94	6.4	2.82
730) 2.8	1.5	1.9	.55	.28	1.41
740) .06	.03	1.9	.37	.27	.53

MAGNETIC SUSCEPTIBILITY

HOLE: D-97B

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE (CGS UNITS)
750 1.1	.52	4.0	2.2	6.8	2.96
760 4.2	2.9	2.5	.87	1.5	2.4
770 1.1	.98	.71	.15	.93	.77
780 1.2	.05	.03	.38	.03	.34
790 .99	3.9	1.8	.50	3.4	2.12
800 3.3	1.6	1.9	2.2	6.0	3.00
810 2.6	5.8	3.5	4.6	1.0	3.5
820 .12	.49	1.2	3.0	.53	1.07
830 2.4	2.0	.02	.74	.19	1.07
840 .10	.08	3.3	4.4	3.8	2.34
850 3.1	5.2	3.6	.24	1.0	2.63
860 .92	.86	3.7	1.2	1.5	1.64
870 4.6	2.9	2.1	5.0	4.7	3.86
880 1.1	.65	1.2	1.2	2.4	1.31
890 4.6	.10	.12	1.0	4.3	2.02
900 1.2	.71	.09	.18	6.3	1.70
910 10.0	4.6	2.0	2.7	4.7	4.80
920 4.2	4.3	2.5	4.1	1.3	3.30
930 .38	.04	2.6	1.5	3.6	1.62
940 .93	.05	1.9	7.8	4.0	2.94
950 2.8	.72	.16	.12	.23	.81
960 .00	.45	1.6	.30	1.0	.67
970 .17	.11	1.0	6.2	5.7	2.64
980 5.2	1.4	2.4	3.5	3.3	3.16
990 5.1	4.1	4.8	1.3	4.3	3.92
1000 3.6	1.1	5.9	6.9	1.3	3.76
1010 2.7	4.8	6.6	2.2	1.9	3.64
1020 2.3	8.0	6.1	.08	.07	3.31
1030 .63	1.7	.65	.47	1.5	0.99
1040 1.2	.83	.54	5.8	3.4	2.35
1050				E.O.H.	
1060					
1070					
1080					
1090					
1100					

D-96-A

HOLE NO. D963

CASING COLLAR V.: 1023.56 GROUND ELEV.:

COORDINATES:

N. 3810.85 E. 27416.74

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: 347.5

PAGE NO: 1 OF 14

REF TO CLAIM CORNER:

SCALE:

LOGGED BY: MIN

INCLINATION: 40°-45° BEARING: N. 12 E.

SECTION

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS

QUICK GEOLOGY LOG

AVE CORE  
REC'Y / HOLE%  
SULPHIDESDRILLING  
INTERVAL% CORE  
RECOVEREDCORE  
SIZESAMPLE  
INTERVAL% REC'Y  
SAMP. INTESTI-  
MATED

DESCRIPTIVE GEOLOGY

260.0-308.5 CHLORITE EPIDOTE SERICITE ALTERED.  
ANDESITE TUFF AND LAPILLI TUFF  
 GREENISH, LT. GREY, OCC. ARGILLITE, CARBONACE  
 VEINING WITH SOME QTZ, EPIDOTE ALT ASSOC  
 WITH VEINING, 270 PY MIN. IN VEINLETS  
 DISSEMINATED.

260.0-262.5 - LAPILLI TUFF

269.0-272.5 - HIGH DENSITY FRACTURING

265.0 - DEFINITE INCREASE IN EPIDOTE ALT

277.0-278.5 - HIGH DENSITY FRACTURING

286.8-287.3 - LAPILLI TUFF

291.5-292.5 - LAPILLI TUFF

296.7-297.2 - HIGH DENSITY FRACTURING

299.9 - HEMATITE STAINING

301.7-302.5 - LAPILLI TUFF

308.5-313.0 HEMATIZED - CHLORITE EPIDOTE SERICITE  
ALTERED ANDESITE TUFF  
 REDDISH GREEN, ~ 270 PY MIN.

308.5-312.2 - MATRIX LT WHITE GREY WITH GREEN CALORITIZED  
 FRAGMENTS (MOTTLED APPEARANCE), EPIDOTE  
 VEINING, SOME SILICIFICATION?









HOLE NO. **D96B**  
 CASING COLLAR  
 COORDINATES  
 INCLINATION:

GROUND ELEV.  
 N. E.  
 BEARING

PROJECT:  
 DATE STARTED:  
 DATE FINISHED:  
 TOTAL DEPTH:

PAGE NO: **5** OF **14**  
 REF. TO CLAIM CORNER:  
 SCALE:  
 LOGGED BY:

SECTION	ALTERATION			FRACTURING	MINERAL GEOLOGY	COMMENTS	AVE CORE RECY/HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% RECY SAMP INT	ESTI-MATED
						<b>QUICK GEOLOGY LOG</b>  DESCRIPTIVE GEOLOGY								
						<p>480.0 - 508.5 CHLORITE EPIDOTE SERICITE ALTERED  <del>AND</del> ANDESITE TUFF (CRYSTAL TUFF) OR (FELDSPAR PORPHYRY?)            LT GREEN FELDSPAR FRAG. IN DK GREEN MATRIX            FRAG &lt; 5mm - VARYING IN SIZE &amp; SHAPE,            ANGULAR, SOME ROUNDED, IRREGULAR.            SERICITE, CHLORITE, EPIDOTE ALT (PORPHYRITIC            LOOK.) ~ 2% PY MIN.</p> <p>491.0 - 491.5 - HIGH DENSITY FRACTURING</p> <p>492.0 - 494.4 INTENSE SERICITE, CHLORITE EPIDOTE            ALTERATION.</p> <p>492.1 - <u>BOUGE SEAM</u> (1/4") - CRUMBLES</p> <p>492.5 - <u>BOUGE SEAM</u> (1/8") - "</p> <p>493.0 - <u>BOUGE SEAM</u> (1/8") - "</p> <p>493.5 - <u>BOUGE SEAM</u> (1/10") - "</p> <p>494.4 - 495.5 <u>FAULT SHEAR ZONE</u>            BOUGE, SERICITE, CHLORITE, EPIDOTE ALTERATION            CRUMBLES.</p> <p>495.5 - 496.3 - YELLOW GREEN COLOUR - EPIDOTE ALT            WITH PY VEINETS</p> <p>496.1 - 496.2 - <u>BOUGE SEAM</u> - WITH SERICITE</p> <p>496.6 - 496.8 - <u>BOUGE SEAM</u> - DK GREY CLAY MIXED            WITH ANGULAR ROCK FRAGMENTS</p> <p>506.0 - 506.5 - HIGH DENSITY FRACTURING</p>								

HOLE NO. **D913**

CASING COLLAR

COORDINATES:

INCLINATION:

GROUND ELEV.:

N. E.

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: **247.5**

PAGE NO: **6** OF **14**

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: **MW**

SECTION

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS:

**QUICK GEOLOGY LOG**

AVE. CORE RECY./HOLE

SULPHIDES

DRILLING INTERVAL

% CORE RECOVERED

CORE SIZE

SAMPLE INTERVAL

% RECY. SAMP INT.

ESTIMATED

DESCRIPTIVE GEOLOGY

506.5-508.0 - INTENSE ALT. - SERICITE EPIDOTE, CHLORITE, WITH SOME GOUGE

508.0-508.5 - GOUGE SEAM - WITH SERICITE CRUMBLES EASILY

508.5-540.5 HEMATIZED - CHLORITE EPIDOTE SERICITE ALTERED ANDESITE TUFF (CRYSTAL TUFF) OR (FELDSPAR PORPHYRY?) (SAME AS ABOVE UNIT BUT HEMATITE MIN.)

508.5-509.9 - RED BROWN HEMATITE STAINING PY MIN 2-4% blebs, INCREASE IN SERICITE (SOFT)

509.9-510.2 - GOUGE SEAM - WITH SERICITE CRUMBLES EASILY

510.2-525.2 - HEMATITE STAINING  
512.8 - TRACE CPY

513.2-514.0 - HIGH DENSITY FRACTURING

514.6-516.5 INTENSE SERICITE ALT WITH CHLORITE, HEMATITE, SOME GOUGE, CRUMBLES EASILY

521.0-525.2 - LAPILLI SIZE FRAGMENTS INTENSE SERICITE ALT.





HOLE NO. **D917**  
CASING COLLAR  
COORDINATES:  
INCLINATION:

GROUND ELEV.:

N  
E  
BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: **947.5**

PAGE NO: **9** OF **14**

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: **MN**

SECTION	ALTERATION	FRACTURING	MINERAL GEOLOGY	COMMENTS	AVE. CORE REC Y / HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC Y SAMP INT	ESTIMATED	
													DESCRIPTIVE GEOLOGY
				<p>624.5-624.7 - <u>GOUGE SEAM</u> WITH SERICITE ALT - CRUMBLES</p> <p>626.1-626.3 - <u>GOUGE SEAM</u></p> <p>626.5 - <u>GOUGE SEAM</u> (1/8") WITH SERICITE ALT - CRUMBLES</p> <p>627.9 - <u>GOUGE SEAM</u> (1/4")</p> <p>628.2 - <u>GOUGE SEAM</u> (1/8")</p> <p>628.7 - <u>GOUGE SEAM</u> (1/8")</p> <p>630.2 - <u>GOUGE SEAM</u> (1/8")</p> <p>632.3 - <u>GOUGE SEAM</u> (1/8")</p> <p>634.0-636.0 - ZEOLITE, CARBONATE VEINING, FRACTURES EASILY</p> <p>636.0-637.8 - ZEOLITE, CARBONATE VEINING, WITH INTENSE SERICITE ALT. SOME <u>GOUGE</u>, CRUMBLES EASILY</p> <p>637.7 - <u>GOUGE SEAM</u> - DK GREY CLAY (1/4") STPT</p> <p>640.3-644.1 - INTENSE SERICITE ALT, FRACTURES EASILY</p> <p>644.1-645.7 - INTENSE SERICITE ALT, SOME <u>GOUGE</u> CRUMBLES EASILY</p> <p>645.7-648.7 - <u>FAULT SHEAR ZONE</u> - INTENSE SERICITE ALT. (GREEN) SOFT, WITH ANGLAR BRECCIATED FRAGMENTS. (3-30MM), - FRACTURES EASILY</p>									

MINOR ADJUSTS TO CASE

QUICK GEOLOGY LOG

HOLE NO. **D96B**  
 CASINO COLLAR V.  
 COORDINATES:  
 INCLINATION:

GROUND ELEV.:  
 N. E.  
 BEARING:

PROJECT:  
 DATE STARTED:  
 DATE FINISHED:  
 TOTAL DEPTH: **247.5**

PAGE NO: **10** OF **14**  
 REF. TO CLAIM CORNER:  
 SCALE:  
 LOGGED BY: **MN**

SECTION	ALTERATION			FRACTURING	MINERAL GEOLOGY	COMMENTS	AVE CORE RECY/HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% RECY SAMP INT.	ESTI-MATED
						<p><b>QUICK GEOLOGY LOG.</b></p> <p>DESCRIPTIVE GEOLOGY</p>								
						<p><b>648.7-660.0 CHLORITE EPIDOTE ALTERED ANDESITE LAPILLI-TUFF AND TUFF</b></p> <p>GREENISH DK GREY, ZEOLITE CARBONATE VEINING, 12% Py Mn.</p>								
						<p><b>660.0-688.0 CHLORITE SERICITE EPIDOTE ALTERED ANDESITE TUFF</b></p> <p>GREENISH LT GREY, OCC ZEOLITE CARBONATE VEINING, 2-4% Py Mn.</p>								
						<p><b>660.0-670.6 INTENSE SERICITE ALT, SOME HEMATITE STAINING</b></p>								
						<p><b>660.0-660.0 - GOUGE SEAM (1/16") DK GREY CLAY, VERY SOFT</b></p>								
						<p><b>660.0-661.8 - CRUMBLES EASILY</b></p>								
						<p><b>662.2-662.5 - GOUGE SEAM WITH SERICITE, PYROPHYLLITE ALT, CRUMBLES EASILY</b></p>								
						<p><b>663.8-667.4 - SOME GOUGE, WITH SERICITE, PYROPHYLLITE ALT, CRUMBLES EASILY.</b></p>								
						<p><b>668.8-669.8 - SOME GOUGE, CRUMBLES EASILY</b></p>								
						<p><b>669.8-670.1 - GOUGE SEAM WITH SERICITE, SOFT</b></p>								
						<p><b>672.0-673.0 INTENSE SERICITE ALT, SOFT, FRACTURES CRUMBLES EASILY.</b></p>								

1453-4 INTERVAL NOZ 11











HOLE NO. D968

CASINO/DOLLAR

COORDINATES:

INCLINATION:

GROUND ELEV.:

N.

E.

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: 947.5'

PAGE NO: 13 OF 14

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: MN

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS	AVE. CORE REC'Y/HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI- MATED
							<p>QUICK GEOLOGY LOG</p> <p>DESCRIPTIVE GEOLOGY</p>								
							<p>863.2 - 872.5 - PY VEINS PARALLELING ZEOLITE VEINING</p> <p>863.2 - 864.3 - SERICITE ALT.</p> <p>863.2 - 877.5 - REDDISH ORANGE ZEOLITES</p> <p>874.3 - 874.8 - HIGH DENSITY FRACTURING</p> <p>873.5 - 873.8 - <u>GOUGE SEAM</u> WITH SERICITE ALT SOFT CRUMBLES</p> <p>874.5 - 891.8 - LT GREY SERICITE ALT WITH CHL + EP. SOME HEMATITE STAINING, (SILICIFICATION?) HARD, PY. VEINING.</p> <p>902.5 - 947.5 - <u>CHLORITE EPIDOTE ALTERED - ANDESITE LAPILLI TUFF + BRECCIA (VL)</u> GREENISH LT-DK GREY, ANGULAR + ROUNDED FRAGMENTS VARYING FROM 4MM TO 80MM IN SIZE, FRAG - GENERALLY CHLORITIZED, PY MIN. ~2%</p> <p>904.5 - 914.0 - ENVELOPES + FINGERS OF SERICITE ALT (SILICIFICATION?)</p> <p>905.0 - 911.0 BRECCIA FRAG</p> <p>908.9 - <u>GOUGE SEAM (1/2")</u> WITH SERICITE ALT CRUMBLES EASILY</p>								



# ROCK QUALITY DESIGNATION (R.Q.D.)

D.96A

HOLE #:

DATE: JAN 10<sup>TH</sup> 1980 LOGGED BY: M<sup>W</sup>

FEET (FT)		INTERVAL		CORE REC. DIA.	% REC.	SMALL LENGTHS (INCHES)		R. Q. D.	# of FILLS	FILL MATERIAL
FROM	TO	INCHES	CUM. INCHES			3"	4"			
260	265	60		60		31				
265	268	30		31		0				
268	269	12		6		0				
269	269.5	6		10		0				
269.5	271.5	24		22		0				
271.5	275.5	48		36		16.5				
275.5	278.5	36		42		0				
278.5	282.5	48		45		14				
282.5	288	60		54		26				
288	292.5	54		51		18				
292.5	298	66		56		25				
298	298.5	6		8		0				
298.5	303.5	60		60		40				
303.5	308	54		54		32				
308	313	60		54		10				
313	318	60		58		34				
318	322	48		42		30				
322	326	48		51		24				
326	328.5	30		34		18				
328.5	333	54		39		4				
333	335.5	30		22		0				
335.5	338	30		24		0				
338	343	60		61		47.5				
343	348	60		54		37				
348	353	60		59		42				
353	358	60		57		14.5				
358	363	60		59		32				
363	368	60		59.5		49				
368	373	60		60		46				
373	378	60		60		47.5				
378	383	60		56.5		35.5				
383	388	60		59		49				
388	393	60		63.5		38.5				
393	398	60		65.5		38.5				
398	403	60		60.5		35.5				

# ROCK QUALITY DESIGNATION (R.Q.D.)

096A

HOLE #:

DATE: 5/10/87

LOGGED BY: SMA

FEET/INCHES (FI)		INTERVAL		CORE REC. DIA.	% REC.	PIECES (INCHES)	R. Q. D.	5 of FEET	FEET INCHES
FROM	TO	INCHES	CU. FT.						
403	408	60		59 1/2		53			
408	413	60		60		33 1/2			
413	418	60		60		30 1/2			
418	423	60		62		41			
423	428	60		60 1/2		53 1/2			
428	430.5	30		21		15			
430.5	433	30		31		15.5			
433	433.5	6		6.5		4			
433.5	437.5	48		42.5		26.5			
437.5	442.5	60		54		33			
442.5	447.5	60		59		15			
447.5	453	66		60		5			
453	457	48		40		4			
457	462	60		47		31			
462	467	60		57 1/2		12			
467	472	60		51		42			
472	475	36		28		0			
475	480	60		63		31			
480	485.5	60		63		15			
485.5	490.5	60		66		7			
490.5	495.5	60		68		22 1/2			
495.5	500.5	60		59		34			
500.5	502.5	24		11		8 1/2			
502.5	506.5	48		41 1/2		8 1/2			
506.5	512	66		47.5		33			
512	514	24		23		0			
514	518	48		46		25			
518	523	60		58		32			
523	528	60		60		15			
528	530.5	30		31		6 1/2			
530.5	535.5	60		32		5.5			
535.5	538	30		19		16			
538	543	60		35		24			
543	548	60		31		0			
548	550	24		26		0			

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D.96A

DATE : 10<sup>TH</sup> JAN 1987.

LOGGED BY : MU

Footings (FT)		INTERVAL		CORE REG. (IN)	% RECY	No. of PIECES	Length of PIECES (INCHES)	R. Q. D.		# of CRACKS	REMARKS
FROM	TO	INCHES	FOOTING					4"	4"		
560	556	60		59		34					
565	558	36		34		11					
568	563	60		60		29					
563	564.5	18		20		6					
564.5	569.5	60		58		17					
569.5	575	60		52		25					
575	580	60		59		19					
580	586	60		57		31					
586	588.5	42		42		0					
588.5	592.5	48		37		19					
592.5	596.5	48		39		5					
596.5	597.5	12		5		0					
597.5	601.5	48		40.5		34					
601.5	606.5	60		50		27					
606.5	611.5	60		58		17					
611.5	616.5	60		63		33					
616.5	621.5	60		59		4					
621.5	627.5	72		57		5					
627.5	632	54		59		7					
632	637.5	66		60		13					
637.5	642.5	60		47		27					
642.5	647.5	60		61		38					
647.5	652.5	60		59		37					
652.5	657.5	60		58.5		50					
657.5	662.5	60		48		23					
662.5	668	66		61		25					
668	673	60		64		9					
673	678	60		60		40					
678	683	60		58		42					
683	688	60		61		42					
688	693	60		60		5					
693	698	60		61		31					
698	703	60		63		40					
703	708	60		53		34					
708	713	60		63		45					

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D916A

DATE : 10<sup>th</sup> APR 1960

LOGGED BY : M.U.

Footings (FT)		INTERVAL		CORE SPEC. (IN)	% Rock	No. of Pieces (min)	R. Q. D.			No. of Pieces	R.Q.D. %
From	To	INCHES	CU. FT. INCHES				4"	8"	12"		
713	718	60		59		32					
718	723	60		65		31					
723	728	60		57		17					
728	732	48		45		14					
732	737	60		60		30					
737	742	60		52		17					
742	747	60		58		23					
747	752	60		62		39					
752	757	60		56		30					
757	762	60		60		24					
762	767	60		56.5		27					
767	771	48		46		6					
771	776	60		60		27					
776	777	12		9		0					
777	782	60		57		37					
782	787	60		64		9					
787	792	60		58		39					
792	797	60		60		42					
797	802	60		57		38					
802	807	60		56		17					
807	812	60		49		13					
812	817	60		59		20					
817	822	60		57		22					
822	827	60		60		7					
827	832	60		63		44					
832	837	60		59		41					
837	842	60		57		25					
842	845	36		41		18					
845	850	60		60		26					
850	856.5	66		54		37					
856.5	860.5	60		60		29					
860.5	862.5	24		22		11					
862.5	867.5	60		55		37					
867.5	872.5	60		60		21					
872.5	877.5	59				16					





D96A

MAGNETIC SUSCEPTIBILITY

HOLE:

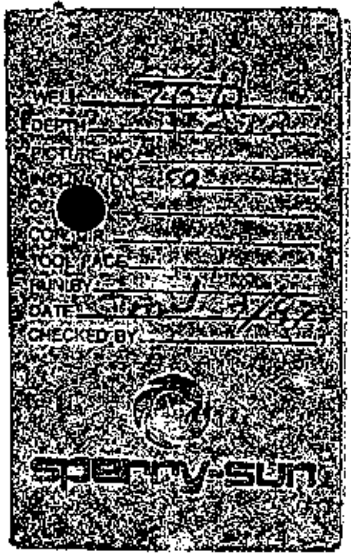
INTERVAL FEET	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE
260	00	φ	φ	φ	φ
270	00	φ	φ	φ	φ
280	00	φ	φ	φ	φ
290	φ	φ	φ	φ	φ
300	/	/	/	/	/
310	/	<del>0.08</del>	<del>0.04</del>	/	2.0
320	/	0.06	3.0	0.04	
330	/	1.8	1.3	0.67	
340	/	/	/	/	/
350	/	/	/	/	/
360	/	/	/	/	/
370	/	/	/	/	/
380	/	/	/	/	/
390	/	/	/	/	/
400	/	/	/	/	/
410	/	/	/	/	/
420	/	/	/	/	/
430	/	/	/	/	/
440	/	/	/	/	/
450	/	/	/	/	/
460	/	/	/	/	/
470	/	/	/	/	/
480	0.78	1.7	0.21	0.21	0.13
490	/	/	/	/	/
500	/	/	/	/	/
510	/	/	/	/	/
520	/	/	/	/	/
530	/	/	/	/	/
540	/	/	/	0.46	2.2
550	/	1.3	1.3	0.99	0.99
560	φ	1.7	3.0	3.3	2.4
570	0.00	<del>3.5</del>	<del>3.5</del>	0.50	1.3
580	3.05	3.5	3.3	2.9	2.6
590	1.09	2.3	0.46	1.2	0.70
600	φ	2.3	2.9	2.4	3.1
610	2.6	1.4	2.9	2.6	/
620	/	1.1	1.4	φ	/

D96A

MAGNETIC SUSCEPTIBILITY

HOLE:

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE
630 0	1.4	0	0	0	
640 0	0	0	0	0	0
650 1.1	1.5	4.5	4.4	3.6	
660 1.4	0	0	0	0	
670 0	0	0	0	0	0
680 0	0	0	0	0	0
690 0	0	0.93	3.1	2.7	
700 4.1	3.3	2.00	3.7	3.2	
710 3.4	0	2.0	1.0	0	
720 0	0	0	0	0	0
730 2.1	3.8	3.4	0	2.8	
740 2.9	1.1	0	0	1.1	
750 1.7	0	0	1.5	0	
760 0	0	0	0.97	1.0	
770 2.5	2.0	3.6	2.0	3.2	
780 1.6	0	0	1.0	1.4	
790 7.5	3.4	0	0	0	
800 0	0	1.2	2.7	2.6	
810 2.2	1.2	3.4	2.4	2.3	
820 1.4	0.97	0	1.7	0	
830 1.5	-	-	-	-	
840 -	0	0	0	0	0
850 0	0	0	0	0	0
860 0	0	0	0	0	0
870 0	0	0	0	0	0
880 0	0	-	-	-	0
890 0	0	-	-	-	0
900 0	0	-	-	-	0
910 0	0	0	1.6	0	0
920 0	0	0	0	0	0
930 0	0	0	-	-	0
940 -	-	-	-	-	0
950 1.2		END			



1023.6

D-96A

collar -45°

27.417 E.

R/T 846'

3,812 N.

HOLE NO. —

D-96A

DEPTH —

278

INCLINATION —

50° ✓

DIP —

40° ✓

BEARING (MAG) —

N 1.25° W X N 12 W

AZIMUTH —


N 21° E = N 12 E

CALCULATION — LYO

CHECKED — AR

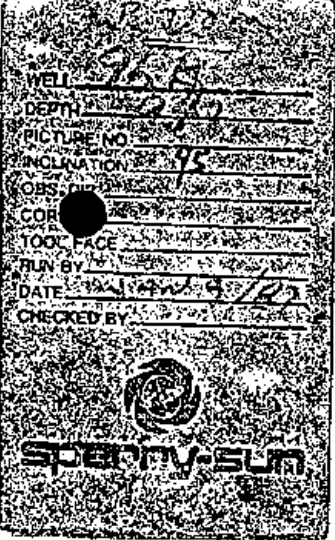
DATE — 5/27/87

WELL D 96A  
 DEPTH 608  
 PICTURE NO. \_\_\_\_\_  
 INCLINATION 47  
 DIP DIR \_\_\_\_\_  
 BEARING DIR \_\_\_\_\_  
 TOOL FACE \_\_\_\_\_  
 RUN BY \_\_\_\_\_  
 DATE JAN 24/37  
 CHECKED BY \_\_\_\_\_

  
 SPERRY-SUN

HOLE NO. — D 96A.  
 DEPTH — 608'  
 INCLINATION — 47° 5  
 DIP — 48° 5 ✓  
 BEARING (MAG) — N 1° W X N 11 W  
 AZIMUTH — N 21.5° E N 13 E

CALCULATION — RW  
 CHECKED — AR/CL  
 DATE — JAN 24/37



HOLE NO.	-	<u>D-96A.</u>
DEPTH	-	<u>947'</u>
INCLINATION	-	<u>45° ✓</u>
DIP	-	<u>45° ✓</u>
BEARING (MAG)	-	<u>N 0.6° W X N 7 W</u>
AZIMUTH	-	<u>N 22° E N17E</u>

CALCULATION - RJO  
CHECKED - AR  
DATE - JAN 29/37

D-101







HOLE NO.

CASING COLLAR

COORDINATES:

INCLINATION:

GROUND ELEV.:

N.

E.

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH:

PAGE NO: 3 OF 45

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY:

SECTION

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS:

QUICK GEOLOGY LOG

AVE CORE  
REC'Y / HOLE

SULPHIDES

DRILLING  
INTERVAL% CORE  
RECOVEREDCORE  
SIZESAMPLE  
INTERVAL% REC'Y  
SAMP. INTESTI-  
MATED

DESCRIPTIVE GEOLOGY

230.0 - 250.5 HEMATITE, CHLORITE-SERICITE ALTERED  
ANDESITE TUFF

2300-241.5 - PURPLE-RED BROWN, INTENSE SERICITE  
ALTERATION - PYROPHYLLITE?, SOFT,  
HIGH DENSITY FRACTURING, GREASY FEEL  
TRACE OF PY MIN.

232.7 - GOUGE SEAM ( $\frac{1}{8}$ " ) VERY SOFT

232.8 - GOUGE SEAM ( $\frac{1}{4}$ " ) " "

232.9 - GOUGE SEAM ( $\frac{1}{16}$ " ) SOFT

233.0 - GOUGE SEAM ( $\frac{1}{2}$ " ) VERY SOFT

233.0-233.1 - GOUGE SEAM VERY SOFT

234.0-234.5 - HIGH DENSITY FRACTURING

236.0 - GOUGE SEAM ( $\frac{1}{8}$ " ) SOFT

237.5-238.0 - HIGH DENSITY FRACTURING.

238.3-239.1 - FAULT SHEAR ZONE - GOUGE SERICITE  
SOFT CRUMBLES EASILY

241.5 - GOUGE SEAM ( $\frac{1}{8}$ " ) SOFT.



HOLE NO. D101

CASING COLLAR

COORDINATES:

INCLINATION:

GROUND ELEV.

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: 963

PAGE NO. 5 of 45

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: MN

SECTION

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS

QUICK GEOLOGY LOG

AVE CORE  
REC'Y / HOLE

SULPHIDES

DRILLING  
INTERVAL% CORE  
RECOVEREDCORE  
SIZESAMPLE  
INTERVAL% REC'Y  
SAMP. INT.ESTI-  
MATED

DESCRIPTIVE GEOLOGY

265.9 - GOUGE SEAM (1/16") - SERPENTINE AGT., CRUMBLES

265.0 - 268.4 - LAPILLI TUFF - ANGULAR - SUBROUNDED  
FRAGMENTS.270.0 - 276.8 - LAPILLI TUFF - ANGULAR - SUBROUNDED  
FRAGMENTS, ZEOLITE-CARBONATE  
QTZ VEINING AROUND CHLORITE  
ALT. FRAGMENTS, 5% SPHALERITE  
VEINING, TRACE OF CPY.278.5 - 306.0 - FAULT SHEAR ZONE -  
GOUGE + BRECCIATED FRAGMENTS OF HEMATIZED  
(SERPENTINE CHLORITE EPIDOTE ALTERED)  
ANDESITE TUFF, ANGULAR + SUBROUNDED  
FRAGMENTS 2-70MM, OCC ZEOLITE  
CARBONATE VEINING, 2% PYMIN.

278.5 - 300.5 - REDDISH GREEN

278.8' - GOUGE SEAM (1/4") - dk grey clay, VERY SOFT

279.8' - GOUGE SEAM (1/16") - CRUMBLES

283.0' - GOUGE SEAM (1/16") - CRUMBLES

285.4 - 285.8' - GOUGE SEAM - SOFT

286.3 - 286.4' - GOUGE SEAM - SOFT

287.6 - GOUGE SEAM (1/16") - CRUMBLES

287.9 - GOUGE SEAM (1/16") - CRUMBLES







HOLE NO. D101

CASING COLLAR

COORDINATES:

INCLINATION:

GROUND ELEV.

N

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH:

PAGE NO: 9 OF 45

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY:

SECTION

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS

QUICK GEOLOGY LOG

AVE CORE  
REC'Y / HOLE

SULPHIDES

DRILLING  
INTERVAL% CORE  
RECOVEREDCORE  
SIZESAMPLE  
INTERVAL% REC'Y  
SAMP. INT.ESTI-  
MATED

323.9 - 335.8 BRECCIA (VOLCANIC?)

HEMATITE. - CHLORITE SERICITE ALTERED  
 ANDESITE TUFF + CRYSTAL TUFF OR FELDSPAR PORPHYRY?  
 BLISH GREEN + YELLOW GREEN FRAGMENTS (2-70mm)  
 IN RED HEMATIZED MATRIX, FRAGMENTS  
 ARE ANGULAR + SUBROUNDED, SOME  
 ELONGATED + STRETCHED, INTENSE  
 SERICITE ALT., < 1% PYMIN. - DISS. VEINLETS

330.5 - DOUBT SEAM (1/2") SOFT  
 332.0 - DOUBT SEAM (1/16") SOFT

335.8 - 341.5 HEMATITE. CHLORITE SERICITE  
 ALTERED ANDESITE TUFF (CRYSTAL  
 TUFF OR FELDSPAR PORPHYRY?)

REDDISH GREEN, LT. GREEN FELDSPAR  
 CRYSTALS < 5mm, IRREGULAR SHAPES (CRYSTAL  
 TUFF), 1-2% PYMIN. - DISS. + VEINLETS.























HOLE NO. D101

CASING COLLAR

COORDINATES:

INCLINATION:

GROUND ELEV.:

N.

E.

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: 963

PAGE NO: 19 OF 45

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: MN

SECTION

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS

QUICK GEOLOGY LOG

AVE CORE  
REC'Y / HOLE

SULPHIDES

DRILLING  
INTERVAL% CORE  
RECOVEREDCORE  
SIZESAMPLE  
INTERVAL% REC'Y  
SAMP INT.ESTI-  
MATED

DESCRIPTIVE GEOLOGY

582.1 - 595.5

FAULT BRECCIA

LT. GREENISH GREY, SERICITE, CHLORITE  
ALT. ANDESITE TUFF FRAGMENTS  
ANGULAR - SUBROUNDED VARYING  
FROM 2-50 MM, OCC. HEMATITE  
STAINING, BLEACHED (INTENSE  
SERICITE ALT.) NEAR CONTACTS,  
1-2% PY MIN. DISS. BLEBS.

582.6 - 582.7 - GOUGE SEAM - SER. ALT. CRUMBLY

595.5 - 608.5

FAULT SHEAR ZONE

LT GREY-PINK, GOUGE MIXED WITH  
BRECCIATED FRAG OF ANDESITE  
ANGULAR & SUBANGULAR VARYING  
FROM 2-50 MM, INTENSE SERICITE  
ALT. WITH HEMATITE STAINING,  
BLEACHED (INTENSE SERICITE ALT) ZONES  
- WITH HEMATITE STAINING FOUND AT  
CONTACTS, < 1% PY MIN DISS.

595.5 - 595.9 - GOUGE SEAM - CRUMBLES













HOLE NO. D101

CASING COLLAR

COORDINATED:

INCLINATION:

GROUND ELEV.:

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH: 963

PAGE NO: 26 OF 45

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: MN.

SECTION

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS:

QUICK GEOLOGY LOG

AVE CORE  
REC'Y / HOLE

SULPHIDES

DRILLING  
INTERVAL% CORE  
RECOVEREDCORE  
SIZESAMPLE  
INTERVAL% REC'Y  
SAMP. INT.ESTI-  
MATED

DESCRIPTIVE GEOLOGY

657.2-657.3 - FOUGE SEAM, CRUMBLY

659.3 - FOUGE SEAM (1/16") "

660.2 - FOUGE SEAM (1/16") "

660.6-660.7 FOUGE SEAM SOFT "

661.3 - FOUGE SEAM (1/16") "

661.7 - FOUGE SEAM (1/8") "

662.0 - FOUGE SEAM (1/8") "

662.5 - FOUGE SEAM (1/16") "

664.0-665.0 - FOUGE IN ROCK MATRIX, SERICITE +  
PYROPHYLLITE ALT.665.4 - 670.5 HEMATIZED-SERICITE CHLORITE ALTERED  
ANDESITE TUFFGREENISH WHITE, BLEACHED (INTENSE  
SERICITE ALT), SOFT, 5% PY MIN,  
BLEBS.

668.0-668.3 - FOUGE SEAM - SOFT, CRUMBLY

669.3 - FOUGE SEAM (1/8") CRUMBLY























HOLE NO. **D11**  
CASING COLLAR ELEV.:  
COORDINATES:  
INCLINATION:

GROUND ELEV.:

BEARING:

PROJECT:  
DATE STARTED:  
DATE FINISHED:  
TOTAL DEPTH: **963**

PAGE NO: **35** OF **45**  
REF. TO CLAIM CORNER:  
SCALE:  
LOGGED BY: **MN**

ALTERATION

FRACTURING

MINERAL

GEOLOGY

COMMENTS:

**QUICK GEOLOGY LOG**

AVE CORE  
REC'Y / HOLE

SULPHIDES

DRILLING  
INTERVAL

% CORE  
RECOVERED

CORE  
SIZE

SAMPLE  
INTERVAL

% REC'Y  
SAMP. INT.

ESTI-  
MATED

DESCRIPTIVE GEOLOGY

784.0-785.6 CONT.

785.0-785.6 - BLEACHED (INTENSE SERICITE  
ALT.) WITH PYROPHYLLITE

785.6 - 821.0 FAULT SHEAR ZONE

PINKISH GREY TO GREENISH GREY,  
GOUGE WITH CHLORITE EPIDOTE ALT  
BRECCIA FRAG VARYING FROM 2-50MM  
1-5% PY MIN.

785.6-808.7 - PINKISH GREY, BLEACHED, 1-2% PY MIN

785.6-787.0 - GOUGE SEAM, SERICITE SOFT  
CRUMBLY

787.0-791.3 - GOUGE WITHIN MATRIX OF  
BRECCIA FRAG.

793.4 - GOUGE SEAM (1/8") SOFT CRUMBLY

794.3-794.5 - GOUGE, DK GREY CLAY (1/8")  
SOFT, AT BOTH ENDS WITH GOUGE  
+ BRECCIATED FRAG. IN BETWEEN

794.7 - GOUGE SEAM (1/16") CRUMBLY

795.0 - GOUGE SEAM (1/16") "

795.4 - GOUGE SEAM (1/8") "

796.3 - GOUGE SEAM (1/16") - DK GREY CLAY, SOFT









HOLE NO. **D101**  
 CASING COLLAR  
 COORDINATED:  
 INCLINATION:

GROUND ELEV.:  
 BEARING:

PROJECT:  
 DATE STARTED:  
 DATE FINISHED:  
 TOTAL DEPTH: **963**

PAGE NO: **40** of **45**  
 REF. TO CLAIM CORNER:  
 SCALE:  
 LOGGED BY:

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS	AVE CORE REC'Y / HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED
							<b>QUICK GEOLOGY LOG</b>								
							DESCRIPTIVE GEOLOGY								
							<p><b>865.6-870.5 CONT.</b>  <b>ZEOLITE-CARBONATE VEINING, 2% PY MIN</b>  <b>BLEBS</b></p> <p><b>870.5 - 880.0 FAULT SHEAR ZONE</b></p> <p>GREENISH GREY, BOUGE WITH            SERICITE, CHLORITE EPIDOTE ALT            BRECCIA OF ANGULAR-SUBROUNDED            FRAGMENTS VARYING FROM 2-40MM,            OCC. ZEOLITE-CARBONATE VEINING,            2-5% PY MIN.</p> <p><b>870.5-871.3 BOUGE SEAM CRUMBLY</b>  <b>8735-880.0 - BOUGE WITHIN ROCK MATRIX.</b></p> <p><b>880.0-883.0 SILICEOUS? SERICITE CHLORITE EPIDOTE</b>  <b>ALTERED ANDESINE TUFF</b></p> <p>LT. GREENISH GREY, ZEOLITE-CARBONATE            VEINING, 1% PY MIN.</p>								













# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D. 101

DATE: 8/3<sup>TH</sup> 1957 LOGGED BY: ML

Footings (FT)		INTERVAL		CORE Rec. <sup>of</sup> 12	% Rec'd	Total Length Pieces (inches)	R. Q. D.		# of Pipes	FT IN
FROM	TO	INCHES	FEET				4"	4"		
160.5	165.5	60		55		18				
165.5	170.5	60		60		32				
170.5	175.5	60		56		25				
175.5	180.5	60		58		11				
180.5	186	66		49		15				
186	190	48		38		5				
190	195	60		56		10				
195	199	48		57		40				
199	204	60		58		31				
204	209	60		51		7				
209	209.5	6		6		0				
209.5	212.5	36		28		9				
212.5	217.5	60		62		37				
217.5	222	54		48		44				
222	227	60		60		45				
227	229	24		26		4				
229	233	48		43		4				
233	235.5	30		18		0				
235.5	238	30		27		0				
238	242	48		43		0				
242	246	48		40		0				
246	249.5	42		42		5				
249.5	254.5	60		58		0				
254.5	259.5	60		55		19				
259.5	265	66		60		22				
265	270	60		54		41				
270	275.5	66		60		20				
275.5	280.5	60		58		49				
280.5	285.5	60		60		57				
285.5	290.5	60		60		4				
290.5	295.5	60		61		17				
295.5	300.5	60		58		9				
300.5	306	66		60		60				
306	311	60		58		53				
311	316.5	66		59		42				

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D101

DATE : 3<sup>rd</sup> JAN 1977

LOGGED BY : MU

LOGGERS (FT)		INTERVAL		CORE REC'D (%)	% REC'D	No. of PIECES (min)	R. Q. D.			No. of PIECES	%
FROM	TO	DIAMETER	DEPTH (ft)				1"	4"	10"		
316.5	321.5	60		58		15					
321.5	326	60		54		29					
326	331.5	66		59		32					
331.5	336.5	60		58		32					
336.5	341.5	60		57		42					
341.5	347	66		57		10					
347	351.5	54		49		12					
351.5	355	42		25		0					
355	360	60		62		15					
360	360.5	6		4		0					
360.5	365.5	60		59		37					
365.5	370.5	60		60		34					
370.5	376	60		58		32					
376	381	60		59		15					
381	386	60		60		10					
386	388	24		5		0					
388	392	48		41		0					
392	397	60		55		17					
397	400	36		28		0					
400	401	12		7		0					
401	403	24		19		0					
403	407	48		36		12					
407	412	60		57		10					
412	414	24		20		0					
414	419	48		35		8					
419	424	36		30		0					
424	423	24		19		9					
423	428	60		54		24					
428	433	60		56		44					
433	439	60		56		8					
438	443	60		52		34					
443	448	60		56		28					
448	453	60		60		51					
453	458	60		42		31					

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D 101

DATE: 15<sup>th</sup> JAN 1977

LOGGED BY: MM

100 FEET (FT)		INTERVAL		CORE REC. (%)	% RECY	SPECIAL LOGGING PIECES (INCH)	R. Q. D.			# OF PIECES	RQD %
FROM	TO	INCHES	FEET				4"	8"	12"		
458	463	60		54		0					
463	468	60		56		26					
468	473	60		53		26					
473	474.5	18		14		0					
474.5	475	6		7		6					
475	478	36		30		8					
478	483	60		40		26					
483	488	60		63		20					
488	493	60		50		18					
493	498	60		55		32					
498	503	60		54		32					
503	508	60		59		12					
508	513	60		56		33					
513	517	60		48		36					
517	522	60		56		54					
522	527	60		57		19					
527	528	12		10		0					
528	533	60		58		38					
533	537	48		25		8					
537	542	60		57		24					
542	547	60		98		24					
547	552	60		56		23					
552	557	60		59		32					
557	561.5	54		44		12					
561.5	567	66		59		10					
567	570	36		24		5					
570	575.5	66		51		19					
575.5	580.5	60		58		18					
580.5	586.5	60		55		13					
586.5	587.6	24		22		7					
587.6	602	66		18		5					
592	597.5	66		51		22					
597.5	602.5	60		57		6					
602.5	607.5	60		57		13					
607.5	612.5	60		58		31					

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D10

DATE : 16<sup>TH</sup> JAN

LOGGED BY : M4

FEET/INCHES (FT)		IN. DIA. L		CORE REC. # (IN)	% ROCK	SPECIAL LOGS (INCHES)		R. Q. D.		# OF CORES	REMARKS
FROM	TO	INCHES	CON. INCHES			#	#	4"	4"		
612.5	617.05	60		55		29					
617.5	622.5	60		57		29					
622.5	627.5	60		56		30					
627.5	629	18		18		0					
629	634	60		58		4					
634	638	48		41		25					
638	643	60		58		49					
643	645	24		14		12					
645	647	24		3		0					
647	652	60		29		15					
652	675.5	110.2		56		16					
675.5	680.5	60		58		18					
680.5	685.5	60		58		19					
685.5	690.5	60		56		26					
690.5	695.5	60		57		32					
695.5	700.5	60		59		22					
700.5	705.5	60		57		17					
705.5	706.5	30		22		18					
706.5	713	78		95		54					
713	719	60		6		0					
719	723	48		30		0					
723	726	36		16		0					
726	730	48		38		0					
730	735	60		55		5					
735	740	60		62		35					
740	745	60		60		51					
745	750	60		57		40					
750	755	60		55		40					
755	760	60		58		38					
760	765	60		58		32					
765	770	60		57		25					
770	771	12		5		0					
771	773	24		20		6					
773	777.5	54		54		21					
777.5	781.5	48		46		8					

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : D.101

 DATE: 8/16<sup>TH</sup> 5AM

LOGGED BY: MW

Feet/Inches (FT)		INTERVAL		CORE Rec. # (ft)	% Rec.	TOTAL PIECES (INCHES)	R.	Q.	D.	# of FACETS	FR 100
FROM	TO	INCHES	COM. INCHES								
781.5	785	42		29		7					
785	787	24		5		0					
787	792	60		59		50					
792	797.5	60		59		39					
797.5	802.5	60		60		37					
802.5	807.5	60		58		12					
807.5	812.5	60		58		28					
812.5	814.5	24		22		7					
814.5	822.5	96		95		35					
822.5	828	60		60		23					
828	833	60		59		28					
833	838	60		57		41					
838	843	60		57		40					
843	848	60		57		22					
848	853	60		47		18					
853	858	60		57		21					
858	863	60		60		41					
863	867.5	54		56		17					
867.5	872.5	60		59		29					
872.5	877.5	60		56		13					
877.5	882.5	60		57		19					
882.5	887.5	60		54		6					
887.5	892.5	60		58		0					
892.5	898	66		52		22					
898	903	60		59		33					
903	908	60		60		25					
908	913	60		57		13					
913	918	60		54		6					
918	923	60		60		19					
923	927.5	54		45		0					
927.5	929	18		18		11					
929	932.5	42		41		0					
932.5	938	60		49		16					
938	943	60		58		21					
943	948	60		58		8					





MAGNETIC SUSCEPTIBILITY

HOLE: D 101

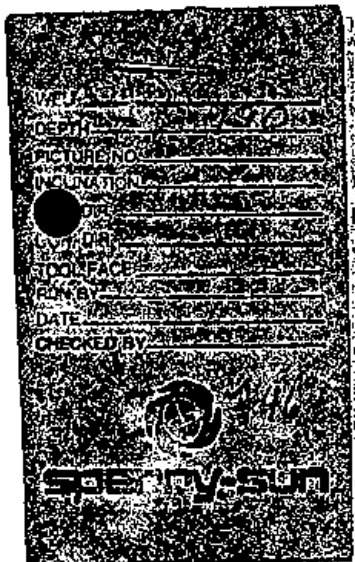
INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE <small>(G.S. UNIT)</small>
160	/	/	/	/	Ø
190	/	/	/	/	Ø
200	/	/	/	/	Ø
210	/	/	/	/	Ø
220	/	/	/	/	Ø
230	Ø	• 76	1.8	1.0	• 51
240	• 83	1.1	• 74	• 20	• 55
250	/	/	/	/	Ø
260	/	/	/	/	Ø
270	/	/	/	/	Ø
280	/	/	/	/	Ø
290	/	/	/	/	Ø
300	/	/	/	/	Ø
310	/	/	/	/	Ø
320	/	/	/	/	Ø
330	/	/	/	/	Ø
340	/	/	/	/	Ø
350	/	/	/	/	Ø
360	/	/	/	/	Ø
380	/	/	/	/	Ø
390	/	/	/	/	Ø
400	/	/	/	/	Ø
410	/	/	/	/	Ø
420	/	/	/	/	Ø
430	/	/	/	/	Ø
440	/	/	/	/	Ø
450	/	/	/	/	Ø
460	/	/	/	/	Ø
470	/	/	/	/	Ø
480	/	/	/	/	Ø
490	• 42	3.3	1.23	/	• 79
500	/	/	/	/	Ø
510	/	/	/	/	Ø
520	/	/	/	/	Ø
530	/	/	/	/	Ø
540	/	/	/	/	Ø

MAGNETIC SUSCEPTIBILITY

HOLE # 151

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE (CGS UNITS)	
550					0	
560	/	/	/	/	0	
570	/	/	/	/	0	
580	/	/	/	/	0	
590	/	/	/	/	0	
600					0	
610					0	
620					0	
630					0	
640	/	/	/	/	0	
650	1.1	1.1	1.1	1.0	1.08	
660	/	/	/	/	0	
670	/	/	/	/	0	
680	/	/	/	/	0	
690	/	1.3	1.8	2.7	1.4	1.2
700	0	/	/	/	0	
710					0	
720	/	/	/	/	0	
730	/	/	/	/	0	
740	/	/	/	/	0	
750	/	/	/	/	0	
760	/	/	/	/	0	
770	/	/	/	/	0	
780	/	/	/	/	0	
790	/	/	/	/	0	
800	/	/	/	/	0	
810	/	0	/	/	0	
820	/	/	/	/	0	
830	/	/	/	/	0	
840	/	/	/	0	0	
850	2.6	2.3	4.3	2.9	0.33	2.46
860	/	/	/	/	0	
870	/	/	/	/	0	
880	/	/	/	/	0	
890	0	4.6	1.6	0	0	2.4
900					0	
910	0	0	0	2.0	2.1	1.90

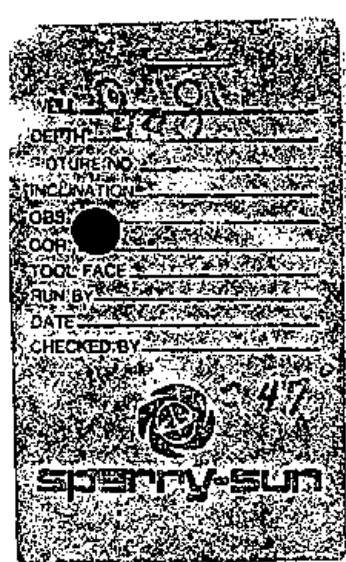




D-101  
4153 N  
26290 E.  
1035.4  
R/T 934.3  
TOT DEP 963'

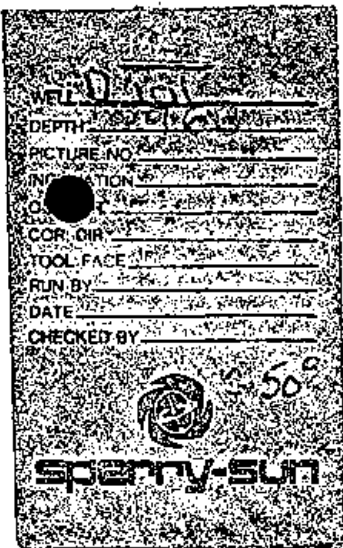
HOLE NO. - D101  
DEPTH - 190'  
INCLINATION - 44°½  
DIP - 46½°  
BEARING (MAG) - N 5° W x N6W  
AZIMUTH - N 22° E. x N018E

CALCULATION - RS  
CHECKED - AR  
DATE - JAN 29/37



HOLE NO.	-	<u>0101</u>
DEPTH	-	<u>480</u>
INCLINATION	-	<u>43° ✓</u>
DIP	-	<u>47° ✓</u>
BEARING (MAG)	-	<u>N 5° W<sup>X</sup> N 6 W</u>
AZIMUTH	-	<u>N 22° E. N 19 E</u>

CALCULATION - EW  
CHECKED - \_\_\_\_\_  
DATE - \_\_\_\_\_



HOLE NO.

- D 101

DEPTH

- 963'

INCLINATION

- 40° 1/2

DIP

- 19 1/2 (50°)

BEARING (MAG)

- North N001W

AZIMUTH

- (N. 22 1/2° E) N 23 E

CALCULATION - RSD

CHECKED - \_\_\_\_\_

DATE - \_\_\_\_\_





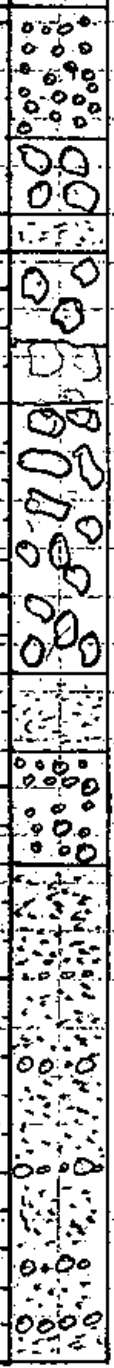
V6 - START JAN 17<sup>th</sup> 8pm  
 COMPLETE JAN 20<sup>th</sup> 8pm

D-102  
 Collar 1022.7  
 N 3708 E 28468

HOLE SIZE	FLUID RETURN (%)	FLUID PRESS. (psi)	HEAD PRESS. (psi)	Drill Action	Drill Method	Sample Recovery %	DESCRIPTION	GRAPH LOG
							0 to 4.6' Datum to Ground.	
PW	80% TO 100% GREY	φ	300 TO 350	Bubbling & slow			4.6' - 177.6' MINE WASTE Grab samples at surface indicate particles from silt and clay sized fractions to boulders. Descriptive notes apply to largest grain size. 4.6' - 8.0' Gravelly. 8.0' - 10.0' Bouldery	5-10
	0% TO 2.0% GREY	φ	250 TO 50	Rough & slow Smooth & slow			10.0' - 11.00' Sandy 11.0' - 22.0' Bouldery with one boulder from 13.5' to 15.0'	10-15
	φ	φ	50	Slow & ROUGH			15.0' - 22.0' CAVING ZONE	20
	φ	φ	?	Smooth & Fast	TRICONING		22.0' - 24.0' Sandy	25
	φ	φ	200	Bubbling			24.0' - 27.0' Gravelly with cobbles	25
	φ	φ	350 TO 400				27.0' - 77.0' Sandy with occasional thin (4"-6") layers of gravelly to cobble sized material	30
	φ	φ					* Note: Descriptions of mine waste interpreted from drill rates section, fluid return etc and imply only the coarsest size encountered in a zone. The matrix is likely a silty sand to silty fine gravel.	35-40

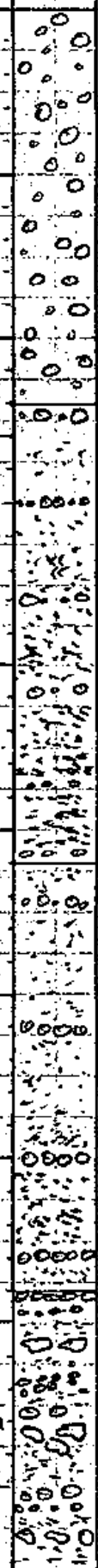
NO SAMPLES

TRICONING



HOLE SIZE	FLUID RETURN	FLUID PRESS (PSI)	HEAD PRESS (PSI)	DRILL ACTION	DRILL METHOD	SAMPLE RECOVERY %	DESCRIPTION	DEPTH LOG
				Smooth and fast with bouncy intervals			27'-77' CONTINUED	00000
			350 TO 400	Smooth and Fast				5
PW	0% $\phi$	$\phi$	350 TO 400	Smooth and Fast with Bouncy Intervals	TRICONING			5
			200 TO 300	Bouncy			77'-97' Gradually to coarse sized material	5

HOLE SITE	FLUID RETURN	EMER. PRESS (PSI)	HEAD PRESS (PSI)	DRILL ACTION	DRILL METHOD	SAMPLE RECOVERY	DESCRIPTION	DEPTH LOG.				
PW	0%	φ	200	Bouncy			77' - 97' CONTINUED	77				
			170									
			100									
			200	Smooth w/ occ. bouncy intervals	TRICOMING		97' - 111' Sandy w/ occasional zones of gravel & cobble	97				
	170											
	100											
				Smooth with some rough zones			111' - 124' Sandy with short intervals of cobbly material	110				
PW	0%	0	80	Smooth and fast to Bouncy and slow			124' - 177.5' MIXED short intervals of gravelly to cobble sized material, 25% to 70% Sandy intervals and boulders at 142' - 143', 150.5' - 152.5' and 168' - 168.5'	125				



HOLE SIZE	FLUID RETURN	FLUID PRESS	HEAD PRESS	DRILL ACTION	DRILL MEMO	Sample Recovery	DESCRIPTION	DEPTH LOGS
PW	0	0	80	Smooth and fast to	TRICONING		124.0 - 177.5 CONTINUED.	135
				Rough and slow			15	
			100 to 200				152.0 - 173.0 BOULDER	175
			240	Smooth and slow.			150.5 - 152.5 BOULDER	190
			100	Smooth and fast to				155
			600 to 650	Rough and slow.				160
			200 to 400					165
			100 to 400					170
								175











(V-3) START: JAN 21/87  
 END: JAN 24/87.

D-103

COLLAR 1030.0  
 N 3872 E 26720

1 of 5

HOLE SIZE	FLUID RETURN	FLUID PRESS	HEAD PRESS	DRILL ACTION	DRILL METHOD	SAMPLE RECOR.	DESCRIPTION	DEPTH	GRAPH LOGS
							0 = 1034.5 0-4.5' DATUM TO GROUND.	0 1 2 3 4	
PW	100% GREY	0	300 PSI	BOUNCING	TRICK		4.5- 4.5' MIXED MINE WASTE ROCK AND TILL FILL	5	
			100	SLOW AND ROUGH		4.5-32.0 MINE WASTE	4.5-10' COBBLES and gravel.	10	
			300	BOUNCY	BOUNCY	10'-12' BOULDER			
			100			12'-15' COBBLES and gravel.			
			300	SMOOTH AND FAST		15'-17' Gravel.			
	0	0	200	BOUNCY	TRICKING	17'-32' Cobbles with 1'-2' layers of gravelly waste rock.	15		
	300						20		
	400						25		
							30		
							35		
	0	200 TO 300 PSI	FAST AND SMOOTH			32'-43.5' TILL FILL	SOFT, GRAVELLY MATERIAL.	40	
	0	1100 PSI	BOUNCY			43.5-49.5 MINE WASTE	43.5-45.5 Cobbles and gravel.	45	

HALE SIZE	FLUID RETURN	FLUID PRESS	HEAD PRESS	DRILL ACTION	DRILL METHOD	SAMPLE RECOV.	DESCRIPTION	GRAFA LOGS.
PW	0	0	100 PSI				45.5-47.5 Gravel 47.5-49.5 Cobbles and Gravel.	
			400 PSI	SMOOTH AND FAST			49.5'-52.5 TILL FILL, Gravelly	50
			100 PSI	BOUNCY			52.5'-57.0' MINE WASTE, Cobbles and gravel.	55
			200 TO 300 PSI	FAST AND SMOOTH			57.0'-69.0' TILL FILL, gravelly	60
			100	BOUNCY			69.0'-71.0' MINE WASTE, cobbles and gravel.	70
			200 TO 300	SMOOTH			71.0'-73.0' FILL TILL, gravelly and soft.	
			400 TO 600 PSI	SMOOTH AND FAST BOUNCY			73.0'-80.0' MINE WASTE AND TILL FILL, soft & gravelly. S&I MIXED WASTE ROCK AND TILL FILL. Top 2" angular <sup>to sub-rounded</sup> gravel sized fragments with a matrix of silty clay. Bottom 4" contains two 2" pebbles.	75
			0 TO 300 PSI	ROUGH AND SLOW WITH MINOR BOUNCE TO SMOOTH INTERMITTENT			80.0'-95.0' MINE WASTE, Bouldery with short intervals of sand, gravel and cobbles. Boulders ranging from 6" to 3'.	80
								85
								90
HW.	30-50% GREY ↓ incre. to 100% GREY	0						

TRICONING

SPT S&I 6" 15 16

HOLE SIZE	FLUID RETURN	FLUID PRESS	HEAD PRESS	DRILL ACTION	DRILL METHOD	SAMPLE RECOV.	DESCRIPTION	GRAPH LOGS
	100%	0					80.0 - 95.0 CONTINUED	
11W.	53-60% grey ↓ decr to 20-30% dark grey ↓ decr. 0%	0	200 TO 400 PSI	SMOOTH BOUNCY BOUNCY AND SMALL SMOOTH TO BOUNCY Moderate to FAST	TRICONE CORING		95.0 - 104.0 MINE WASTE, sandy to gravelly <sup>95</sup> with minor cobbly zones.	
	0-5% GREY.	0	0 TO 400 PSI	ROUGH AND SLOW WITH FAST INTERVALS		104.0 - 110.5 MINE WASTE, boulders with minor intervals of sandy to gravelly material		
	0%	0	400 TO 600 PSI	SMOOTH TO SLIGHTLY BOUNCY WITH FAST TO MODERATE RATE		110.5 - 129.0' ? GRAVELLY TILL? with a matrix of dense sand. usually had jump in fluid pressure when tricone encountered till but if no silt or clay in matrix, this would not happen.		
	0-5% FACT TO 500KPa.	0	600 PSI					
					SPT	12/10 N-122.5' 23 53 125.0'	SA2 GRAVELLY TILL, light grey with sub-angular to rounded particles to 2" with a silty sand matrix and with chunks (1/4") sand thin layers (1/8") of reddish brown organics.	
					SA3	3 1/4" / 40"	129.0' - 132.0' SANDY GRAVEL (OUTWASH) TOP 1' - Grey, sub-angular to subrounded, 1/2" to 2 1/2" sandy gravel.	
					SA4	4 1/2" / 54"	132.0 - 136.0 Fluvial Floodplain clays SA4 129-132' Layered silty sand w/ a trace of organics. Alternating layers of silt and sand vary from 1"-5".	
		1000 KPa			CSAS	12 7/8" / 42"	132'-133.5' GRAY SILTY CLAY w/ soft lenses of fine to medium sand and a trace of 1/4"-1" gravel (sub-angular to subrounded).	
						137.0'	SA5 133.5'-136' AS IN 132'-133.5' (SA4). 136.0'-137.0' GRAVEL 1/2"-2", sub-angular to sub-rounded with some fine to	

HOLE SIZE	FLUID RETURN	FLUID PRESS	HEAD PRESS	DRILL ACTION	DRILL METHOD	SAMPLE RECOV.	DESCRIPTION	GRAPH LOGS.
HQ.	1600 <sub>6</sub> GREY	750 kPa.	800 PSI				136.0 - 150.3 OUTWASH SAND AND GRAVEL	
							SA6 6/6 137' 137.5 SA6 SAND, grey, medium grain sand with trace of silt	
							SA7 12/47 SA7 GRAVEL, grey, sub-angular - sub-rounded with some sand and a trace of silt	140
							SA8 2 2/49 SA8 GRAVEL, 1" pebble with a trace of sand	145
							SA9 15 1/36 SA9 GRAVEL, grey, subangular - rounded 1/4" - 2"	145
							SA10 3 1/18 SA10 GRAVEL coarse, subangular - rounded pebbles up to 3"	148
							SA11 6 1/10 SA11 Top 2" well rounded coarse gravel. Bottom 4" SAND, fine to medium grained with a trace of silt and a trace of gravel. Gravel content & grain size decreasing with depth	149.5
							SA12 30 1/41 SA12 SAND with some gravel and a trace of silt. Grey green, subangular to rounded sand. Gravel up to 3" scattered throughout. Dense.	154.0
							SA13 40 1/42 SA13 SAND as in SA12.	157.5
							SA14 4 1/18 SA14 157.5 - 158.0 GRAVELLY SILT fine to coarse, dark gravel with a matrix of sand w/ some silt to silty sand with a trace of clay. Sample descriptions reflect only variations in the till.	159.0
	SA15 27 1/30 SA15 - Gravel to 2" w/ silty sand matrix	161.5						
	SA16 15 1/24 SA16 - Gravel to 2 1/2" w/ a matrix of silty sand with a trace of clay.	167.0						
	SA17 40 1/42 SA17 - Gravel, fine w/ some coarse gravel to 3" and 35% - 40% matrix of silty sand with a trace to some clay.	167						
	SA18 26 1/36 SA18. Gravel fine to coarse w/ cobbles to 3 1/2" and 20% matrix of sandy silt with some clay.	170						
	SA19 10 1/24 SA19 As above with cobbles to 4" and 25-35% matrix.	172						
	SA20 0% SA20 Top 2" as above. Bottom 8" loose pebbles from 1/2" to 2"	175						
	SA21 10 1/6 SA21 177' 177.5 SA21 LOOSE GRAVEL AND COBBLES up to 5 1/2"	177.5						
	SA22 15 1/18 SA22 Coarse gravel and one cobble and a matrix of silty sand with a trace of clay.	179.0						
	SA23 13 1/36 SA23 GRAVEL, fine to coarse with a matrix of silty sand with a trace of	180						
				600 TO 700 PSI				

