



52H09NE0023 63.4801 POPLAR POINT

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MEMORANDUM

on

LBITCH GOLD MINES LIMITED

BEARDMORE, ONT.

(Period of Sept. 8th. to Oct. 8th. 1935)

by

F.R. BURTON

Port Arthur, Ont.
Oct. 13th. 1935.

MEMORANDUM

on

LEITCH GOLD MINES LTD., BEARDMORE, ONTARIO.

CONCLUSIONS

- (1). The ore shoot in #1 vein (Discovery vein) has been opened up for a length of approximately 250 feet, closed at both ends. It has been sampled for a length of 150 feet. The eastern 25 feet is below ore grade, averaging \$3.01 across an average width of 1.19 feet. The remaining 125 feet averages \$51.64 (see text) or a reduced average of \$36.98 across an average width of 1.12 feet. Grab samples of the unsampled section are said to indicate a similar grade but the average width may be slightly narrower.
- (2). Diamond drilling of #1 vein indicates that it continues to a depth of at least 175 feet and maintains its length, width, and grade (see Memorandum of Sept. 10th. 1935).
- (3). A new discovery (#2 vein) has been opened up for a length of 260 feet, closed at the west end and open to the east. The vein has been sampled for a length of 235 feet, over which length it averages 10 inches wide. Assay returns are available for a length of 185 feet and average \$36.00 (see text) or a reduced average of \$27.94 across an average width of 10 inches.
- (4). The intersection in diamond-drill hole #8 at a depth of 80 feet probably represents the downward extension of #2 vein. A core length of 10 inches assayed \$29.40.
- (5). A quartz vein has just been discovered 50 feet west of the west end of #2 vein and appears to be the beginning of a new shoot. In the only trench where it is exposed, the vein is 14 inches wide and contains a small amount of visible gold.
- (6). The possibility of discovering additional ore shoots is exceptionally good.
- (7). The property is being developed in a thorough and excellent manner under the direction of Mr. W.J. Hacker, with Mr. W.E. Segsworth as consulting-engineer.
- (8). There is a good possibility of the property developing into a small, high-grade mine and the stock at the present price of about 35¢ per share is recommended as a good speculation.

FOREWORD

The following memorandum and accompanying plans are based upon an examination of the property on Oct. 7th.-8th. 1935, together with information supplied by Mr. Karl Springer, president, and Mr. W.J. Hacker, resident manager. Both Mr. Springer and Mr. Hacker were, as usual, extremely courteous in furnishing the necessary data. The memorandum supplements previous reports by Mr. J.A.H. Paterson and the writer.

PREVIOUS REPORTS

- ✓(1) Sampling Results of Fraser Reid and Russell Cryderman - J.A.H. Paterson, July 24th. 1935.
- ✓(2) Memorandum - F.R. Burton, August 14th. 1935.
- ✓(3) Results of Diamond Drill Holes Nos. 1 to 8 - J.A.H. Paterson, August 30th. 1935.
- ✓(4) Memorandum - F.R. Burton, Sept. 10th., 1935.

DEVELOPMENTS FROM SEPT. 8th. TO OCT. 8th. 1935.

Since the previous examination on Sept. 8th., the ore shoot in the Discovery vein (#1) has been blasted to a fresh surface for its entire length and partially sampled. Two new veins have been discovered and partially developed (#2 and #3). A new diamond drill program has just been started to test #1 vein to a depth of 500 feet and to explore veins #2 and #3.

NUMBER ONE VEIN

At the time of examination, this vein was almost entirely under water so that the following details are based largely upon information supplied by Mr. Hacker. The ore shoot in this vein has now been fully opened up and has a length of approximately 250 feet, closed at both ends. The above length allows for major folds in the vein; minor folding would increase the length by only a very small amount. Beginning at a point 31 feet west of point #1 on the base line (see accompanying plan 1), the vein has been sampled at five-foot intervals for a length of 150 feet. The first 25 feet is low grade and would not make ore. At the next five-foot interval, the vein is faulted across a drag fold, with the south side moving west so that from south to north there are three sections of quartz vein; the south section being terminated at the west end by the fault; the centre section being a short faulted block terminated at both ends; the north section continuing on to the west. There is 13 inches of schist separating the south and centre sections and the same width separating the centre and north sections. In the following calculations this condition is treated as simply lengthening the quartz vein. The vein material in the south and centre sections is extremely rich and there is a quartz length of about 10 feet which is very high grade the two sections assaying \$3073.00 and \$270.20 respectively. The writer would regard this as only a pocket and would not give it

undue weight in obtaining the average grade; thus in the following calculations these two assays have been arbitrarily reduced to five ounces before averaging.

(1) Sampling from 56' west to 176' west of Point 1.

Sample No.	Width	Grade (\$35/oz.)	Width x Grade	Assay Reduced to	Reduced Width x Grade
58	0.5'	175.00 (1)	87.50	51.64	25.82
59	1.0'	175.00 (2)	175.00	51.64	51.64
60	1.1'	30.10	33.10		33.10
61	0.65'	55.30	35.90		35.90
62	2.65'	28.00	74.20		74.20
63	1.00'	2.10	2.10		2.10
64	1.75'	14.70	25.70		25.70
65	0.75'	16.80	12.60		12.60
66	1.25'	19.60	24.50		24.50
67	1.00'	117.95	117.95	51.64	51.64
68	0.66'	53.90	35.60		35.60
69	0.75'	135.45	101.60	51.64	38.73
70	0.66'	17.15	11.30		11.30
71	1.00'	76.65	76.65	51.64	51.64
72	0.92'	53.20	48.95		48.95
73	0.66'	17.15	11.30		11.30
74	1.00'	8.05	8.05		8.05
75	0.75'	24.50	18.35		18.35
76	1.58'	52.15	82.40		82.40
77	0.88'	61.60	54.20		54.20
78	2.42'	26.25	63.50		63.50
79	1.58'	56.35	89.00		89.00
80	1.13'	56.35	63.70		63.70
81	1.25'	72.45	90.55	51.64	64.55
82	1.08'	93.10	100.55	51.64	55.77
	27.97'		1444.25		1034.24

(1) Arbitrarily reduced from actual assay of \$3073.00
 (2) " " " " " " " \$270.20

Average width - 1.12'

Average "unreduced" grade - \$51.64

Average reduced grade - \$36.98

Length - 125'

(2). Sampling from 31' west to 56' west of Point 1.

Sample No.	Width	Grade (\$35/oz.)	Width x Grade
52	0.6'	3.50	2.10
53	0.6'	2.80	1.70
54	2.0'	1.40	2.80
55	1.45'	5.60	8.10
56	1.3'	1.40	1.80
57	1.2'	4.20	5.05
	7.15'		21.55

Average Width - 1.19'
 Average grade - \$3.01
 Length - 25'

(3). Combined Sampling from 31' west to 176' west of Point 1.

It is possible that at slightly greater depth, the east end of the shoot might increase to ore grade, or that similar short, low-grade sections might be found under present indicated ore and that it would not be feasible to select this material. Thus the following combined calculations are made to show the effect of inclusion of material of this type.

	Width	Width x Grade	Reduced Width x Grade
Totals from 31' to 56' W. of Pt. 1	7.15'	21.55	21.55
Totals from 56' to 176' W. of Pt. 1	27.97'	1444.25	1034.24
Combined Totals	35.12	1465.80	1055.79

Average Width - 1.13'
 Average unreduced grade - \$41.74
 Average reduced grade - \$30.06
 Length - 150'

(4) Unsampled Section of Ore Shoot

On each of the writer's examinations this section of the vein has been under water. However, Mr. Hacker states that in his opinion, the average width at the west end will equal that at the east, and that grab samples indicate a similar grade. Judging by the mapping, the vein appears to be somewhat narrower in this section.

NUMBER TWO VEIN

This vein has been discovered and partially developed since the previous examination in September. As shown on accompanying plan, it is located approximately 160 feet west of the west end of the ore shoot in #1 vein. The strike is approximately N.60°E. as compared with a general strike of N.67°W. for #1 vein. The apparent dip is steep to the north-west. Referring to the plan accompanying the memorandum of August 14th. it is interesting to note that this vein lies close to the Cryderman base line and has approximately the same strike. This base line was projected along the strike of the Sand River vein and, in the writer's opinion, represents the main break.

#2 vein has been opened up and blasted to a fresh surface for a total quartz length of approximately 260 feet. The vein is strong, well-defined, free walls and is similar to #1 vein except that it is not strongly drag folded. The wall rock on each side is strongly sheared and cut by numerous irregular veinlets of dark blue quartz with considerable pyrite mineralization. A grab sample (#58) of the most favourable looking material assayed only 0.02 ounces.

The vein is open at the east end and is narrow but good grade; at the west end it is terminated by a drag fold. However, 50 feet west along the strike, another vein was discovered the day of the writer's examination and in the only trench where exposed, it is 14 inches wide and contains a small amount of visible gold.

The #2 vein has been sampled for a length of 235 feet over which length it averages approximately 10 inches wide. As shown on plan 2, sampling results are available for a length of 185 feet and are averaged below. As in the case of #1 vein, where the vein is repeated at any section, such as in the vicinity of samples 108 and 109, this is regarded as adding to the vein length. Similarly one high assay of 27 ounces was arbitrarily reduced to five ounces before obtaining the "unreduced" grade. The low assay obtained in sample 93 suggests a possible error and as it is at the end of a vein section it is not included in either length or averages.

(Please refer to next page)

Sample No.	Width	Grade (\$35/oz.)	Width x Grade	Assay Reduced to	Reduced Width x Grade
97	6"	\$135.45	812.70	\$ 36.00	216.00
98	5"	66.50	332.50		332.50
99	7"	17.15	120.05		120.05
100	5"	22.40	112.00		112.00
101	4.5"	20.65	92.93		92.93
102	4"	14.35	57.40		57.40
103	6"	21.00	126.00		126.00
104	6"	36.05	216.30		216.30
105	4"	18.55	74.20		74.20
106	6.5"	31.85	207.02		207.02
107	4"	12.60	50.40		50.40
84	5"	28.70	258.30		258.30
85	13"	29.05	145.25		145.25
86	4"	11.55	150.15		150.15
87	4"	28.35	113.40		113.40
88	10"	4.90	49.00		49.00
89	12"	16.80	201.60		201.60
91	13"	115.50	1501.50	36.00	468.00
92	12"	16.45	197.40		197.40
109	10"	45.50	455.00		455.00
126	30"	9.80	294.00		294.00
108	22"	12.95	284.90		284.90
110	18.25"	27.30	498.22		498.22
125	8"	53.90	431.20		431.20
113	8"	57.05	456.40		456.40
114	13"	19.95	259.35		259.35
115	9"	58.80	529.20		529.20
116	12"	52.85	634.20		634.20
117	9"	64.05	576.45		576.45
118	9"	25.20	226.80		226.80
119	20"	49.70	994.00		994.00
120	15"	13.65	204.75		204.75
121	15"	23.10	346.50		346.50
122	5"	8.40	42.00		42.00
123	10"	10.15	101.50		101.50
124	5"	20.30	101.50		101.50
127	6"	59.50	357.00		357.00
	10.5"	175.00(1)	1837.50	36.00	378.00
	370.75		13,448.57		10,358.87

(1) Arbitrarily reduced from actual assay of \$935.20

Average width - 10"

Average unreduced grade - \$36.00

Average reduced grade - \$27.94

Length - 185'

It now appears extremely likely that #8 diamond drill hole actually intersected #2 vein and not an extension of #1. At a vertical depth of 80 feet a core length of 10 inches assayed \$29.40

NUMBER THREE VEIN

This vein, the location of which is shown on plan 1, is a shear zone nine feet wide containing several quartz "leads". A pit has been sunk on it to a depth of 10 feet and in this pit there are three main quartz stringers 5 to 6 inches wide with numerous smaller veinlets. The quartz is similar in appearance to that of vein 1 and 2 and the schist is fairly well mineralized.

The pit has been channel sampled from north to south with results as follows:-

<u>Sample No.</u>	<u>Width</u>	<u>Grade in Ounces</u>
94	24"	0.05
95	24"	0.04
96	18"	0.02
111	34"	0.03
112	7"	0.08

The above results indicate that the vein at this point does not approach a commercial grade but visible gold is said to have been found in one stringer and the vein warrants attention when locating diamond-drill holes for exploration on other veins.

MINING CONDITIONS

Sampling of the walls to date, particularly in diamond drilling, indicates that values are confined almost entirely to the quartz veins. Under these conditions the ore would no doubt be sorted and in the writer's opinion, this could be done to best advantage in the stopes. Underground foremen at the Northern Empire mine at Beardmore state that they have been very successful in mining narrow veins with stopers, first blasting onto planks and then slashing the walls for backfill. On a 150-ton mill and an average vein width of two feet, the overall costs are stated unofficially to be in the order of \$10 to \$12 per ton.

The Leitch ore should be particularly amenable to this type of mining as the quartz breaks free from the walls and dilution should be comparatively low. In the highly contorted section at the east end of #1 vein, stopes would likely have to be carried comparatively wide, but on #2 vein it should be possible to keep stope widths to two feet or less.

GENERAL

The discovery of #2 vein justifies the prediction made in the memorandum of Sept. 10th., that in the 1200 feet from the Discovery vein west to the Sand River boundary a break existed "in which there is a good possibility of developing

other ore shoots". The writer believes that the possibility of finding ore shoots in this direction in addition to #1 and #2 is now indicated even more strongly. Also, judging by the character of the break at the east end of #2 vein, there is a good possibility that the break to the east along strike will prove to be favourable prospecting ground.

The company is now engaged in mapping the geology of the property and although overburden is generally heavy, there is a suggestion that the ore zone may lie in a large drag fold.

DEVELOPMENT PROGRAM

At present, there are about 12 men on the property engaged in surface exploration. As the company has a portable gasoline compressor, this crew is able to do a very large amount of work. A second diamond drilling program has just been started with two drills.

The company has purchased a complete mining plant capable of sinking to a depth of 500 feet. The intention was to proceed immediately with underground development but it is now stated that this will be delayed for a month. The writer would urge that the surface be thoroughly explored for a month, or preferably two months, before choosing a shaft site. It would not only permit locating the shaft so as to mine the several ore shoots to the best advantage but would mean bringing in the plant over a winter road. It would be quite possible to move machinery over the present road, but costs would be greatly reduced by winter transportation.

VALUATION OF THE SHARES

The property is in the prospect stage only, and it is not possible at present to value the shares upon a strictly engineering basis on ore blocked out. Surface sampling of #1 and #2 veins and diamond drilling of #1 vein indicates a possibility of developing from these two veins a minimum length of 500 feet of ore with an average width of about 12 inches and a grade of between \$30 and \$40. Assuming that the ore will be sorted and that dilution will be 25%, grade would probably be lowered to \$25 to \$30. Tonnage per vertical foot of depth would be approximately 50 tons (allowing for dilution). A fair valuation for the stock on the present indicated tonnage would be about 20-25%. The stock would thus appear to be over-valued at current quotations of 33-35%, which is usually the case at a property in this stage of development. However, the writer regards the possibilities of developing a greater length than the present 500 feet of ore as exceptionally good, and for this reason would recommend purchase of the stock as an attractive speculation even though the price is probably slightly higher than it should be on developments to date.

F. R. Burton

Port Arthur, Ontario.
October 13th. 1935.



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MEMORANDUM

on

LEITCH GOLD MINES, LTD.

BEARDMORE, ONT.

(Supplementing Report of Aug. 30, 1935, by J.A.H. Paterson)

Port Arthur, Ont.
Sept. 10th. 1935.

MEMORANDUM

on

LEITCH GOLD MINES, LTD., BEARDMORE, ONT.

CONCLUSIONS

- (1) Surface exploration has extended the discovery lens to a length of 225 feet closed at both ends. This length does not make allowance for increased volume due to folding.

No further sampling has been done since Paterson's report of July 24th. 1935, but blasting at the east end of the shoot has revealed extremely high grade ore.

- (2) Five diamond-drill holes to an average vertical depth of about 75 feet indicate the lens to have about the same length at that horizon as on surface and an average unreduced grade of \$61.00, or a reduced grade of \$54.79, across an average true width of 22 inches.

The indicated width is probably greater than the true width due to drill hole intersections across folds.

Values in the walls are low and the ore would probably be sorted before milling.

- (3) The deepest drill hole intersection at a vertical depth of 176 feet assayed 0.57 ozs. for a core length of 31 inches.
- (4) The ore shoot probably rakes west at about 45°.
- (5) Tonnage in the discovery shoot is small but surface exploration to the west indicates a break for a minimum distance of 1200 feet in which there is a good possibility of developing other ore shoots.

RECOMMENDATION

Participation in financing is recommended, providing it may be arranged upon reasonable terms.

EXPLANATORY NOTE

The property has been described in reports by J.A.H. Paterson of July 24th. and August 30th., 1935 and in a report by the writer of August 14th, 1935. The information for the following memorandum and accompanying plan was obtained during

an examination of the property on Sept. 8th., and an interview with Mr. W.J. Hacker, resident engineer. The memorandum is submitted only as a supplement to Mr. Paterson's report of Aug. 30th. to which the reader is referred.

SURFACE EXPLORATION

At the time of the writer's examination, most of the trenches were filled with water due to an extremely heavy rainfall but the discovery shoot was exposed for a length of 160 feet as shown on the accompanying plan and is said to continue under water for another 65 feet to the west where it fingers out in a series of narrow stringers or an over-all length of 225 feet. This figure makes no allowance for increased volume due to folding.

The shoot is now being blasted out for sampling and although the sampling has not yet been started, blasting at the east end of the shoot has exposed a large quantity of extremely high grade ore. About one ton of this has been bagged and of many pieces examined, all showed abundant coarse, rough visible gold which would likely assay several hundreds, and possibly thousands of dollars per ton.

Exploration west of the discovery shoot indicates a possibility of developing further lenses of ore in this direction. Several short sections of quartz have been stripped and visible gold occurs in the most westerly lens, 1200 feet west of the discovery. Going west, the lenses appear to finger out, then offset a few feet to the north and continue again. Due to the above mentioned water conditions, the quartz in these trenches was poorly exposed but it is the writer's opinion that it is unlikely that any of the surface exposures to date would make ore. However, it cannot be too greatly stressed that the above mentioned visible gold occurs only 800 feet east of the Sand River boundary and on the line of strike of their main discovery. It is therefore probable that there is a strong "break" running for a considerable distance through this section of the country and which is favourable prospecting ground for its entire length.

DIAMOND DRILLING

As shown on the accompanying plan, 12 holes have been drilled. #1 to #10 inclusive were located to intersect the vein at vertical depths of 60 to 80 feet and #11 and #12 at approximately 175 feet.

In the writer's report of Aug. 14th., the pitch of the drag folds was stated to be about 50° to the west and diamond drilling indicates this conclusion to be substantially correct

but careful measurement along several of the drags now indicates the pitch to be about 45° . On the accompanying drawing, the surface exposure is projected upon a vertical section and given a rake to the west of 45° , as indicated by the drag folds. The vein intersections of the diamond drill holes are also projected horizontally upon this vertical section. Referring to this section, it will be noted that of the shallow holes, #2 to 6 inclusive are the only holes passing through this projected shoot. #1 hole intersected low values at a depth of 150 feet but obviously south of the main vein. It is therefore probable that the hole passed under the orebody. Similarly #7 hole intersected low values, probably in the main break but above the ore shoot. Holes 8 and 9 appear to conform to a short lens of quartz exposed on surface which is probably part of the main break but offset slightly to the north as mentioned in description of Surface Exploration.

Casual examination of #2 hole would indicate a southerly dip to the vein, but allowing for the plunge of the folds, it is probably that the vein was intersected on the extreme easterly section of the shoot before it folds to the north, and therefore that the vein actually stands about vertical. Holes 3, 4, 5, and 6 confirm this point.

Values in the walls outside of the vein are low and as the ore would probably be sorted before milling, no allowance has been made in the following calculations. The reader is referred to Mr. Paterson's report for wall rock assays.

(Please see next page.)

Hole No.	Sample No.	(A) Assay #35 Gold	(C.L.) Core Length Inches	Unreduced A. x C.L.	Assay Reduced to A. X C.L.	Dip of Hole (1)	True Vein Width(2)
2	8	\$ 1.40	6"	8.40			
	9	4.90	7	34.30			
	10	19.25	13	250.25			
	11	<u>7.35</u>	<u>17</u>	<u>124.95</u>			
	Total		43	417.90	417.90	47°S	30"
	Average -		\$9.72				
3	17	53.20	16	851.20	851.20	36°N.	13"
4	22	123.20	15	1848.00	61.00	43°N.	11"
5	26	17.50	20	350.00	350.00	47°N.	14"
6	29	101.50	56	5684.00	5684.00	40°N.	43"

(1) Dip of the hole at dip-test nearest to the vein intersection.

(2) Assuming the vein to have a vertical dip.

SUMMARY OF RESULTS OF D.D. HOLES 2 to 6 INCLUSIVE

Hole No.	(A) Unreduced Av. Assay \$35 Gold	(C.L.) Core Length	True Width	Total Unreduced A. x C.L.	Total Reduced A. x C.L.
2	9.72	43"	30"	417.90	417.90
3	53.20	16"	13"	851.20	851.20
4	123.20	15"	11"	1848.00	915.00
5	17.50	20"	14"	350.00	350.00
6	101.50	56"	43"	5684.00	5684.00
Total		150"	111"	9151.10	8218.10

Average true width - 22"
 Average unreduced assay - \$61.00
 Average reduced assay - \$54.79
 Length - about 225'

It is very probable that D.D. holes #2 and 6 passed through folded sections of the vein and that the ^{average} true width at this horizon is less than indicated.

D.D. HOLES #11 and #12

#11 hole did not intersect the vein but as shown on the accompanying drawing, probably passed under the ore shoot. #12 hole intersected the vein at a vertical depth of 176 feet and a core length of 31 inches assayed 0.57 ozs. This is the deepest drill hole to date.

F. R. Burton

Port Arthur, Ontario.
 Sept. 10th, 1935.



52H09NE0023 63.4801 POPLAR POINT

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MEMORANDUM

on

LEITCH GOLD MINES, LIMITED.

BEARDMORE, ONT.

by

F.R. BURTON

Port Arthur, Ontario.
August 14th. 1935.

MEMORANDUM

on

LEITCH GOLD MINES LTD., BEARDMORE, ONT.

CONCLUSIONS

(1) Surface sampling by Fraser and Russell Cryderman has indicated a shoot 150 feet long with average values as follows:-

	<u>Average Width</u>	<u>Average Unreduced Value</u>	<u>Average Reduced Value</u>
Reid	13.5"	1.15 oz.	0.864 oz.
Cryderman	21"	1.82 oz.	0.67 oz.

(2) Two diamond-drill holes under the shoot have intersected quartz which appears to be the main vein at vertical depths of 70 and 165 feet but the core has not been assayed.

(3) The shoot is delimited at the east end but open at the west.

(4) The discovery is of major importance and warrants a considerable expenditure on exploration and development with the possibility of developing a small mine.

EXPLANATORY NOTE

This memorandum is based upon an examination of the property on Aug. 10th., and supplements a report by J.A.H. Paterson of July 24th. "Sampling Results of Fraser Reid and Russell Cryderman on Cryderman-Gentles Property North of Beardmore, Ont."

LOCATION, TRANSPORTATION, AND POWER

The property is located six miles northwest of Beardmore and adjoins Sand River Gold Mining Co. on the east. It comprises the east half of claim A.L.416, all of H.F.1 and the west half of H.F.3. There is a good wagon road to Beardmore on the C.N.R.

The Ontario Hydro Commission has a substation at Empire, one mile east of Beardmore, but it is said that additional power demand in the district would necessitate a heavier line from Hydro which is about 40 miles from Beardmore.

HISTORY AND FINANCES

The find was made early in June by Russell Cryderman who was prospecting the ground for an interest. The property at

the time was under option by C.A. Gentles from the Leitch interests of Port Arthur. Leitch Gold Mines was recently incorporated to develop the property. According to Mr. K.J. Springer, 1,200,000 shares of a 3,000,000 share company were issued to the vendors for property, and Springer Sturgeon obtained an option on 1,400,000 shares at an average price of 22¢ per share, making a firm commitment on 200,000 shares at 10¢.

DEVELOPMENT PROGRAM

There is a diamond drill on the property and two holes have been completed. The immediate program is to cut the vein every 50 feet along the strike at a vertical depth of less than 100 feet. Eight men are engaged in surface trenching and stripping.

GEOLOGY

In so far as is known, the property is underlain by Timiskaming sediments of the greywacke type with bands of interbedded iron formation, forming part of a wide band of infolded sediments lying between Keewatin greenstone (See map 37k, Ont. Dept. Mines). In the immediate vicinity of the showing, the rock is a coarse-grained greywacke approaching the composition of an arkose.

A quartz vein in a strongly sheared zone has been traced by continuous stripping for a length of 150 feet. Neither the vein or wall rock has been blasted but there appears to be at least 2 feet of highly carbonated schist on each side of the vein, with the vein itself averaging about 15 to 20 inches wide. The general strike of the vein is N.65°W. but it has been strongly drag-folded, the northeast side moving easterly relative to the southwest wall, with a drag fold every few feet. The drag folds pitch westerly at about 50°. The schistosity follows the contour of the quartz. From surface exposures the vein appears to dip to the north but diamond drilling indicates a southerly dip of 70°.

In the vicinity of the vein, bedding has been destroyed by the intense alteration, but as the general strike of the sediments is slightly north of east, the vein apparently cuts across the formation.

The quartz is a white, milky colour and somewhat greasy in appearance. It is intensely fractured with one set of longitudinal fractures and the other branching in all directions. The longitudinal fractures contain considerably iron carbonate and are minutely crenulated, following the major vein structure. The irregular fractures are filled with a later, clear, vitreous

quartz. There is practically no mineralization in the vein but in the carbonate streaks there is a small amount of a soft black mineral which may be chalcocite. At the east end of the stripping the quartz contains coarse visible gold.

SURFACE SAMPLING RESULTS

The vein has been sampled by Fraser Reid, Russell Cryderman, and S.S. Saxton. Details of the Reid and Cryderman sampling are given in Paterson's report. Averages were as follows:-

<u>Sampling by</u>	<u>Average width</u>	<u>Unreduced Average Assay</u>	<u>Reduced Average Assay</u>
Reid	13.5"	\$40.25	\$30.24
Cryderman	21.0"	63.81	23.50

The reduced average assay was obtained by reducing erratic assays to the unreduced average. Gold is valued at \$35 per ounce.

Mr. Springer stated that he understood Saxton obtained lower values than either Reid or Cryderman, and the writer was fairly reliably informed that his unreduced average was about \$26 across 20 inches.

It should be noted that the vein has not been blasted at any point and that all sampling has been done on a weathered surface. Although the quartz is comparatively fresh, there is always possibility of surface enrichment.

Referring to the accompanying plan of Mr. Cryderman's sampling, it will be noted that the two easterly samples assayed quite low. This is the section containing coarse visible gold and is probably very much richer than indicated by sampling.

The difference in average width between Reid's and Cryderman's sampling is probably due to different methods of sampling. It is likely that Reid measured the vein at right angles to the walls and that Cryderman occasionally measured across drag folds. Probably the most reliable method would be to accept Reid's average width and add some empirical figure for additional quartz volume due to drag folding, say 15 to 20%.

Diamond drilling shows that the schist on each wall of the vein is fairly well mineralized with arsenopyrite and it is possible that it would carry gold values. It is an extremely important point and the vein zone should be blasted across at regular intervals and sampled. Due to the heavy shearing and contorted character of the vein, stopes would likely have to be 2½ to 3 feet wide and average grade of the stoped material would depend upon values in the schist. If the schist does not carry commercial values, the ore would be amenable to sorting.

DIAMOND DRILLING

Judging by surface exposures, the vein appears to dip steeply north and for #1 hole, the drill was set up 45 feet west of the east end of the shoot and 100 feet north of the vein. The hole was drilled at an angle of 45° and did not intersect quartz until a depth of 234 feet where it cut a core length of 15 inches of quartz, with considerable arsenopyrite mineralization on each wall. If this is the main vein, it indicates a southerly dip of about 70°.

#2 hole, drilled at an angle of 45° is located 100 feet west of the east end of the shoot, and 50 feet north of the vein. From 101'6" to 117'0" intersections were as follows:-

- 101'6"-102'0" - Quartz vein
- 102'0"-102'7" - Mineralized greywacke and quartz stringers.
- 102'7"-103'0" - Quartz vein
- 103'0"-104'0" - Numerous quartz stringers in mineralized greywacke.
- 104'0"-116'4" - Sparsely mineralized greywacke with widely spaced narrow quartz veinlets.
- 116'4"-117'0" - Quartz vein

If this intersection represents the main vein, the indicated dip is again about 70° to the south.

Assuming a southerly dip of 70°, the true width of the quartz intersection in #1 hole is about six inches. The quartz is similar in appearance to that exposed on surface but needless to say unless the wall rock carries appreciable values, the quar will have to assay extremely high to be ore grade.

It appears likely that #2 hole intersected the vein at one of the drag folds. Assuming a southerly dip of 70°, there are three quartz intersections with true widths of about 2½", 2", and 3½". As for #1 hole, the ore possibilities will no doubt depend largely upon values in the mineralized greywacke. The true width of the overall intersection would be about 6.5 feet.

The drill is to be moved to the south side of the vein and set up at 50-foot intervals along the strike to intersect the vein at a depth of about 80 feet. As it is proposed to drill five holes before doing any assaying, it will be ten days or more before assay results are available.

POSSIBILITIES OF VEIN EXTENSION AND NEW DISCOVERIES

At the east end of the shoot, the vein breaks up into two stringers, one of them continuing about ½ inch wide for 30';

the other for 15'. Further east, the ground is low lying and swampy but 400 feet east of the shoot a cross-trench has picked up a 12-inch quartz vein (Sample #41). It has not been sufficiently opened up to determine its importance.

At the west end of the shoot, the vein continues strong but runs into low swampy ground. Two hundred feet west, cross-trenching has exposed a quartz stringer which may possibly be an extension of the main vein but it is not probable (See accompanying plan).

In the limited amount of trenching completed to date, several narrow stringers have been exposed, apparently parallel to the main fracture. The management is hopeful that some of these will develop ore but it is too early to make any estimate of their possible importance.

H. R. Burton

Port Arthur, Ont.
August 14th. 1935.

63.4801



52H09NE0023 63.4801 POPLAR POINT

040

SAMPLING RESULTS OF

FRASER REID and RUSSELL CRYDERMAN

on

CRYDERMAN - GENTLES PROPERTY

NORTH OF BEARDMORE, ONT.

J. A. H. Paterson

Toronto, Ont.
July 24/35.

EXPLANATORY NOTE

The following results of the sampling by Fraser Reid and Russell Cryderman, were given to me by a friend who had access to all the information. I have never been on the property.

LOCATION

The property adjoins the Sand River Gold Mines, and is located a few miles north of Beardmore, Ontario. The claims were staked by Russell Cryderman, working for a syndicate controlled by C. A. Gentles.

GENERAL DESCRIPTION

The showing is said to lie in sediments, chiefly arkose and greywacke. It was described to me as a quartz vein averaging about 11 inches wide that occurs in a highly twisted and contorted condition in a schist zone. The schist is said to average about three feet in width, and because of the peculiar twisted occurrence of the quartz vein, it is most likely that the full three foot width would have to be stoped. It strikes roughly east-west. There is much visible gold present.

The length exposed is said to be about 150 feet, with the west end still open. The east end does not show vein, and it is thought to have either been delimited or to have taken a sharp fold or fault.

SAMPLING BY FRASER REID

	<u>Inch Width</u>	<u>Assay Oz.</u>	<u>Width x Assay</u>	<u>Assay reduced to</u>	<u>Reduced width x assay</u>
	12	.66	7.92		
	6	.92	5.52		
	9	1.14	10.26		
	17	1.28	21.76		
	9	.22	1.98		
	8	.66	5.28		
	10	.44	4.40		
	9	2.12	19.08	1.15	10.55
	7	1.64	14.76		
	10	1.68	16.80		
	12	3.30	39.60	1.15	13.80
	11	.57	6.27		
	26	2.03	52.78	1.15	28.90
	15	1.78	26.70		
	40	.01	.40		
Total	203		233.51		175.10

Average width = 13.5"

Unreduced average assay = 1.15 Oz. = \$ 40.25

Reduced average after reducing all
assays over two ounces to 1.15 Oz. = 0.864 Oz. = \$ 30.24

SAMPLING BY RUSSELL CRYDERMAN

<u>Inch Width</u>	<u>Assay on \$55.</u>	<u>Width x Assay</u>	<u>Assay reduced to</u>	<u>Reduced Width x Assay</u>
30	\$ 6.30	189.00		
12	2.10	25.20		
12	89.60	1,075.20	\$ 63.81	765.72
30	450.10	13,503.00	63.81	1,914.30
12	29.40	352.80		
12	21.00	252.00		
12	67.90	814.80		
24	33.80	806.40		
12	134.40	1,612.80	63.81	765.72
24	25.90	621.60		
12	18.20	218.40		
36	7.00	252.00		
24	15.40	369.60		
40	1.40	56.00		
24	.70	16.80		
Total	316	20,165.60		7,420.34

Average Width = 21"

Unreduced average assay = \$ 63.81

Reduced average after reducing all. }
assays over two ounces } = \$ 23.50

COMBINING RESULTS OF MESSRS REID & CRYDERMAN

<u>Sampler</u>	<u>No. of Samples</u>	<u>Total Inch Widths</u>	<u>Total Width x Assays</u>	<u>Total, reduce Widths x Assay</u>
Fraser Reid	15	203	8,172.85	6,128.50
Russ. Cryderman	15	316	20,165.60	7,420.34
Totals	30	519	28,338.45	13,548.84

Average width = 17.3 inches

Average unreduced assay = \$54.50

Average reduced assay = \$26.10

COMMENTS RE GRADE, ETC.

In an occurrence of this type, it would be difficult to arrive at an accurate grade without either close channel or bulk sampling. It is understood that Mr. Reid's samples were taken between Mr. Cryderman's; hence, a sample was cut every five feet, and the combined results, therefore, will be more accurate than the individual results.

Assuming it will be necessary to mine over a three foot width, the grade, based on the above combined results, would be,-

Unreduced,- \$ 26.20 across 3 ft.

Reduced,- \$ 12.55 across 3 ft.

Respectfully submitted,

J. M. Paterson

Toronto, Ontario,
July 24, 1935.

LOG OF SAMPLE SUBMITTED TO PORT ARTHUR

ASSAY OFFICE FOR ASSAYING

Sample #58.

Grab sample taken from several points along the south wall of #2 vein of Leitch Gold Mines Limited. Sheared greywacke cut by numerous dark quartz veinlets with considerable pyrite mineralization. The sample was taken so as to be fairly representative.

F.R. Burton

Port Arthur, Ont.
Oct. 9th. 1935.

PORT ARTHUR ASSAY OFFICE

Oct. 11, 1935.

Gold
oz. per ton

Total
Value

0.02

.70

Gold reported at
\$35.00 per oz.

"W.G. Armstrong"
Assayer.



52H09NE0023 63.4801 POPLAR POINT

050

SUMMARY REPORT OF EXAMINATION
LEITCH CLAIMS H.F.2, H.F.3,

* H.F.4-H.F.8 INCLUSIVE
Beardmore, Ontario

NOT LEITCH MINE
= WILPORT + CRIDERMAN

by

F. R. Burton

Port Arthur, Ontario,
December 9, 1935.

SUMMARY REPORT OF EXAMINATION.

OWNERS: Leitch Estate, Port Arthur, Ont.
OPTIONOR: C.A. Gentles, Toronto.
DISTRICT: Beardmore Area PROVINCE: Ontario.
CLAIM NOS: H.F.2; east-half H.F.3; and H.F.4 to H.F.8 inclusive.

LOCATION: The property is located about $3\frac{1}{2}$ miles in a straight line northwest of Beardmore on the C.N.R. There is a wagon road from Beardmore to the property, a distance of six miles. The principal discovery is 600 feet west of the northeast corner-post of claim H.F.3 and one mile northeast of the discovery of the Leitch Gold Mines property.

MINERALS: Gold.

TERMS: The writer understands that Mr. Gentles is forming a company to take in the east half of H.F.3, the south halves of H.F.4 and 5, and the southwest quarter of H.F.6. Presumably the company will have a capitalization of 3,000,000 shares. Mr. Gentles is at present making an offering of 100,000 shares at 15¢ per share.

REMARKS & DESCRIPTION: The vein was discovered about a week previous to the examination on Dec. 1st., and as there are only four men engaged in development, the amount of work completed to date is very limited, which together with the fact that the ground is covered with about 12 inches of snow, makes an examination difficult. The vein zone has been stripped continuously for a length of 83 feet, and, as shown on the attached plan, for 63 feet the vein strikes approximately east-west with the quartz apparently fairly continuous. The width ranges from two feet to a maximum of nine feet. There is a strong drag fold at the west end of this section and the greater vein width is apparently related to it, as the vein narrows rapidly to the east. The vein has not been blasted but where the width is nine feet, the south wall appears to dip about vertically and the north wall to dip steeply south indicating that it is probably only a local bulge.

The vein occurs in a strongly sheared zone, the schistosity striking N.60°E. and dipping steeply north, with the quartz cutting across it with sharp, well-defined walls. The schist is highly carbonated and so intensely oxidized that the rock from which it was derived could not be determined but it was likely a coarse-grained sediment of the arkose-greywacke type.

The quartz is a white milky colour and contains considerable iron carbonate, small amounts of sericite and chlorite, and a minute quantity of a black metallic mineral which is probably a copper oxide as there are occasional splashes of malachite on weathered surfaces. The quartz appears to have been well fractured but completely re-cemented by a secondary silicification.

For a length of 20 feet east of the drag fold, there is a high-grade section containing a considerable amount of visible gold, and according to Mr. Cryderman's sampling, the average unreduced grade is \$37.99 across an average width of 7.0 feet (see attached calculation sheet). Judging by the sampling, values are confined mainly to the coarse visible gold and where it is absent values are far below commercial grade. Therefore to arrive at a true average value, the erratic assays would have to be reduced.

Only one channel sample has been taken in the remaining 43-foot length of this section, and it assayed \$1.75 across 3.0 feet. In the writer's opinion, this is probably a fair indication of the values to be expected from this part of the vein.

West of the drag fold, the vein breaks up into narrow, irregular quartz stringers in the schist. A grab sample of the best-looking quartz assayed \$3.50. Mr. Cryderman states that pannings from the schist indicate that values are practically negligible, so that this part of the vein is probably below ore grade.

Trenching along the strike 100 feet southwest of the above stripping has exposed the same oxidized schist zone with occasional quartz stringers but it does not look as if it would make ore.

At the east end of the stripping, the rock drops off sharply and the quartz vein is apparently terminated. It is quite possible that there is a fault at this point, and this is supported by the fact that 30 feet to the south an 8-inch quartz vein, similar to the previous vein, has been stripped for a few feet. Visible gold is said to have been found in the quartz. About 100 feet to the east, a quartz vein that appears to be the extension of this vein has been stripped for about 30 feet. It averages two feet wide, and grab samples of the quartz are said to have assayed about \$2.

Seventy feet due north of the northeast corner-post of H.F.3, trenching has exposed a narrow quartz vein, and although grab samples have assayed over \$30, the vein does not appear to extend for any appreciable distance along the strike.

CONCLUSIONS & RECOMMENDATIONS: Apart from the short section of high-grade, which is very likely only a pocket, no part of the vein stripped to date gives promise of being of ore grade. In the writer's opinion, the discovery is of importance but mainly because of the fact that it appears to be

approximately on the strike of the Leitch "break" and improves the prospects of finding ore on this ground which is particularly well located. Participation in financing exploration of the property is recommended if it may be arranged on reasonable terms, but it should be regarded as a speculation in prospecting a favourably located property, and not as development of a known discovery. The present offer of a one-thirtieth interest in the property for \$15,000 is regarded as an unreasonably high price.

F. R. Burton

Port Arthur, Ontario.
Dec. 9th. 1935.

CALCULATION SHEETS

#1 Section

<u>Width</u>	<u>Value</u>	<u>WidthxValue</u>
3.0' x	\$ 1.40	\$ 4.20
3.0' x	183.40	550.20
6.0'		554.40
6.0' @	\$92.40	

#2 Section

<u>Width</u>	<u>Value</u>	<u>WidthxValue</u>
3.0' x	\$2.10	\$ 6.30
2.0' x	1.75	3.50
5.0'		9.80
5.0' @	\$1.96	

#3 Section

<u>Width</u>	<u>Value</u>	<u>WidthxValue</u>
3.0' x	\$ 20.30	\$ 60.90
3.0' x	4.20	12.60
3.0' x	154.00	462.00
9.0'		535.50
9.0' @	\$59.50	

#4 Section

<u>Width</u>	<u>Value</u>	<u>WidthxValue</u>
4.0' x	\$42.70	\$170.80
3.0' x	0.70	2.10
7.0'		172.90
7.0' @	\$24.70	

#5 Section

<u>Width</u>	<u>Value</u>	<u>WidthxValue</u>
3.0' x	\$ 2.80	\$ 8.40
2.0' x	23.80	47.60
3.0' x	0.35	1.05
8.0'		57.05
8.0' @	\$7.13	

AVERAGE VALUE

<u>Section</u>	<u>Width</u>	<u>Value</u>	<u>WidthxValue</u>
1	6.0' x	\$92.40	\$554.40
2	5.0' x	1.96	9.80
3	9.0' x	59.50	535.50
4	7.0' x	24.70	172.90
5	8.0' x	7.13	57.05
	35.0'		\$1329.65

Average Grade - \$37.99
Average Width - 7'

J. R. Burton



52H09NE0023 63.4801 POPLAR POINT

060

MEMORANDUM

ON

LEITCH GOLD MINES, LIMITED

BEARDMORE, ONT.

(Period of Oct. 8th. to Dec. 16th., 1935)

by

F. R. BURTON

Port Arthur, Ont.
Dec. 18th. 1935.

TAB



52H09NE0023 63.4801 POPLAR POINT

060C

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Map - Leitch Gold Mines, Ltd.

MEMORANDUM

on

LEITCH GOLD MINES, LIMITED, BEARDMORE, ONTARIO.

PERIOD OF OCT. 8th. - DEC. 16th. 1935.

CONCLUSIONS:

- (1) The quartz lens in #1 vein has been opened up and completely sampled for a length of 265 feet, closed at both ends. The eastern 25 feet is below ore grade, averaging \$3.01 across an average width of 1.19 feet. The next 190 feet west averages \$44.48 (reducing 2 high assays - see text) or a reduced average of \$31.08 across an average width of 1.15 feet. The remaining 50 feet averages \$34.01, or a reduced average of \$14.35 across an average width of 0.96 feet. Thus the lens contains only 190 feet of ore as compared with an estimate of 225 feet made in the previous Memorandum.
- (2) The ore shoot in #1 vein has been diamond drilled to a depth of 307 feet and to this depth apparently maintains its width, grade, and, very probably, length.
- (3) The ore shoot in #2 vein is 220 feet long and averages \$37.87 (reducing one high assay - see text) or a reduced average of \$28.43 across an average width of 10 inches. The vein continues in both directions but is below ore grade in the development to date.
- (4) Four diamond-drill holes were drilled to intersect the #2 ore shoot at shallow depths. Good intersections were obtained in three holes but the fourth hole was blank. The four holes averaged \$39.66 (unreduced) across an average width of 7.1 inches. A fifth hole drilled to intersect #1 vein at a depth of 300 feet, should have cut #2 vein at about 230 feet, but although a shearing was encountered which the management considers to be the vein fracture, there were no gold values in the material. These results are not encouraging but in the writer's opinion, the drilling was too limited to be conclusive.
- (5) The mining plant and head-frame are practically complete and shaft-sinking will be started before the end of December. The shaft will be carried to a depth of 350 feet with levels at 125-, 225-, and 325-foot horizons.
- (6) The directors decided to proceed immediately with an underground program for reasons related to the financing. In the writer's opinion, surface exploration and diamond drilling should be resumed as soon as possible with the object of attempting to increase the known length of ore. At present indicated tonnage, the property is an exceedingly good prospect, but it is doubtful whether this tonnage would be sufficient to make a profitable mining operation. As stated in the previous Memorandum "the possibility of discovering additional ore shoots is exceptionally good."

FOREWORD

The information for the following memorandum and accompanying plan was kindly furnished by Mr. W.J. Hacker, resident manager, during visits to the property on Nov. 10th. and Dec. 1st., 1935, and Mr. K.J. Springer, president, in an interview on Dec. 16th. The memorandum supplements previous reports by Mr. J.A.H. Paterson and the writer.

PREVIOUS REPORTS

- (1) Sampling Results of Fraser Reid and Russell Cryderman - J.A.H. Paterson, July 24th. 1935.
- (2) Memorandum - F.R. Burton, Aug. 14th. 1935.
- (3) Results of Diamond Drill Holes Nos. 1 to 8 - J.A.H. Paterson, Aug. 30th. 1935.
- (4) Memorandum - F.R. Burton - Sept. 10th. 1935.
- (5) Memorandum - F.R. Burton - Oct. 13th. 1935.

DEVELOPMENTS FROM OCT. 8th. to DEC. 16th. 1935 & PRESENT PROGRAM

Since the previous examination on Oct. 8th., surface sampling has been completed on both #1 and #2 veins. Four diamond-drill holes were put down to intersect the #2 vein at shallow depths and three holes to intersect #1 vein at vertical depths of 170 to 307 feet. Attention has been directed mainly, however, to preparations for underground development. The underground program calls for sinking a 3-compartment shaft, (two 4'x5' compartments and one 3'x5') to a depth of 350 feet with levels to be established at 125-, 225-, and 325-foot horizons. The shaft has been sunk to a depth of 31 feet with power from the company's portable compressor and as the mining plant (Diesel) is practically installed, shaft sinking will be started before the end of this month, barring unforeseen delays.

SAMPLING OF NUMBER ONE VEIN

The #1 vein has now been completely sampled at 5-foot intervals from the most westerly point available at the time of the previous examination (sample #82) to the west end of this quartz lens. The following averages include all of the sampling of this lens but the reader is referred to the Memorandum of Oct. 13th. for comments on previous sampling. The lens north of diamond-drill holes 6 and 7, which is part of #1 vein, has also been sampled and results are given below.

(Please refer to next page)

(1) Sampling from 31' West of Point 1 (East end of quartz)
to 51' West of Point 1.

Sample No.	Width	Grade (\$35/oz.)	Width x Grade
52	0.6'	\$ 3.50	\$ 2.10
53	0.8'	2.80	1.70
54	2.0'	1.40	2.80
55	1.45'	5.60	8.10
56	1.3'	1.40	1.80
57	1.2'	4.20	5.05
	7.15'		\$ 21.55

Average Width - 1.19'

Average Grade - \$3.01

Length - 25'

(Please refer to next page)

(2) Sampling from 56' West of Point 1 to the West end of Lens

Sample No.	Width	Grade (\$35/oz)	Width x Grade	Assay Reduced to	Reduced Width x Grade
58	0.51	\$175.00(1)	87.50	\$ 42.55	21.28
59	1.0	175.00(2)	175.00	42.55	42.55
60	1.1	30.10	33.10		33.10
61	0.65	55.30	35.90		35.90
62	2.65	28.00	74.20		74.20
63	1.00	2.10	2.10		2.10
64	1.75	14.70	25.70		25.70
65	0.75	16.80	12.60		12.60
66	1.25	19.60	24.50		24.50
67	1.00	117.95	117.95	42.55	42.55
68	0.66	53.90	35.60		35.60
69	0.75	135.45	101.60	42.55	31.90
70	0.66	17.15	11.30		11.30
71	1.00	76.65	76.65	42.55	42.55
72	0.92	53.20	48.95		48.95
73	0.66	17.15	11.30		11.30
74	1.00	8.05	8.05		8.05
75	0.75	24.50	18.35		18.35
76	1.58	52.15	82.40		82.40
77	0.88	61.60	54.20		54.20
78	2.42	26.25	63.50		63.50
79	1.58	56.35	89.00		89.00
80	1.13	56.35	63.70		63.70
81	1.25	72.45	90.55	42.55	53.20
82	1.08	93.10	100.55	42.55	45.95
142	0.42	22.40	9.40		9.40
149	1.00	10.15	10.15		10.15
151	0.58	4.55	2.65		2.65
166	1.17	41.65	48.75		48.75
167	1.17	16.45	19.25		19.25
168	1.00	22.40	22.40		22.40
169	2.50	18.55	46.40		46.40
170	0.67	15.40	10.30		10.30
171	0.67	33.60	22.50		22.50
172	2.17	7.00	15.20		15.20
173	2.17	96.25	208.85	42.55	92.35
175	1.00	29.75	29.75		29.75
176	1.00	7.35	7.35		7.35
177	1.00	7.70	7.70		7.70
178	0.92	2.10	1.95		1.95
179	0.67	6.65	4.45		4.45
180	1.83	14.00	25.60		25.60
181	0.67	13.65	9.15		9.15
182	1.08	7.35	7.95		7.95
183	0.42	25.90	10.90		10.90
184	0.25	12.25	3.05		3.05
185	1.75	141.75	248.05	42.55	74.45
	52.08		2216.00		1456.08

- (1) Arbitrarily reduced from actual assay of \$3073.00
 (2) Arbitrarily reduced from actual assay of \$ 270.20

Average width - 1.11'

Average "unreduced" grade - \$42.55

Average reduced grade - \$27.96

Length - 240'

(3) Sampling of Ore Section

<u>Sample No.</u>	<u>Width</u>	<u>Grade (\$35/oz)</u>	<u>Width x Grade</u>	<u>Assay Reduced to</u>	<u>Reduced WidthxGrade</u>
58	0.5'	\$175.00(1)	87.50	\$ 44.48	22.24
59	1.0	175.00(2)	175.00	44.48	44.48
60	1.1	30.10	33.10		33.10
61	0.65	55.30	35.90		35.90
62	2.65	28.00	74.20		74.20
63	1.00	2.10	2.10		2.10
64	1.75	14.70	25.70		25.70
65	0.75	16.80	12.60		12.60
66	1.25	19.60	24.50		24.50
67	1.00	117.95	117.95	44.48	44.48
68	0.66	53.90	35.60		35.60
69	0.75	133.45	101.60	44.48	33.36
70	0.66	17.15	11.30		11.30
71	1.00	76.65	76.65	44.48	44.48
72	0.92	53.20	48.95		48.95
73	0.66	17.15	11.30		11.30
74	1.00	8.05	8.05		8.05
75	0.75	24.50	18.35		18.35
76	1.58	52.15	82.40		82.40
77	0.88	61.60	54.20		54.20
78	2.42	26.25	63.50		63.50
79	1.58	56.35	89.00		89.00
80	1.13	56.35	63.70		63.70
81	1.25	72.45	90.55	44.48	55.60
82	1.08	93.10	100.55	44.48	48.04
142	0.42	22.40	9.40		9.40
149	1.00	10.15	10.15		10.15
151	0.58	4.55	2.65		2.65
166	1.17	41.65	48.75		48.75
167	1.17	16.45	19.25		19.25
168	1.00	22.40	22.40		22.40
169	2.50	18.55	46.40		46.40
170	0.67	15.40	10.30		10.30
171	0.67	33.60	22.50		22.50
172	2.17	7.00	15.20		15.20
173	2.17	96.25	208.85	44.48	96.52
175	1.00	29.75	29.75		29.75
	42.49'		1889.85		1320.40

(1) Arbitrarily reduced from actual assay of \$3073.00

(2) Arbitrarily reduced from actual assay of \$ 270.20

Average width - 1.15'

Average "unreduced grade" - \$ 44.48

Average reduced grade - \$ 31.08

Length - 190'

(4) Sampling of Low-grade Section at the West End of the Lens

<u>Sample No.</u>	<u>Width</u>	<u>Grade (\$35/oz)</u>	<u>Width x Grade</u>	<u>Assay Reduced to</u>	<u>Reduced WidthxGrade</u>
176	1.00'	\$ 7.35	7.35		7.35
177	1.00	7.70	7.70		7.70
178	0.92	2.10	1.95		1.95
179	0.67	6.65	4.45		4.45
180	1.83	14.00	25.60		25.60
181	0.67	13.65	9.15		9.15
182	1.08	7.35	7.95		7.95
183	0.42	25.90	10.90		10.90
184	0.25	12.25	3.05		3.05
185	1.75	141.75	248.05	\$ 34.01	59.52
	9.59'		326.15		137.62

Average width - 0.96'

Average unreduced grade - \$34.01

Average reduced grade - \$14.35

Length - 50'

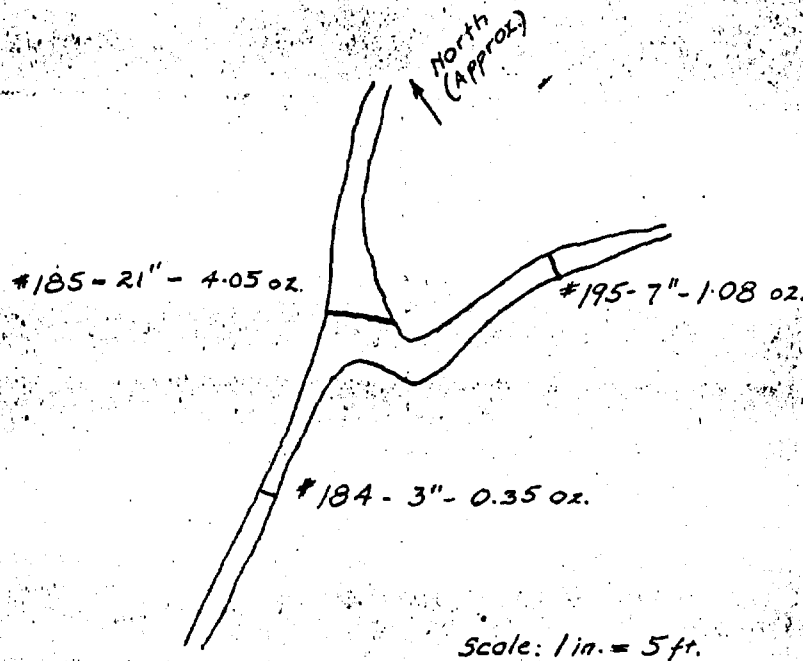
(5) Sampling of Quartz Lens North of D.D.H. #6 and #7

The samples at the east end of this lens were all very low grade but for the last 35 feet to the west there were several high assays. The quartz is too narrow to make ore but the values are interesting; sampling from west to east they were as follows:-

<u>Sample No.</u>	<u>Width</u>	<u>Grade</u>
187	4.5"	0.09 oz.
188	3.0	7.72
189	3.0	0.23
190	3.0	2.67
191	2.0	0.10
193	1.5	5.76
194	3.0	0.28
196	2.0	0.05

(6) Branch Vein at the West End of Main Quartz Lens

At the west end of this lens where it strikes almost due north, there is a vein branching off to the east which is interesting but it has been stripped for only a short distance. Water and heavy overburden will likely prevent further surface exploration. The relation of the branch vein to the main vein is illustrated in the following sketch.



Summary - The writer stated in the previous memorandum that although the unsampled section of the ore shoot in #1 vein was under water at the time of examination, Mr. Hacker was of the opinion that both width and grade were about the same as in the sampled section. Unfortunately this assumption did not prove to be correct for although the average width is about the same, the grade is very much lower, and the last 50 feet to the west is below ore grade. Thus the ore shoot in this vein is only 190 feet long as compared with the previous estimate of 225 feet.

SAMPLING OF NUMBER TWO VEIN

The ore shoot in this vein has now been completely opened up and sampled. In the previous memorandum it was stated that: "50 feet west along the strike, another vein was discovered the day of the writer's examination, and in the only trench where exposed, it is 14 inches wide and contains a small amount of visible gold." This vein was found to be a continuation of #2 and has been stripped for 75 feet. Unfortunately except for the above trench where a width of 5 inches assayed 0.58 ozs., this section of the vein does not carry appreciable values.

At the time of the previous examination the vein had been sampled for a length of 245 feet but assay results were available for only 185 feet of this distance. Returns are now complete for this sampling and beginning at the east end there is an ore shoot 220 feet long but the remaining 25 feet is below ore grade. Two separate calculations are given below to show the averages for the total 245 feet and for the 220-foot ore shoot.

(Please refer to next page)

(1) Sampling of Ore Shoot

Sample No.	Width	Grade (\$35/oz)	Width x Grade	Assay Reduced to	Reduced WidthxGrade
97	6"	\$135.45	812.70	\$ 37.87	227.22
98	5	66.50	332.50		332.50
99	7	17.15	120.05		120.05
100	5	22.40	112.00		112.00
101	4.5	20.65	92.93		92.93
102	4	14.35	57.40		57.40
103	6	21.00	126.00		126.00
104	6	36.05	216.30		216.30
105	4	18.55	74.20		74.20
106	6.5	31.05	207.02		207.02
107	4	12.60	50.40		50.40
83	9	28.70	258.30		258.30
84	5	29.05	145.25		145.25
85	13	11.55	150.15		150.15
86	4	28.35	113.40		113.40
87	10	4.90	49.00		49.00
88	12	16.80	201.60		201.60
89	13	115.50	1501.50	37.87	492.31
91	12	16.45	197.40		197.40
92	10	45.50	455.00		455.00
109	30	9.80	294.00		294.00
126	22	12.95	284.90		284.90
108	18.25	27.30	498.22		498.22
110	8	53.90	431.20		431.20
125	8	57.05	456.40		456.40
113	13	19.95	259.35		259.35
114	9	58.80	529.20		529.20
115	12	52.85	634.20		634.20
116	9	64.05	576.45		576.45
117	9	25.20	226.80		226.80
118	20	49.70	994.00		994.00
119	15	13.65	204.75		204.75
120	15	23.10	346.50		346.50
121	5	8.40	42.00		42.00
122	10	10.15	101.50		101.50
123	5	20.30	101.50		101.50
124	6	59.50	357.00		357.00
127	10.5	175.00(1)	1837.50	37.87	397.64
128	11	49.00	539.00		539.00
129	12	29.40	352.80		352.80
132	6	21.35	128.10		128.10
133	14	12.95	181.30		181.30
134	20	100.10	2002.00	37.87	757.40
135	20	26.60	532.00		532.00
	453.75"		17183.77		12904.64

(1) Arbitrarily reduced from actual assay of \$935.20

Average width - 10"
 Average "unreduced" grade - \$37.87
 Average reduced grade - \$28.43
 Length - 220'

(2) Combined Sampling of Ore Shoot and Low-grade Section
at West end.

Sample No.	Width	Grade (\$35/oz)	Width x Grade	Assay Reduced to	Reduced Width x Grade
97	6"	\$135.45	812.70	\$ 35.71	214.26
98	5	66.50	332.50		332.50
99	7	17.15	120.05		120.05
100	5	22.40	112.00		112.00
101	4.5	20.65	92.93		92.93
102	4	14.35	57.40		57.40
103	6	21.00	126.00		126.00
104	6	36.05	216.30		216.30
105	4	18.55	74.20		74.20
106	6.5	31.85	207.02		207.02
107	4	12.60	50.40		50.40
83	9	28.70	258.30		258.30
84	5	29.05	145.25		145.25
85	13	11.55	150.15		150.15
86	4	28.35	113.40		113.40
87	10	4.90	49.00		49.00
88	12	16.80	201.60		201.60
89	13	115.50	1501.50	35.71	464.23
91	12	16.45	197.40		197.40
92	10	45.50	455.00		455.00
109	30	9.80	294.00		294.00
126	22	12.95	284.90		284.90
108	13.25	27.30	498.22		498.22
110	8	53.90	431.20		431.20
125	8	57.05	456.40		456.40
113	13	19.95	259.35		259.35
114	9	58.80	529.20		529.20
115	12	52.85	634.20		634.20
116	9	64.05	576.45		576.45
117	9	25.20	226.80		226.80
118	20	49.70	994.00		994.00
119	15	13.65	204.75		204.75
120	15	23.10	346.50		346.50
121	5	8.40	42.00		42.00
122	10	10.15	101.50		101.50
123	5	20.30	101.50		101.50
124	6	59.50	357.00		357.00
127	10.5	175.00(1)	1837.50	35.71	374.96
128	11	49.00	539.00		539.00
129	12	29.40	352.80		352.80
132	6	21.35	128.10		128.10
133	14	12.95	181.30		181.30
134	20	100.10	2002.00	35.71	714.20
135	20	26.60	532.00		532.00
136	12	9.80	117.60		117.60
137	3	3.15	9.45		9.45
138	6	4.55	27.30		27.30
139	8	4.20	33.60		33.60
140	6	13.30	79.80		79.80
	488.75"		17451.52		13065.47

(1) Arbitrarily reduced from actual assay of \$935.20

Average width - 10.0"

Average "unreduced" grade - \$35.71

Average reduced grade - \$26.73

Length - 245'

DIAMOND DRILLING OF NUMBER ONE VEIN

Since the previous examination, three holes #16, 17, and 18, have been drilled to intersect #1 vein (see attached plan). The deepest hole (#18) cut the vein at a vertical depth of 307 feet and a core length of 33 inches assayed 1.05 ounces.

#16 hole intersected the vein at a vertical depth of 170 feet and the core assayed 1.17 ounces for a length of 9 inches. In this hole low values were obtained on the south side of the vein as follows:-

2'5"	-	0.02 oz.
0'7"	-	0.09 "
3'1"	-	0.08 "
2'0"	-	0.03 "
2'0"	-	0.03 "
1'0"	-	0.14 "

#17 hole was blank but referring to the vertical projection on the accompanying drawing, it will be seen that the hole intersected the vein at the extreme east end of the quartz lens where values on surface were extremely low.

In the writer's opinion, these holes confirm the original assumption that the ore shoot takes to the west at an angle of about 45°.

DIAMOND DRILLING OF NUMBER TWO VEIN

Four holes were drilled to intersect the #2 vein at shallow depths (#13-14-15-19) and also in previous drilling #8 hole is presumed to have cut the #2 vein (see attached plan). Of the five holes, #13 and #19 were blank. Hole #19 was drilled west of the ore shoot but judging by the plan, possibly the hole was not drilled deep enough to intersect any extension of the shoot which there might be at this horizon. The results of the four holes under the ore shoot were as follows:-

<u>D.D.H. No.</u>	<u>Width</u>	<u>Grade (\$35/oz)</u>
8	10"	\$ 29.40
13	-	-
14	8.5"	11.55
15	10.0"	73.80

In addition to the above, #18 hole, drilled to intersect #1 ore shoot, should also have cut #2 vein under the ore shoot at a vertical depth of about 230 feet. Mr. Springer states that there was some strongly sheared material at the assumed location of the vein, but it did not carry gold values. Since #18 is the only relatively deep hole on the vein, this is a disturbing feature, but in the writer's opinion it would be unwise to arrive at a conclusion from this single hole, especially as it is possible the ore shoot may have a westerly rake similar to the #1.

To summarize - four shallow holes averaged \$39.66 (unreduced) across an average width of 7.1" and a fifth hole to a depth of about 230 feet is said to have intersected the vein fracture but did not carry values. These results are not particularly encouraging but in the writer's opinion, they should not be regarded as conclusive, due to the very limited amount of drilling.

F. R. Burton

Port Arthur, Ont.
Dec. 18th, 1935.



52H09NE0023 63.4801 POPLAR POINT

070

323 Dawson Street,
Port Arthur, Ont.
Feb. 14th. 1936.

Mining Corporation of Canada Ltd.,
602 Atlas Building,
350 Bay Street,
Toronto, 2, Ont.

Attention Mr. J.H.C. Waite

Dear Mr. Waite:-

Re - Leitch Gold Mines Limited,
Beardmore, Ontario.

I visited the property on Feb. 8th. when I was in the Beardmore district. The shaft was then at a depth of 125 feet and the station was nearly completed at that horizon. There are a few quartz stringers in the station but they do not look as if they would be of any importance.

There have been several delays in the work due to breakdowns of the Diesel plant and to heavy water flow. The difficulties with water have been due largely to lack of a good pump as there is not sufficient water to delay the work if proper pumping facilities were available. A new pump has been ordered and is probably at the property by now. The Diesel plant is now working satisfactorily.

The ground breaks well, and barring unforeseen delays, Mr. Hacker expects to have the shaft completed by the end of March.

Yours very sincerely,

F. R. Burton

RECEIVED

FEB 17 1936

The MINING CORPORATION
OF CANADA LIMITED

11-K

Jub
June 1936

Original Report of A. L. Dempster - 11-1

Extract from Report of A. L. Dempster
on the Sand River Area

LEITCH GOLD MINES, LIMITED
and
SAND RIVER GOLD MINES, LIMITED

Sand River Area

The above companies, adjoining each other, under one operation could be considered a possible successful mining enterprise.

With four ore shoots developed and 2,600 feet approximately, along the strike of this break to be opened up between these shoots, the possibility of developing other commercial lenses are fairly good.

LEITCH GOLD MINES, LIMITED

Sand River Area

Beardmore, Ontario

Visited May 22 to 24, 1936.

The Leitch Gold Mines, Limited, was formed July 23, 1935, to take over a group of claims staked by Russell Cryderman, which is situated $6\frac{1}{2}$ miles northwest of Beardmore, Ontario.

The main showing is located in the Greywacke on what appears to be a wide folded condition. A thousand linear feet, approximately, of surface trenching has opened up two commercial ore shoots called No. 1 and No. 2 Veins.

SEE MAP

No. 1 Vein, 220 ft. long by 15 inches wide, averages \$36.00 per ton, strikes N. 68°W, dips vertically and rakes 45°W. The vein follows lines of weakness resulting in an apparently folded quartz vein, which cuts the bedding planes of the wall rock or greywacke.

No. 2 vein, 210 feet long by 10 inches wide, averages \$29.00 per ton, strikes N. 64°E., dips 75°N. and shows one fold which suggests a 45° rake West. This vein appears to straighten out from No. 1 Vein and it is again picked up on its strike at the west boundary 1100 feet distant, and then explored on the same strike or picket line by the Sand River Mines, Ltd.

Tonnage per foot of Depth

No. 1 Vein, 220'/12 X 15/12	=	22.8 tons per foot @ \$36.00
No. 2 Vein, 210/12 X 10/12	=	<u>14.6 tons per foot @ \$29.00</u>
Total		37.4 " " " \$33.20

\$35,000 is said to have been expended on building a camp, installation of plant.

Possible Tonnage & Value

Assume that the surface conditions of the No. 1 and No. 2 Veins continue to hold up to the 324 foot level, the tonnage to be mined on a cut and fill system would be as follows:

No. 1 Vein: Assume material mined, for milling, on this vein will average in stope a width of 22 inches, thus getting 32% dilution and cutting the value to \$24.60 per ton; this stope would contain:

220' X 22' x 324'	=	10,890 tons @ \$24.60	=	\$ 267,994.00
12 x 12				

No. 2 Vein: Assume material mined, for milling, on vein will carry a stope width of 20 inches in ore, thus getting 50% dilution and cutting value to \$14.50 per ton, this stope would contain:

210' X 20' x 324'	=	9,450 tons @ \$14.50	=	\$ 137,025.00
12 x 12				

This makes a total of 20,340 tons @ \$19.90 (Ave.) = 405,019.00

This gives 62.7 tons per foot to be mined, averaging 19.90

Possible Profit on this Area

50 ton mill would give a life of 400 mill days.

20,340 tons @ \$ 19.90 per ton - Value -	\$	405,019.00
" " @ 13.00 per ton # Operating cost		<u>264,420.00</u>
Possible Profit	\$	140,599.00

\$13.00 cost to include operating costs, mill loss, overhead, taxes, etc.

Conclusions

The present set-up means that the shaft has to be sunk 300 feet each

year and two levels opened up on the known ore shoots to keep a year ahead of a 50 ton mill.

The life of this Company depends on the development of other ore shoots.

Noranda Mines, Limited

Arthur I. Dempster

Mining Engineer

June 12, 1936



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MEMORANDUM

on

LEITCH GOLD MINES LTD.

Beardmore, Ontario,

by

J.A.H. Paterson

July 17th, 1936

on

LEITCH GOLD MINES LTD.

Beardmore, Ontario,

July 17th, 1936

CONCLUSIONS:

(1) My visit to the property on June 17th, 1936, was about a month too early, as only crosscuts had been driven and practically no drifting had been done.

Hence from a share valuation standpoint, the opinions in Dr. F.R. Burton's previous reports still hold.

(2) The developments as at June 17th, 1936, are described herein. Plans and sections of the workings are attached.

EXAMINATION:

I visited the property on June 17th, 1936, and was given every facility to inspect the underground and surface workings and to study the plans. Mr. Hamilton, the Manager, was most helpful and courteous, and I wish to record my appreciation to him.

The surface work and drilling on this property has been well recorded in extensive detail in reports by Dr. Burton.

CONDITIONS UNDERGROUND AS AT JUNE 17th:

My visit to the property was probably made a month too early, as I arrived there before sufficient drifting had been done to get any idea of the character of the vein underground. A recent article in the Northern Miner gives the drifting in ore up to date as shown below in this memo.

The important points to be learned at the time of my visit were as follows:

(a) No. 1 vein, which is the most important, had not yet been reached

underground.

(b) The only dependable vein intersection on No. 2 vein was on the 125' level. It was poor, showing a narrow 2" to 6" vein, assaying about 0.5 oz. gold.

(c) Mr. Hamilton's theory was that crosscuts had entered a folded area.

This theory appeared quite logical and would explain the broken-up condition at the time. It is described below.

EXPLANATION OF SURFACE PLAN AND PROJECTION OF ORESHOOTS ATTACHED HERETO:

Referring to this plan, one can readily understand the reasons for Mr. Hamilton's theory. It shows the location of both No. 1 and No. 2 ore shoots. This plan is on the same scale as a previous plan submitted by Dr. F.R. Burton, and can be compared with it. It was at first thought that No. 1 and No. 2 were separate veins. This idea was later changed, and Mr. Hamilton is of the belief that they are the same vein contorted by a sharp fold. A plunge of the minor drag folds on surface is about 60° to the west. The attached plan therefore shows the ore shoot to plunge at 60° with a dip that was ascertained by the diamond drilling. On the plan just northeast of the shaft there is a line showing "Direction of crosscuts." It will be readily observed that crosscuts therefore entered into the highly folded part of the ore shoots which do not make ore on surface, and therefore would not be expected to make ore underground.

EXPLANATION OF COMPOSITE PLAN AND WORKINGS ATTACHED HERETO:

The vertical cross sections shows an interesting condition. If No. 2 ore shoot had kept its dip from surface to the first level, it would have been close to the shaft at the 325' level. However, there is nothing corresponding with it on the 225' or the 325' crosscuts. As shown on the plan, there is a stringer zone north of No. 2 on the surface, and this stringer zone has been cut on all three levels at a corresponding distance north of a quartz vein, and hence it is assumed that this vein on the 225' and 325' is the No. 2 shoot, and as shown

on the plan, if this is the case, it must have been changed in dip below the 125' level so that on the 325' it is a slight distance south of the surface outcrop.

UNDERGROUND DEVELOPMENT:

This is most clearly shown on the composite plan of workings. Briefly, three levels had been established at 125, 225, and 325 feet. The developments as at June 17th were as follows:

125' LEVEL:

The 101 crosscut had been advanced about 110 feet from the shaft end as shown on the vertical cross section it cut a 4' stringer zone, giving low assays under \$2.00.

The No. 2 ore shoot was definitely intersected by this crosscut and showed a narrow quartz vein 2 to 6 inches wide, averaging about 0.5 oz. No drifting had been done.

225' LEVEL:

The 201 crosscut cut a 4' stringer zone assaying less than \$2.00, about 80 feet from the shaft. This is thought to be the same stringer zone as intersected on the 125' level.

What is considered to be the No. 2 vein was intersected in the 201 crosscut at a point 125 feet from the shaft. It showed a vein of quartz several inches wide with a few narrow stringers, but the assays were very low and it would not make ore.

About 80 feet of drifting had been done on the No. 2 vein, but no ore was disclosed. One section, 15 feet long, averaged 1.88 ozs. across 4 inches.

325' LEVEL:

At a point about 35 feet from the shaft, a stringer, 1 to 2 inches wide, was cut which gave an assay of 0.8 oz. across 4 inches. This is insignificant in itself, but will probably be given some attention on strike later on.

The stringer zone similar to the stringer zones above, was intersected at 95 feet from shaft, but did not make ore.

What was thought to be the No. 2 vein was cut at 140 feet from the shaft. It showed a well-defined fracture 1 to 2 inches wide, and paralleling stringers. About 40 feet of drifting had been done on it, but it was not in ore.

UP-TO-DATE RESULTS AS PER NORTHERN MINER, JULY 16, 1936:

According to the Northern Miner, results to date are as follows:

(a) No. 1 Oreshoot

125' level — ore section not yet reached.

225' level — oreshoot open for length of 55 feet, averaging \$59.15 across 27 inches.

325' level — open for length of 35 feet, averaging \$16.36 across 30".

(b) No. 2 Oreshoot

125' level — opened up for length of 88 feet, averaging \$47.95 across 9 inches.

225' level — Drifts said to be just entering oreshoot.

325' level — opened up for 73 feet, averaging \$25.80 across 12.5 inches.

Respectfully submitted,

J. M. Stenson



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ERIE CANADIAN MINES LIMITED
(No Personal Liability)

Notes on Leitch Gold Mines Limited

The Leitch property is located some 3 miles east of Lake Nipigon on the Sand River. It consists of the E- $\frac{1}{2}$ -of-A1-416; all-of-HF-1; W- $\frac{1}{2}$ -of-HF-3.

The country here is all gently rolling with considerable swamp and over burden. Timber and water for mine purposes are abundant and electric power is now being used on the property.

Geology

The claims are underlain by relatively massive Temiskaming greywackes. These sediments are folded in relatively tight drag folds which together form the major fold. The axial plane of the folding strikes about N 75° E and dips 63° N.

There are two veins of identical appearance which are being worked. Both veins are composed of faintly banded quartz and some carbonate and are very weakly mineralized by pyrite, arsenopyrite and chalcocite. Fine free gold is also present. About 8 inches of wall rock is heavily sheared and fairly well mineralized with the above minerals with the exception of gold. Values are apparently confined to the quartz.

Number-two-vein conforms to the attitude of the regional schistosity which in turn is parallel to the axial planes of the folding.

Number one vein conforms more or less to the bedding and consequently has the appearance of being drag folded. It seems probable that both these veins are essentially the same vein but that in the case of number one the easiest channelway for the mineralizing solutions was along the bedding and that when the solutions approached the area in which number two lies an easier and freer channel was parallel to the regional schistosity. It would appear that number two vein is essentially on the axial plane of the major fold. The various relations will be seen on the accompanying sketch.

Both veins are similar as to widths and both pinch and swell along their strike. There is considerable thickening in number one vein around the noses of the drag folds. The lenses formed by the wider parts of the vein between the pinches are in the order of 150 to 200 feet. The average width of the lenses is in the neighbourhood of 22 inches.

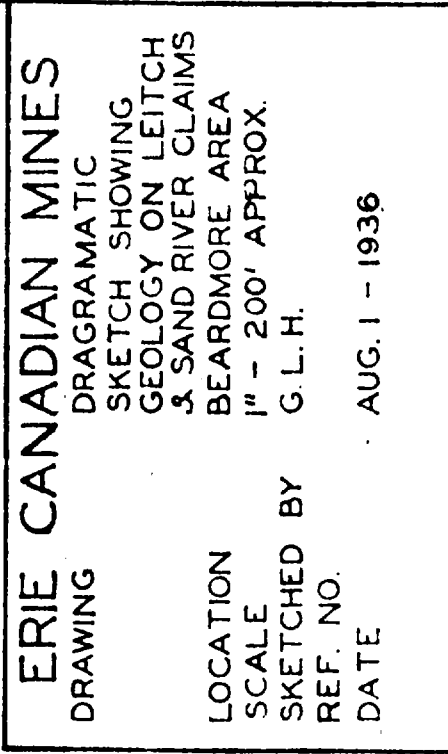
An ore shoot has been developed in number one vein on surface, 250 feet long, averaging \$61.00 across 22 inches. The number two vein has a shoot averaging \$28.00 over 10 inches for a length of 185 feet.

Underground development has opened up these ~~two-veins-on-three levels-to-a-depth-of-325~~ feet. Underground sampling of number one vein returns higher assays and greater length and width. On number two the values are higher, the width approximately the same, but the length is shortened to 120 feet.

There is considerable discussion as to the possibility of the Leitch ore bodies running westward on the the adjoining Sand River claims. However, from a study of the folding it would seem reasonable to expect that the rake of the ore would conform with the pitch of the folds which is approximately 70° to the East.

This property give promise of becoming a small producer but from the tons per vertical foot so far indicated 50 tons per day production would seem to be about the limit.

LEITCH



AUG. 1 - 1936



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MEMORANDUM

on

LEITCH GOLD MINES LIMITED

BEARDMORE, ONT.

by

F.R. Burton,

Toronto, Ont.,
Dec. 4th, 1936.



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MEMORANDUM

on

LEITCH GOLD MINES LIMITED

Beardmore, Ont.

CONCLUSIONS:

(1) Probable ore in No. 1 and 2 veins to a depth of 375 feet is estimated at 12,785 tons, with an average grade of 2.152 ounces; or allowing dilution of 33-1/3%, 17,047 tons averaging 0.864 ounces. The writer would emphasize that, due to the fact that there has not been any raising done on the ore and to numerous other uncertain features, this estimate is submitted only to indicate possibilities and is not to be accepted as an accurate estimate of ore reserves.

(2) The company is proceeding with construction of a 75-ton mill which should be in production about February 1st, 1937. The initial milling rate will be about 50 tons per day.

(3) Milling at a rate of 50 tons per day and on the basis of conditions detailed herein, yearly profits on a 3,000,000 share capitalization would be 8.7¢ per share. This estimate is possibly high.

(4) On the basis only of the above earnings, the shares might be expected to sell on the market as follows:

- | | | |
|--|---|--------|
| (1) Normal low in dull market, 8 times earnings | — | \$0.70 |
| (2) Normal high in strong market, 13 times earnings | — | \$1.13 |
| (3) Extreme high in strong market, 17 times earnings | — | \$1.48 |

The obvious weak point in such a share valuation is that present indicated ore reserves are not sufficient for one year's operations with a 50-ton mill. Also, present indicated tonnage is only 45 tons per vertical foot, whereas at a 50-ton per day milling rate, double this tonnage would be required to provide for an economical operation. Another serious factor is that the main oreshoot appears to be pinching out at depth.

Diamond drilling has indicated ore-making possibilities at a point 200 feet east of No. 1 shoot. In the writer's opinion, a vigorous exploration campaign would have very good chances of success in developing double the present indicated tonnage per vertical foot. However, until there is definite evidence of new ore developments, the stock is not an attractive speculation at present market quotations of approximately 70¢ per share.

FOREWORD:

The writer visited the property on October 20th - 21st, 1936, and through the courtesy of Mr. W. Hamilton, mine-manager, permission was granted to examine all underground workings and mine plans.

PREVIOUS REPORTS:

Reports on the property have been submitted at fairly regular intervals by Mr. J.A.H. Paterson, and by the writer. The present report details development only since Mr. Paterson's report of July 17th, 1936.

UNDERGROUND DEVELOPMENT:

Since Mr. Paterson's report, the No. 1 oreshoot has been fully developed on all three levels. The section of No. 2 vein zone lying vertically below the surface oreshoot has been explored fairly completely but further drifting to the northeast and southwest may develop additional ore. The attached plans illustrate the ore development better than a written description. All averages are as calculated by the mine management but they are said to have been reduced in an approved manner, and, in the writer's opinion, may be accepted as reliable.

(1) 125-foot Level — (Please refer to attached Plan 1)

(a) No. 1 oreshoot The shoot is delimited at both ends, and a length of 260 feet averaged 0.76 ounces across 16.24 inches.

(b) No. 2 Vein The vein has been drifted on for a total length of approximately 470 feet. In this distance the following shoots were developed:

19 feet	—	0.73 ounces across 6.25 inches
128 "	—	0.864 " " 9.07 "
29 "	—	1.20 " " 9.30 "

Of the foregoing, the first shoot is too low grade to be of possible importance.

The second shoot is below ore grade but might improve sufficiently on stoping to make ore. The third shoot is ore grade.

Referring to the attached plan, it will be noted that the southwest drift face assays 1.04 ounces across 8 inches, and it is possible that further drifting in this direction might develop an oreshoot.

(2) 225-foot Level — (Please refer to attached Plan 2)

(a) No. 1 Oreshoot The shoot is delimited at both ends, and a length of 205 feet averaged 2.52 ounces across 17.1 inches. Referring to the attached plan, it will be noted that there are several high assays northwest of this shoot which are probably related to the same structure. It is possible that further drifting might develop ore in this vicinity but the nearby 201 crosscut makes the possible length of any shoot very short.

(b) No. 2 Vein The vein has been drifted on for a total length of approximately 250 feet and in this distance there is a shoot 180 feet long averaged 1.03 ounces across 8.27 inches. This is marginal material, and the grade would have to improve in stoping to make ore.

(3) 325-foot Level — (Please refer to attached Plan 3).

(a) No. 1 Oreshoot The oreshoot is delimited and a length of 105 feet averaged 0.774 ounces across 24.5 inches.

(b) No. 2 Vein The vein has been drifted on for a length of approximately 360 feet. In this distance, there are two shoots averaging as follows:

130 feet — 0.93 ounces across 9.5 inches

90 " — 0.915 " " 10.8 "

Of these two shoots, it should be possible to mine the second shoot at a profit but the first shoot is marginal material.

PROBABLE ORE RESERVES:

Due to numerous uncertain factors, it is very difficult to make an accurate estimate of probable ore reserves on a deposit of this type, particularly as there has not been any raising done on the oreshoots. The following estimate is submitted merely to indicate possible tonnages and grade that may be expected under certain conditions, and the writer would emphasize the doubtful nature of many of these conditions.

There is very little information available on the mining of narrow, high grade veins in Canada. However, at a mine in the Boardmore area where the vein is narrow, relatively straight and requires only a small amount of exploration work the mine manager states that he regards 8.5 inch-ounces as ore. This mine is equipped with a mill handling approximately 175 tons per day. The Leitch No. 2 vein is similar in mining characteristics to the above-mentioned vein, but as probable mill tonnage in the immediate future will be only 50 to 75 tons per day, the grade would necessarily have to be above 8.5 inch-ounces, possibly in the order of 10 inch-ounces to make ore. For an extremely irregular vein like No. 1, the grade would have to be very much higher. Referring to the attached Plan 4, it will be noted that approximately 80% of the tonnage developed in No. 2 vein is considerably below 10-inch ounces. In as much as the vein may slope to a considerably better grade than indicated by channel sampling, shoots in the vicinity of 8 inch-ounces are included as possible ore.

Another uncertain factor is the possible shape of the shoots in No. 2 vein. For the purpose of this estimate, they are assumed to extend as rectangles half the distance above and below the levels. No. 1 oreshoot is assumed to extend as a continuous orebody between levels.

On the above basis, tonnage and grade in the two veins is estimated as follows (slide rule calculations):

(1) No. 1 Oreshoot

	<u>Tons</u>	<u>Grade</u>	<u>Tons x Grade</u>
Between Surface and 125' Level	2,870	0.808 oz.	2,311
Between 125' and 225' Levels	2,575	1.562	4,020
Between 225' and 325' Levels	2,030	1.783	3,620
Between 325' and 375' Levels	860	0.774	665
	<u>8,335</u>		<u>10,625</u>

Total tonnage — 8,335 tons

Average grade — 1.275 oz.

(2) No. 2 Vein (Please refer to Plan 4)

	<u>Tons</u>	<u>Grade</u>	<u>Tons x Grade</u>
Block A	915	0.81 oz.	742
" B	870	0.864	752
" C	200	1.20	240
" D	990	1.03	1018
" E	825	0.93	767
" F	650	0.915	595
	<u>4450</u>		<u>4114</u>

Total tonnage — 4,450 tons

Average grade — 0.924 oz.

(3) Tonnage and Average Grade of Ore in No. 1 and No. 2 Veins

	<u>Tons</u>	<u>Grade</u>	<u>Tons x Grade</u>
No. 1	8,335	1.275 oz.	10,625
No. 2	4,450	0.924	4,114
	<u>12,785</u>		<u>14,739</u>

Total tonnage — 12,785 tons

Average grade — 1.152 oz.

MILL CONSTRUCTION:

The company is proceeding with construction of a 75-ton mill. At the time of the writer's examination, the building was nearly completed, and foundations were being poured for the machinery. The manager stated that the mill would be in production about February 1937, and initial tonnage would probably be about 50 tons per day.

As pointed out below, allowing for dilution, indicated tonnage to a depth of 375 feet totals 17,047 tons, or approximately 45 tons per vertical foot. Following ordinary mining practice of extracting ore at a rate of 180 feet of vertical depth per year, the above indicated tonnage would warrant a mill of 20 to 25 tons per day.

MINING AND DILUTION:

The management plans to employ a cut and fill mining method. As No. 2 vein is straight and well defined, it is probable that a resuing practice will be followed on this vein permitting fairly clean sorting in the stopes. No. 1 vein is extremely contorted, even more so underground than on surface, and dilution in mining this vein undoubtedly will be large. Just how great this dilution will be is problematical but assuming that a picking belt will be installed on surface, dilution in the two veins combined should not exceed 33-1/3%.

PROBABLE GRADE OF MILL FEED:

Assuming the above average grade of ore reserves to be correct and allowing 33-1/3% dilution, mill heads would be 0.864 ounces, or \$30.25 with gold valued at \$35 per ounce. The writer would emphasize, however, the doubtful factor in calculation of ore reserves and dilution. It is unlikely that heads will exceed the above figure, and they may possibly be considerably lower.

COSTS:

With the present indicated tonnage, it will be necessary to sink approximately 400 feet per year to supply ore to a 50-ton mill. If development fails to raise the indicated tonnage per vertical foot, development costs per ton will be high. Costs will depend also on the amount of sorting involved, in addition to numerous other uncertain factors. For the purpose of this analysis, overall costs are assumed at \$15 per ton but this figure may be low.

MILL RECOVERY:

Milling tests have indicated an overall recovery of 97.4% to 99.2% by straight cyanidation. The management expects an overall recovery of 97% in actual practice.

PROBABLE EARNINGS:

On the basis of the above estimates, profit per ton would be as follows:

Mill heads	\$30.25
Recovery of 97%	29.30
Less costs	<u>15.00</u>
Profit per ton	\$14.30

The company is capitalized at 3,000,000 shares and it is likely that the full capitalization will be issued before the property goes into production. Therefore on the basis of a milling rate of 50 tons per day and 100% running time, yearly profits per share would be as follows:

$$\frac{50 \times 365 \times \$14.30}{3,000,000} = 8.7¢$$

SHARE VALUATION:

On the basis of the above estimated yearly earnings per share, the stock might be expected to have a market valuation as follows:

(1) Normal low in dull market, 8 times earnings	\$0.70
(2) Normal high, strong market, 13 times earnings	\$1.13
(3) Extreme high, strong market, 17 times earnings	\$1.48

The obvious weak point in such a share valuation is that present indicated ore reserves are not sufficient for one year's operations with a 50-ton mill. Also, with present indicated tonnage per vertical foot it will be necessary to mine the ore at a rate of 400 feet of vertical depth per year, which is about twice the ordinary rate of approved mining practice. Thus to provide for steady economical operation, it will be necessary to develop about double the present indicated tonnage per vertical foot.

Another disquieting feature is that the No. 1 oreshoot on the 325-foot level is only 105 feet long as compared with a length of 190 feet on surface. This may be only a local feature but in the writer's opinion, with a short oreshoot of this nature it strongly suggests that the oreshoot is pinching out. If this proves to be correct, and another rich shoot is not located in the meantime, it will be an extremely serious feature as the major part of the profits are in No. 1 oreshoot.

As stated in previous reports, the indicated tonnage in No. 1 and 2 veins is not sufficient to make a profitable mining operation but the structure and ore discoveries to date offer extremely favourable prospecting ground. In the writer's opinion, if the company pursued a vigorous exploration program, there would be a good prospect of developing further ore.

It is possible that when the mill goes into production, if profits prove to be about as outlined above, the market price of the stock may rise appreciably from present quotations of approximately 70¢ per share. However, until a development program is successful in indicating a tonnage per vertical foot of 75 to 100 tons, it is the writer's opinion that the shares are not an attractive speculation.

CURRENT DEVELOPMENT AND PROSPECTIVE ORE:

At the time of the writer's examination, underground development was concentrated on sinking the shaft to a depth of 550 feet to permit opening up new levels. At a depth of 400 feet, a vein was cut in the shaft which was

presumed to be No. 2 vein. It was said to be about eight inches wide and contain considerable visible gold but a channel sample taken at one point assayed only 0.2 ounces. Current press reports state that at a depth of 490 feet, a 12-inch vein was cut in the shaft and assayed \$52. This might possibly represent the downward extension of No. 1 vein but it does not appear probable, as it would require a very appreciable change in rake and dip.

On completion of the shaft, it is proposed to open up the No. 1 and 2 veins on the two new levels and to carry out further exploration on the upper levels. Considerable flat diamond drilling will be done to explore for parallel veins, and further drifting will be carried out on the No. 2 vein zone.

Diamond drilling from surface has indicated a favourable area about 200 feet east of No. 1 creshoot. Several high-grade intersections were obtained over widths similar to No. 1 and 2 veins. Unfortunately, mine records of this drilling are in poor shape and although from the information available the several intersections do not appear to be on the same strike, the zone certainly warrants further investigation. It is proposed to explore the area from one of the lower levels.

Considerable surface prospecting has been done on the property but, although several interesting discoveries have been made, to date no creshoots have been developed from them.

F. R. Burton

Toronto, Ont.,

Dec. 4th, 1936.



52H09NE0023 63.4801 POPLAR POINT

110

*Memorandum on Zacher Gold Mines, Ltd., Beaconsfield, Ont.
by J.R. Burton, Toronto, Ont., November 29th, 1937.*

TAB I



52H09NE0023 63.4801 POPLAR POINT

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" 2	" " " "	- 225' Level
" 3	" " " "	- 325' "
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" 6	Longitudinal section illustrating oreshoots.	

on

CONCLUSIONS

- (1) At the time of the previous report, the #1 oreshoot appeared to be pinching out on the 325-foot level. Since that date, two new levels have been opened up at depths of 425 and 525 feet. On the bottom level, the total gold content of the #1 oreshoot compares favourably with any level above, and the #2 vein is better than at any other horizon. Development on the two veins is summarized as follows:

<u>Level</u>	<u>Length</u>	<u>Width</u>	<u>Tons Per</u> <u>Vert. Foot</u>	<u>Grade</u>	<u>Ounces Per</u> <u>Vert. Foot</u>
Surface	226'	15.2"	22.96	1.04 oz.	23.88
125' Level	285	18	34.20	0.71 "	24.28
225 "	205	17.1	23.37	2.52 "	58.89
325 "	105	24.5	17.15	0.774 "	13.27
425 "	275	15.7	28.78	1.06 "	30.51
525 "	290	14.2	27.45	0.828 "	22.73

Average tons per vertical foot (without dilution) = 25.65
 " grade " " ") = 1.13 ounces
 " ounces " " " " = 29

#2 Vein		Tons Per Inclined		Ounces Per Inclined	
Level	Length	Width	Foot	Grade	Foot
Surface	210'	10.9"	15.26	0.85 oz.	12.97
125' Level	128	9.1	7.77	0.864 "	6.71
225 "	180	8.27	9.92	1.03 "	10.22
325 "	130	9.5	8.23	0.93 "	7.65)
	90	10.8	6.48	0.915 "	5.93)
425 "	130	8.5	7.37	0.95 "	7.00)
	145	13.3	12.86	0.985 "	12.37)
525 "	80	11.1	5.91	1.37 "	8.10)
	225	10.6	15.90	1.12 "	17.81)

Average tons per inclined foot (without dilution)	= 14.95
" " " vertical " (" ")	= 17.19 - 15% allowance for vein dip
" grade	= 0.993 ounces
" ounces per vertical foot	= 17

- (2) Surface diamond drilling indicated ore possibilities in an area approximately 370 feet east of #1 oreshoot. The zone has been partially explored on the 225-foot level, and the work disclosed two new veins (#3 and #4). Development results to date have been exceptionally good and have a very important bearing on the mine's future. Vein characteristics are generally similar to #1 and #2. Certain sections are highly contorted but fortunately the major portion of indicated ore is in relatively straight sections of the vein. Oreshoots indicated to date are as follows:

<u>Vein</u>	<u>Length</u>	<u>Width</u>	<u>Tons Per Vert. Foot</u>	<u>Grade</u>	<u>Ounces Per Vert. Foot</u>
#4	60'	23"	9.20	0.347 oz.	3.19
	20	14	1.87	0.955 "	1.79
	35	25.4	5.93	0.854 "	5.06
	100	16	10.67	1.12 "	11.95
	130	18	15.60	0.541 "	8.44
	60	16.3	6.52	1.070 "	6.98
#3	88	15.2	8.92	0.49 "	4.37

Indicated tons per vertical foot (without dilution) = 58.71
 Average grade = 0.71 ounces
 Ounces per vertical foot = 42

It will be noted that the indicated 42 ounces per vertical foot is nearly equal to the combined values of 46 ounces in #1 and 2 veins.

At the time of examination, the crosscut had intersected the #4 vein on the 325-foot level, and although it had been drifted on for only a few feet, the vein was very rich. Considering the fact that drilling and drifting have now indicated values for a depth of 325 feet, and also considering the remarkable vertical continuity of #1 and #2 veins, there are reasonable good possibilities that developments on other levels will compare favourably with the 225-foot level.

- (3) On the 525-foot level, a diamond-drill hole intersected 7 feet of mineralized schist with quartz stringers approximately 300 feet north of #2 vein. Val

were low, averaging slightly over \$3., but the zone looks favourable, and additional holes will be drilled from this level to intersect the vein at several points along the strike.

- (4) In mining #1 vein, dilution is approximately 75%; on #2 vein, about 25%. After sorting on the picking belt, overall dilution is approximately 50%.
- (5) Mill heads are raised or lowered, as desired, by the amount of sorting on the picking belt. The management endeavours to maintain the heads at 0.6 ounces. Current production is approximately \$45,000. per month but if development of #3-4 veins continues favourable, it is planned to raise production to \$60,000. monthly, early in 1938. The mill is capable of treating the increased production without additional capital expenditure.
- (6) Positive ore reserves in #1 and 2 veins to a depth of 575 feet are estimated at 23,592 tons with an average grade of 0.70 ounces. At the present rate of production, this amounts to one year's ore, or 0.77 years at the proposed increase to \$60,000. monthly. If development results in #3-4 veins continue as indicated on the 225-foot level, there is slightly over one year's ore (at the higher rate of production) in these two veins to a depth of 575 feet.
- (7) Assuming a total of 88 ounces per vertical foot in 1-2-3-4 veins, a production of \$60,000. monthly requires mining the ore at a rate of 244 feet of vertical depth per year. This figure is considerably higher than the generally accepted economical rate of 180 feet per year.

- (8) Earnings are estimated as follows:

	Monthly Production <u>\$45,000.</u>	Monthly Production <u>\$60,000.</u>
Operating profit per share	5.7¢	10¢
Net profit per share after write-offs	3.8	7.6

No allowance is made for Dominion taxes which do not become effective for 3 years.

- (9) Assuming a mine-life of 3 years, present value per share on an 8% and 4% basis would be as follows:

<u>Monthly Production Rate</u>	<u>Annual Earnings Per Share</u>	<u>Present Value Per Share</u>
\$45,000.	3.8¢	9.5¢
\$60,000.	7.6¢	19

In three years at a production rate of \$60,000. per month, the indicated ore would be mined out to a depth of 1000 feet and in view of the character of the deposits, an estimated 3-year life appears ample from an engineering point of view.

- (10) Market valuation of the company's shares is estimated as follows:

	<u>Annual Earnings of 3.8¢ Per Share</u>	<u>Annual Earnings of 7.6¢ Per Share</u>
(1) Normal low in dull market, 8 times earnings	\$0.30	\$0.61
(2) " high " strong " , 13 " "	0.49	0.99
(3) Extreme " " " " , 16 " "	0.61	1.22

In the writer's opinion, it is probable that earnings will be at the higher of the above two rates, and thus at current market quotations of 60 - 70¢ per share, the stock is selling near the estimated low point. Purchase of the stock in relatively small blocks is recommended as an attractive market speculation, but the small proven ore reserves and doubtful mine life does not encourage large-scale investment.

- (11) A diamond-drill hole to a vertical depth of approximately 950 feet did not encounter any of the flat diabase sills of the district which are later than the ore.
- (12) The property enjoys excellent management, and the mine-manager, Mr. W. Hamilton is to be complimented for the manner in which the frequently obscure veins have been followed with only a relatively small amount of barren development.

FOREWORD

The writer visited the property on Nov. 9 - 10, 1937, and through the courtesy of Messrs. K.J. Springer, president, and W. Hamilton, mine manager, was permitted to examine all underground workings and mine plans.

PREVIOUS REPORTS

The property has been reported on at fairly regular intervals by Mr. J.A.H. Paterson and the writer. The present memorandum is supplementary to the previous reports.

UNDERGROUND DEVELOPMENT

Since the writer's previous report of Dec. 4, 1936, the shaft has been deepened, and two new levels established at depths of 425 and 525 feet. Numbers 1 and 2 oreshoots have been completely developed on the new levels. Two important new vein systems (#3 and #4) have been developed on the 225-foot level, and their downward continuation proven to the 325-foot horizon. The developments are best described by reference to the accompanying plans.

(1) 125-FOOT LEVEL - Please refer to Plan 1.

- (a) No. 1 Oreshoot - Drifting to the west has extended the shoot 25 feet, and it now has a total length of 285 feet averaging 0.71 ounces across 18 inches, delimited at both ends.
- (b) No. 2 Vein - No new development.
- (c) General - The shaft crosscut has been extended 140 feet south of #2 vein and a raise put through to surface.

(2) 225-FOOT LEVEL - Please refer to Plan 2.

- (a) No. 1 Oreshoot - No new development.
- (b) No. 2 Vein - No new development.
- (c) No. 3 and 4 Veins - In the writer's report of Dec. 4, 1936, reference was made to a favourable area, east of #1 oreshoot indicated by drilling. It was decided to explore this area from the

225-foot level, and approximately 370 feet east of #1 oreshoot, the crosscut intersected a north-south trending quartz vein (#3). Drifting on the vein developed a shoot of marginal ore 88 feet long averaging 0.49 ounces across 15.2 inches.

Drifting north on #3 vein, an east-west trending quartz vein (#4) was encountered 40 feet north of the above shoot, and drifting on this vein has developed some very important ore shoots.

In a drift length of approximately 735 feet, the following shoots have been developed:

(1)	60	feet	averaging	0.347	ounces	across	23	inches
(2)	20	"	"	0.955	"	"	14	"
(3)	35	"	"	0.854	"	"	25.4	"
(4)	100	"	"	1.12	"	"	16	"
(5)	130	"	"	0.541	"	"	18	"
(6)	60	"	"	1.074	"	"	16.3	"

To some extent #4 vein combines the characteristics of #1 and #2 veins; the western portion is greatly contorted and the eastern section is relatively straight. Fortunately, most of the good ore is in the straight portion of the vein. In the wide sections, the quartz vein frequently splits to include mineralized schist, and this schist carries good values in contrast to the barren schist associated with #1 and #2 veins. As the schist is mineralized, it is possible to distinguish it from the waste rock but it will require greater care in sorting on the picking belt.

Both the east and west drift faces contain narrow quartz stringers but they do not carry appreciable values. However, the quartz in the east face looks promising and at a later date, this drift will be extended.

Branch veins are numerous, and several have been followed for a few rounds but do not make ore. Near the east end of the drift, there is a vein branching to the north which actually may be the main vein stringer.

(3) 325-FOOT LEVEL - Please refer to Plan 3.

(a) No. 1 Oreshoot - No new development.

(b) No. 2 Vein - Further drifting to the southwest has developed two shoots with lengths of 140 feet and 35 feet. The former is definitely sub-ore and in the latter, if one high erratic of six ounces is reduced, the shoot is below ore grade.

(c) No. 4 Vein - As shown on the level plan, the vein has been intersected in the crosscut and drifted on for a short distance. At the crosscut, the vein is low grade but it is very rich both to the east and west. At the time of examination, the vein in the east face was extremely rich with abundant visible gold, and would undoubtedly assay several ounces. Referring to Plans 2 and 3, it will be noted that the drift is about vertically below the west end of the favourable zone on the 225-foot level, and judging by results to date there is a reasonable expectation that development on the 325-foot level will be as good or possibly better than on the level above.

(4) 425-FOOT LEVEL - Please refer to Plan 4.

(a) No. 1 Oreshoot - At the time of the previous examination, this shoot appeared to be pinching out on the 325-foot level but it opened up again on the 425-foot level where it has a greater area than on any upper level with the exception of the first. The shoot is 275 feet long with an average grade of 1.06 ounces across 15.7 inches.

(b) No. 2 Vein - The following shoots have been developed in this vein:

(1)	145	feet	averaging	0.985	ounces	across	13.3	inches.
(2)	25	"	"	1.78	"	"	12	"
(3)	105	"	"	0.632	"	"	7.7	"
(4)	255	"	"	0.498	"	"	12.4	"

The first three shoots are practically continuous except where they are displaced by the fault. (See Plan 6) The third shoot is marginal

to sub-ore but probably will be mined. The fourth shoot is also marginal to sub-ore and is the downward continuation of the marginal material on the 325-foot level. It is possible that some ore may be developed in this shoot but it is not assured.

- (c) No. 3-4 Vein Zone - An east drift is being driven to intersect this zone and the face is approximately 300 feet east of the shaft crosscut. The objective should be reached in approximately another 100 feet, depending upon the rake.

(5) 525-FOOT LEVEL - Please refer to Plan 5.

- (a) No. 1 Oreshoot - The shoot continues strong on this level and has a length of 290 feet with an average grade of 0.828 ounces across 14.2 inches.

- (b) No. 2 Vein - The following shoots have been developed in this vein:

- | | | | | | | | | |
|-----|-----|------|-----------|------|--------|--------|------|---------|
| (1) | 225 | feet | averaging | 1.12 | ounces | across | 10.6 | inches. |
| (2) | 55 | " | " | 1.07 | " | " | 10.2 | " |
| (3) | 25 | " | " | 1.90 | " | " | 13 | " |

Referring to Plan 6, it will be noted that except for a section at the fault, this ore is practically continuous. The west drift has not been driven far enough to intersect the downward extension of the marginal to sub-ore shoot indicated on the third and fourth levels but the drift is being extended.

- (c) No. 3-4 Vein Zone - The east drift to intersect this zone has been driven 250 feet east of the shaft and is close to the projected downward extension of the vein. The drift was turned south to follow a quartz stringer but encountered a fault with a large water flow and is now being grouted.
- (d) General - Approximately 300 feet north of #2 vein, a diamond-drill hole (#504) intersected seven feet of mineralized schist and quartz stringers assaying slightly over \$3.00. Mr. Hamilton states

that the vein material looked very promising and several additional holes will be drilled to intersect this vein at other points along the strike.

(6) SUMMARY OF ORE DEVELOPMENT IN #1 AND 2 VEINS - Please refer to Plan 6.

The following tables illustrate relative development results for #1 and 2 veins from surface to the 525-foot level. It should be noted that in #2 vein, there is a low-grade shoot west of the ore that appears to be improving with depth and might make ore at some lower horizon.

#1 Shoot

	<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Tons Per Vert. Foot</u>	<u>Grade</u>	<u>Tons X Grade</u>
Surface	226'	15.2"	287.02	22.96	1.04 oz.	23.88
125' Level	285	18	427.50	34.20	0.71 "	24.28
225' "	205	17.1	292.13	23.37	2.52 "	58.89
325' "	105	24.5	214.38	17.15	0.774 "	13.27
425' "	275	15.7	359.79	28.78	1.06 "	30.51
525' "	290	14.2	343.17	<u>27.45</u>	0.828 "	<u>22.73</u>
				153.91		173.56

Average tons per vertical foot = 25.65
 " grade = 1.13 ounces
 " ounces per vertical foot = 29

#2 Vein

	<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Tons Per Inclined Foot</u>	<u>Grade</u>	<u>Tons X Grade</u>
Surface	210'	10.9"	190.75	15.26	0.85 oz.	12.97
125' Level	128	9.1	97.07	7.77	0.864 "	6.71
225' "	180	8.27	124.05	9.92	1.03 "	10.22
325' "	130	9.5	102.92	8.23	0.93 "	7.65)
	90	10.8	81.00	6.48	0.915 "	5.93)
425' "	130	8.5	92.08	7.37	0.95 "	7.00)
	145	13.3	160.71	12.86	0.985 "	12.67)
525' "	80	11.1	73.83	5.91	1.37 "	8.10)
	225	10.6	198.75	<u>15.90</u>	1.12 "	<u>17.81)</u>
				89.70		89.06

Average tons per inclined foot	=	14.95
" " " vertical "	=	17.19 (15% allowance for vein dip)
" grade	=	0.993 ounces
" ounces per vertical foot	=	17

MINING AND DILUTION

Briefly, the mining practice is a modified resuing method, similar to the system employed at the neighbouring Northern Empire mine, in which the vein is removed first, and the waste is blasted later. The main problem involved is to reduce dilution to a minimum. Naturally, the problem is more serious in the highly contorted #1 oreshoot than in the relatively straight #2 vein. In the early stages of production, Mr. Hamilton estimated that dilution on #1 oreshoot was as high as 125%, and 75% on #2 vein. It is difficult to determine the exact dilution as no attempt is made to sample each lift taken down in the stope. However, judging by drift averages, Mr. Hamilton estimates that dilution in ore from the stopes is approximately 75% for #1 oreshoot and 25% for #2 vein. Sorting on the picking belt improves the final dilution in the mill head to an overall average of approximately 50%. This rough estimate is confirmed by the fact that the management considers it necessary to have a vein grade of 0.9 ounces to yield a mill head of 0.6 ounces. The dilution could be lowered by sorting more waste on the picking belt but for various reasons, this is not considered expedient at the present time. This waste would be mainly from #1 oreshoot dilution as judging by the stopes on #2 vein, dilution in this vein must be from very finely broken material.

Approximately 14 machine shifts are employed in stoping, the machines breaking $4\frac{1}{2}$ - 5 tons per machine shift.

CURRENT PRODUCTION

According to the Northern Miner (Nov. 11, 1937), from the beginning of production in January to date, the mill recovery has been as follows:

	<u>Tons Milled</u>	<u>Tons Per Day</u>	<u>Recovery</u>	<u>Average Per Ton</u>
January	1,119	-	\$ 8,864	\$ 7.92
February	1,696	60	33,486	19.74
March	1,896	61	36,704	19.35
April	1,795	60	31,683	18.21
May	1,946	63	37,868	19.45
June	1,954	65	36,771	18.81
July	2,101	68	43,253	20.58
August	2,033	66	42,504	20.90
September	2,164	72	35,120	16.25
October	<u>2,275</u>	73	<u>45,500</u>	20.00
	18,979		351,753	

Excluding the month of January, average recovery per ton has been \$19.20. Recovery is approximately 95-96%, thus heads have averaged about \$20.

In recent months, the company policy has been to maintain a production of approximately \$40,000. per month. Due to the mining method, it is difficult to control grade from stopes over short periods, and control has been exercised mainly by the amount of waste sorted at the picking belt.

PROBABLE MILL INCREASE

If results continue favourable in development of the #3-4 vein system, it is planned to increase the mill tonnage. The mill is capable of treating 90 to 100 tons per day without further capital expenditure except possibly to increase slightly the filter capacity. Mr. Hamilton states that the objective would be to obtain a production of approximately \$55,000. to \$60,000. per month. If heads were maintained at their present value of approximately 0.6 ounces, this would require milling 90 to 100 tons per day. However, it is quite possible the same production could be obtained with a considerably smaller tonnage by sorting more waste and raising the mill head. This point will be determined mainly by the efficiency of the mill on the higher tonnage rate.

ORE RESERVES

In estimating ore reserves on a tonnage basis, dilution is a very important factor. The company bases the production policy on ounces of gold,

that is, they endeavour to maintain output for the month at a certain number of ounces, previously agreed upon. As previously stated, due to the mining method, it is difficult to control the grade of ore from underground, and the procedure followed is to maintain the rate of production by sorting on the picking belt. For example, if production has been high during the early part of the month, more waste rock is allowed to go through the mill for the remainder of the month and vice versa. Consequently, heads vary considerably. Under these conditions it is difficult to estimate reserves on the basis of a certain number of tons with a given grade. In the writer's opinion, a more reasonable estimate of reserves would be based on the total gold content in ounces without regard to dilution and this procedure is followed below.

(1) NUMBER 1 ORESHOOT - Please refer to Plan 6.

The vein dip is approximately vertical but the shoot rakes west at 50°.

(a) Surface to 125' Level

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>	<u>Grade X Area</u>	
226'	15.2"	287.02	1.04 oz.	298.50	
285	18	<u>427.50</u>	0.71 "	<u>303.53</u>	Av. Grade = 0.84 oz.
		714.52		602.03	
Unbroken reserves = $\frac{714.52 \times 75}{2 \times 12.5}$ = 2144 tons of 0.84 oz. grade					
= <u>1801 ozs.</u>					

(b) 125' - 225' Levels

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>	<u>Grade X Area</u>	
285'	18"	427.50	0.71 oz.	303.53	
205	17.1	<u>292.13</u>	2.52 "	<u>736.17</u>	Av. Grade = 1.44 oz.
		719.63		1039.70	
Unbroken reserves = $\frac{719.63 \times 80}{2 \times 12.5}$ = 2303 tons of 1.44 oz. grade					
= <u>3316 ozs.</u>					

(c) 225' - 325' Levels

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>
205'	17.1"	292.13	2.52 oz.

$$\text{Unbroken reserves} = \frac{292.13 \times 12}{12.5} = 280 \text{ tons of 2.52 oz. grade} \\ = \underline{706 \text{ ozs.}}$$

(d) 325' - 425' Levels

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>	<u>Grade X Area</u>
105'	24.5"	214.38	0.774 oz.	165.93
275	15.7	<u>359.79</u>	1.06 "	<u>381.38</u>
		574.17		547.31

$$\text{Unbroken reserves} = \frac{574.17 \times 63}{2 \times 12.5} = 1447 \text{ tons of 0.95 oz. grade} \\ = \underline{1375 \text{ ozs.}}$$

(e) 425' - 525' Levels

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>	<u>Grade X Area</u>
275'	15.7"	359.79	1.06 oz.	381.38
290	14.2	<u>343.17</u>	0.828 "	<u>284.14</u>
		702.96		665.52

$$\text{Unbroken reserves} = \frac{702.96 \times 60}{2 \times 12.5} = 1687 \text{ tons of 0.95 oz. grade} \\ = \underline{1603 \text{ ounces}}$$

(f) Below 525' Level - It is reasonable to assume that the shoot will extend at least 50 feet below the level, and this is included with positive ore reserves.

$$\frac{343.17 \times 50}{12.5} = 1373 \text{ tons of 0.828 oz. grade} \\ = \underline{1137 \text{ ounces}}$$

(2) NUMBER 2 VEIN - In this vein, the ore has a westerly rake similar to #1 oreshoot, and the vein has an average dip of approximately to the north. The dip increases the ore height between levels by approximately 15%, and this factor is allowed for in the following calculations:

(a) Surface - 125' Level

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>	<u>Grade X Area</u>
210'	10.9"	190.75	0.85 oz.	162.14
128	9.1	<u>97.07</u>	0.864 "	<u>83.87</u>
		287.82		246.01

$$\text{Unbroken reserves} = \frac{287.82 \times 72}{2 \times 12.5} = 829 \text{ tons of } 0.85 \text{ oz. grade}$$

$$= \underline{705 \text{ ounces}}$$

(b) 125' - 225' Level

$$\text{Unbroken reserves} = \frac{97.07 \times 29}{12.5} = 225 \text{ tons of } 0.864 \text{ oz. grade}$$

$$= \underline{194 \text{ ounces}}$$

(c) 225' - 325' Levels

(1) West of Fault

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>	<u>Grade X Area</u>
180'	8.27"	124.05	1.03 oz.	127.77
130'	9.5	<u>102.92</u>	0.93 "	<u>95.72</u>
		226.97		223.49

$$\text{Unbroken reserves} = \frac{226.97 \times 92}{2 \times 12.5} = 835 \text{ tons of } 0.98 \text{ oz. grade}$$

$$= \underline{818 \text{ ounces}}$$

(2) East of Fault

Assume triangular block to have grade and width same as base:

$$\text{Unbroken reserves} = \frac{75 \times 10.8 \times 92}{12 \times 2 \times 12.5} = 248 \text{ tons of } 0.915 \text{ oz. grade}$$

$$= \underline{227 \text{ ounces}}$$

(d) 325' - 425' Levels

(1) West of Fault

<u>Length</u>	<u>Width</u>	<u>Sq.Ft. Area</u>	<u>Grade</u>	<u>Grade X Area</u>
130'	9.5"	102.92	0.93 oz.	95.72
130	8.5	<u>92.08</u>	0.95	<u>87.48</u>
		195.00		183.20

Av. Grade = 0.94 oz

$$\begin{aligned}\text{Unbroken reserves} &= \frac{195 \times 115}{2 \times 12.5} = 897 \text{ tons of } 0.94 \text{ oz. grade} \\ &= \underline{843 \text{ ounces}}\end{aligned}$$

(2) East of Fault

$$\begin{aligned}\text{Unbroken reserves} &= \frac{90 \times 10.8 \times 5}{12 \times 12.5} = 32 \text{ tons of } 0.915 \text{ oz. grade} \\ &= \underline{29 \text{ ounces}}\end{aligned}$$

(e) 425' - 525' Levels

(1) West of Fault

<u>Length</u>	<u>Width</u>	<u>Area</u> <u>Sq.Ft.</u>	<u>Grade</u>	<u>Grade</u> <u>X Area</u>	
105'	7.7"	67.38	0.632 oz.	42.58	
80	11.1	<u>73.83</u>	1.37 "	<u>101.15</u>	Av. Grade = 1.02 oz.
		141.21		143.73	

$$\begin{aligned}\text{Unbroken reserves} &= \frac{141.21 \times 92}{2 \times 12.5} = 520 \text{ tons of } 1.02 \text{ oz. grade} \\ &= \underline{530 \text{ ounces}}\end{aligned}$$

(2) East of Fault

<u>Length</u>	<u>Width</u>	<u>Area</u> <u>Sq.Ft.</u>	<u>Grade</u>	<u>Grade</u> <u>X Area</u>	
145'	13.3"	160.71	0.985 oz.	158.30	
225	10.6	<u>198.75</u>	1.12 "	<u>222.60</u>	Av. Grade = 1.06 oz.
		359.46		380.90	

$$\begin{aligned}\text{Unbroken reserves} &= \frac{359.46 \times 115}{2 \times 12.5} = 1654 \text{ tons of } 1.06 \text{ oz. grade} \\ &= \underline{1753 \text{ ounces}}\end{aligned}$$

(f) Below 525-Foot Level - It is reasonable to assume that the two shoots will extend at least 50 feet vertically below the level, and this is included with positive ore reserves.

$$\begin{aligned}\text{West of fault} &- \frac{73.83 \times 57.5}{12.5} = 340 \text{ tons of } 1.37 \text{ oz. grade} \\ &= \underline{466 \text{ ounces}}\end{aligned}$$

$$\begin{aligned}\text{East of fault} &- \frac{198.75 \times 57.5}{12.5} = 914 \text{ tons of } 1.12 \text{ oz. grade} \\ &= \underline{1024 \text{ ounces}}\end{aligned}$$

- (3) NUMBER 3-4 VEINS - No raising has been done on the shoots in this vein system, and the indicated ore cannot be included in positive reserve. However, on the 325-foot level the drift is in ore, and the vein system was intersected in drill holes from surface at depths up to 100 feet. In the writer's opinion, there is a reasonable expectation that the shoots will prove to have a vertical continuity comparable with numbers 1 and 2. As developed on the 225-foot level, the indicated tonnage per vertical foot in the several shoots is as follows:

<u>Length</u>	<u>Width</u>	<u>Area Sq.Ft.</u>	<u>Tons Per Vert. Foot</u>	<u>Grade</u>	<u>Tons X Grade</u>
60'	23"	115.00	9.20	0.347 oz.	3.19
20	14	23.33	1.87	0.955 "	1.79
35	25.4	74.08	5.93	0.854 "	5.06
100	16	133.33	10.67	1.12 "	11.95
130	18	195.00	15.60	0.541 "	8.44
60	16.3	81.50	6.52	1.070 "	6.98
88	15.2	<u>111.47</u>	<u>8.92</u>	0.49 "	<u>4.37</u>
		733.71	58.71		41.78

Tons per vertical foot = 58.71
Average grade = 0.71 ounces
Ounces per vertical foot = 42

(4) SUMMARY

- (a) Proved Ore Reserves - Included in this class is the ore remaining in #1 and #2 veins from surface to a depth of 575 feet.

<u>Vein</u>	<u>Location</u>	<u>Tons</u>	<u>Grade</u>	<u>Ounces</u>
1	Surface - 125'	2144	0.84 oz.	1801
	125' - 225'	2303	1.44	3316
	225 - 325	280	2.52	706
	325 - 425	1447	0.95	1375
	425 - 525	1687	0.95	1603
	525 - 575	<u>1373</u>	0.82	<u>1137</u>
		9234		9938

<u>Vein</u>	<u>Location</u>	<u>Tons</u>	<u>Grade</u>	<u>Ounces</u>
2	Surface - 125'	829	0.85 oz.	705
	125 - 225	225	0.864 "	194
	225 - 325	835	0.98 "	818
		248	0.915 "	227
	325 - 425	897	0.94 "	843
		32	0.915 "	29
	425 - 525	520	1.02 "	530
		1654	1.06 "	1753
	525 - 575	340	1.37 "	466
		<u>914</u>	1.12 "	<u>1024</u>
		6494		6589
TOTALS -		15,728		16,527

- (b) Probable Ore - It is highly probable that a very considerable amount of ore will be developed in the 3-4 vein system.

However, with the present limited development all that may be said is that there are indications of possibly 42 ounces per vertical foot, which is nearly equivalent to the combined values in #1 and 2 veins of 46 ounces per vertical foot.

It is probable also, that #1 and #2 oreshoots will extend below a depth of 575 feet but due to the very short length of the shoots, it is extremely hazardous to predict their ultimate depth.

- (c) Possible Ore - Mention has been made of a low grade shoot in #2 vein west of the oreshoots. On the 325-foot level, the shoot is definitely below ore grade but on the 425-foot level it shows considerable improvement. At greater depth, it is possible that the shoot might make ore.

On the 525-foot level, the drill intersection north of #2 vein is considered important. If the zone developed it would offer possibilities of a large-scale operation but the present intersection is very low grade and does not give definite promise of making ore.

MINE LIFE

Proved ore reserves in #1 and 2 veins to a depth of 575 feet total 15,728 tons containing 16,527 ounces or, without allowance for dilution, an average grade of 1.05 ounces per ton. Allowing 50% dilution, the reserves amount to 23,592 tons with an average grade of 0.70 ounces. As the management plans on maintaining a mill head of about 0.6 ounces, it is probably best to calculate mine life on this basis. On this head, tailings are about 85¢, or say 96% extraction. The mine life of the proved ore reserves is then as follows:

$$(a) \text{ Present Production of } \$45,000 \text{ per month} = \frac{0.96 \times 16,527 \times 35}{45,000 \times 12} = 1.03 \text{ years} \\ \text{say 1 year}$$

$$(b) \text{ Proposed Production of } \$60,000 \text{ per month} = \frac{0.96 \times 16,527 \times 35}{60,000 \times 12} = 0.77 \text{ years.}$$

#1 and 2 veins contain 46 ounces per vertical foot of depth. If the #3-4 vein system develops as indicated on the second level, it will contain approximately 42 ounces per vertical foot. The following table shows the rate of extraction required to maintain production at \$45,000 and \$60,000 per month.

<u>Rate of Production</u>	<u>Rate of Extraction on Basis of Gold Contained in #1-2 Veins</u>	<u>Rate of Extraction on Basis of Gold Indicated in #3-4 Veins</u>	<u>Rate of Extraction on Basis of Gold in #1-2 and #3-4 Veins</u>
\$45,000 per month	346' per year	383' per year	183' per year
60,000 " "	461 " "	510 " "	244 " "

It is generally assumed that approximately 180 feet per year is an economical rate of extraction. On the basis of ore contained in #1-2 veins, it is obvious that the present rate of production is too high. If the 3-4 vein system develops as indicated, the present rate would be justified. However, there is little doubt that if developments on the 3-4 veins are favourable, production will be increased to approximately \$60,000 per month.

Due to the character of the deposits and the many uncertain factors, it is difficult to estimate mine life. The life of proved reserves is shown above. On the basis of \$60,000 per month production, there would be slightly over one year's ore in #3-4 vein to a depth of 575 feet, providing development continued as indicated on the 225-foot level. In the early production stages, a common method of estimating mine life of a property is to assume that it will be $2\frac{1}{2}$ to 3 times the life of proved ore reserves, which, in this case would be 1.9 to 2.3 years. Due to the fact that the prospects of developing ore in the 3-4 vein systems are particularly favourable, the writer would extend the life beyond the above figure, say to 3 years. This would require mining the indicated oreshoots to a depth of approximately 1000 feet, and as it is probable that one or more of the relatively short oreshoots will be bottomed before that depth, in the writer's opinion, an allowance of a 3-year life is ample.

COSTS

During the course of an examination last July of the neighbouring Sand River property, Mr. Walter Segsworth, consulting engineer for Leitch, discussed Leitch costs with the writer at some length. The month of June was considered to be a typical month, during which costs at the property were as follows:

	Cost Per <u>Ton</u>
Development and Mining	\$10.12
Milling	<u>2.56</u>
Total cost	\$12.38

The above costs were distributed as follows:

General Mining Charges

	<u>Per Ton</u>
Surface Exploration	0.20
U. G. Diamond Drilling	0.12
Crosscutting & Drifting	1.98
Raising	0.23
Stoping	1.93
Hoisting	0.37
Landing & Dumping	0.39
Tramming Underground	0.27
Mine Drainage	0.16
Drill Repairs	0.35
Steel Sharpening	0.35
Mine Lighting	0.04
Handling Explosives	0.01
Superintendence	0.26
Compressed Air (For Drills)	0.23
General Mining Charges	0.45
Tracklaying & Pipefitting	0.33
Timbering	0.56
Grouting	0.05
Mine Sampling	0.03
" Ventilation	0.05
Dump Ore	<u>0.04</u>
	8.40
Proportion General Charges	<u>1.72</u>
	10.12

General Milling Charges

	<u>Per Ton</u>
Ore Sorting	0.001
Crushing & Conveying	0.079
Grinding & Classifying	0.675
Amalgamation	0.095
Solutions	0.291
Precipitation	0.070
Refining	0.027
Neutralizing	0.068
Cyanide	0.112
Power	0.268
Lighting	0.011
Oils & Grease	0.048
Supervision	0.115
General	0.016
Bullion Selling Expense	<u>0.251</u>
	2.127
Proportion General Charges	<u>0.429</u>
	2.556

General Charges

	<u>Per Ton</u>
Management	0.194
Office & Storekeeping	0.230
Workmen's Compensation	0.299
Assaying	0.246
Water Supply	0.061
Engineering	0.124
Watchman & Fire Protection	0.108
Telephone, Telegraph & Postage	0.061
Insurance	0.181
Shop Charges	0.046
Cookery Operation	0.099
Operating Dwellings	0.002
Stable Operating	0.063
General Plant Main	0.213
" Surface Exp.	0.088
" Expense	0.071
Medical	0.050
Camp Maintenance	0.137
Travelling	<u>0.071</u>
	2,344 X

X Discrepancy of 20¢

In June, considerable ore was being obtained from the ore dump, and Mr. Hamilton states that operating costs are now approximately \$13.00 per ton.

The above does not include head-office expenses, Ontario taxes, depreciation and pre-development write-offs. As the company has not issued a financial statement since the property came into production, it is extremely difficult to estimate these figures. For the purpose of this analysis, it is assumed that on the present tonnage, these costs would be as follows:

Head-office	-	\$0.50	per ton	
Depreciation	-	1.00	" "	
Pre-development	-	1.00	" "	
Ontario taxes	-	<u>0.20</u>	" "	
		\$2.70	" "	, say \$3.00, giving a total

overall cost of \$16.00 per ton.

If the milling rate is increased to 90-95 tons, the costs per ton will naturally decline. Assuming that the added tonnage could be extracted and treated at no additional cost, the reduction in costs per ton would be approximately 22.5%. Referring to the above costs it will be noted that for several items the cost reduction should approach this figure, particularly milling, general charges, head-office, and depreciation. On the other hand, the reduction in direct costs of stoping, development, etc. will be very much below 22.5%. Pre-development write-off will probably remain fixed at \$1.00 per ton and taxes will probably increase slightly. Thus the proportion of costs in which considerable reduction may be expected is approximately 38% as against 54% where the change will be relatively low. Considering all factors, the writer would estimate that with the increased tonnage, the overall reduction in costs might amount to \$2.00 - \$2.50 per ton, say \$2.00, giving an overall cost on the new tonnage basis of \$14.00 per ton. It is emphasized that there are a great many uncertain factors in this estimate which should be given due consideration in later estimates of possible profits. It should also be pointed out that no estimate is made at this

time for Dominion taxes which will become effective in three years time.

ESTIMATED PROFITS

On the basis of costs as given above, profit per ton is estimated as follows:

	Monthly Production <u>\$45,000</u>	Monthly Production <u>\$60,000</u>
Recovery Per Ton	\$20.15	\$20.15
Operating Costs (Including Head-office & Taxes)	<u>14.00</u>	<u>12.00</u>
Operating Profit Per Ton	6.15	8.15
Write-offs	<u>2.00</u>	<u>2.00</u>
Net Profit Per Ton	\$ 4.15	\$ 6.15

According to the Financial Post Corporation Service, the issued capital amounts to 2,850,005 shares. Allowing 98% running time annual profits per share would be as follows:

	Monthly Production <u>\$45,000</u>	Monthly Production <u>\$60,000</u>
Operating Profit Per Share	5.7¢	10¢
Net Profit Per Share after Write-offs	3.8¢	7.6¢

SHARE VALUATION

Assuming capital invested is to earn 8% and a redemption fund accumulates at 4%, on the basis of a 3-year mine life, the present value of the company's shares is as follows:

<u>Production Rate</u>	<u>Annual Earnings Per Share</u>	<u>Present Value Per Share</u>
\$45,000 Monthly	3.8¢	9.5¢
\$60,000 "	7.6¢	19¢

On the basis of the above earnings, it is estimated that market valuation of the company's shares would be approximately as follows:

		Annual Earnings 3.8¢ <u>Per Share</u>	Annual Earnings 7.6¢ <u>Per Share</u>
(1)	Normal low in dull market, 8 times earnings	\$0.30	\$0.61
(2)	" high " strong " , 13 " "	0.49	0.99
(3)	Extreme " " " , 16 " "	0.61	1.22

In the writer's opinion, it is probable that earnings will be at the higher of the above two rates, and thus at current market quotations of 60 - 70¢ per share, the stock is selling near the estimated low point. Purchase of the stock in comparatively small blocks by an individual as a market speculation is recommended. However, purchase of a large block by a company is not recommended as the ore reserve position of the company is not strong, and it would probably be difficult to dispose of large amounts of stock on the market.

CURRENT DEVELOPMENT

At the time of examination, development was as follows:

	<u>Machine Shifts</u>
125-foot level - Crosscutting to #4 vein	1
325- " " - Drifting on #4 "	1
425- " " - Crosscutting to #4 "	1
525- " " - Drifting on #2 "	1
- Cutting sump	2

As soon as the grouting is completed on the 525-foot level crosscut to #4 vein, one machine will be transferred from the sump to this heading. In addition to the above, one machine is in continuous operation on raising. Mr. Hamilton estimates that it is necessary to keep seven machine shifts on lateral development work to maintain the ore reserves.

Mr. Hamilton wishes to sink two new levels early in 1938 but the head-office administration may postpone this work for about six months. The new levels

will be at 125-foot intervals. The fifth-level station is not properly equipped to sink without tying up the level or making extensive alterations. Mr. Hamilton is contemplating sinking a small winze and then raising the main shaft.

The company owns a diamond drill, and the machine is in almost continuous operation. At present, a hole is being drilled from the 525-foot level to give another intersection on the indicated low-grade ore material about 300 feet north of #2 vein.

F. R. Burton

Toronto, Ont.,
Nov. 29, 1937.



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MEMORANDUM

On

LEITCH GOLD MINES LTD.

BEARDMORE, ONT.

By

F. R. BURTON

Toronto, Ont.,
March 2, 1938.



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MAPS AND ILLUSTRATIONS

PLAN 1. Longitudinal Section Illustrating Ore Shoots

PLAN 2. Plan Illustrating Development - 325' Level.

MEMORANDUM

On

LEITCH GOLD MINES LTD., BEARDMORE, ONT.

CONCLUSIONS

- (1) The new #3-4 vein system has been located on all five levels, and results from the limited amount of development to date are generally good. On the 225-foot level, total indicated gold content for these veins has been increased from 42 ounces to 51 ounces per vertical foot, and on the 325-foot level, 61 ounces per vertical foot are indicated, with a good possibility of increasing the latter figure. On the remaining levels, only a small part of the zone has been explored but developments to date have been satisfactory. Some faulting has been encountered which might have an unfavourable influence on future development of oreshoots but it is too early to forecast its possible effect (See text).
- (2) In the #2 vein on the third and fourth levels, a low-grade shoot was located west of the oreshoots. On the fifth level, this shoot has improved to ore grade, and for a length of 235 feet averages 0.635 ounces across 11.65 inches. The shoot adds approximately 13 ounces per vertical foot to the indicated ore in #2 vein.
- (3) On the 525-foot level, 300 feet north of #2 vein, ore indications were obtained in a diamond-drill hole. Two additional holes have been drilled to intersect the zone along the strike but values have been very low, and the prospects of developing ore do not appear good.
- (4) Production has been increased to \$50,000 per month with mill-heads averaging approximately 0.6 ounces. In the writer's opinion, it is probable that production will be gradually increased to at least \$60,000 per month.

- (5) The shaft is being deepened to 1050 feet, and four new levels will be established at 125-foot intervals. It is expected that the sinking will take four to five months to complete, and during this period, due to limited power, only two machine shifts will be kept on lateral development.
- (6) In the writer's previous report, trading range of the company's shares was estimated as follows:

	Annual Earnings 3.8¢ Per Share	Annual Earning 7.6¢ Per S
(1) Normal low in dull market, 8 times earnings	\$0.30	\$0.61
(2) " high " strong " , 15 " "	0.49	0.99
(3) Extreme " " " " , 16 " "	0.61	1.22

In general, recent development indicates that the mine should be capable of earning 7.6¢ per share annually, or possibly at a considerably higher rate (See text). In view of the intense market interest in the neighbouring Little Long Lac district, the writer would recommend holding the stock for higher price than present quotations of approximately \$1.00 per share.

FOREWORD

The writer visited the property on Feb. 14 - 15, 1938, and through the courtesy of Mr. W. S. Hamilton, mine manager, permission was granted to examine all underground workings and mine plans.

PREVIOUS REPORTS

The property has been examined at fairly regular intervals by Mr. J.A.H. Paterson and the writer. The purpose of the present examination was to check over new development since the writer's previous report of Nov. 29, 1937 and the reader is referred to the latter report for details of previous development.

RECENT UNDERGROUND DEVELOPMENT

Since the previous examination, the #3-4 vein system has been located on all five levels, and on the 525-foot level, a new oreshoot has been developed in the #2 vein. Development is best described by reference to the attached Plan 1. The oreshoots shown on this plan are as developed to Feb. 1, and in several cases, have been somewhat extended since that date.

(1) 125-FOOT LEVEL - As shown on Plan 1, 160 feet of drifting averages 1.286 ounces across 21.8 inches. Since Feb. 1, the east drift has been extended, and about 50 feet makes ore but averages were not available. In the face, the vein is broken up and does not make ore. The west drift has not been advanced far enough to intersect the possible upward extension of the most westerly shoot obtained on the second, third, and fifth levels. It is also probable that additional oreshoots will be developed in further drifting to the east. It is interesting to note that the 160-foot shoot contains approximately 30 ounces per vertical foot without any allowance for the 50 feet of ore at the east end.

(2) 225-FOOT LEVEL - Since the previous examination, two new shoots have been developed to the east on #4 vein, averaging as follows:

(a) 58' averaging 0.163 ounces across 48.6"

(b) 40' " 0.403 " " 55.4"

The first shoot is not ore but as it is located between two oreshoots, it will probably be mined, especially as there is always the possibility of improvement in stoping. The two shoots contain approximately nine ounces per vertical foot or a total of 51 ounces in the #3-4 vein system on this level. The east drift has been extended another 30 feet beyond the last oreshoot but does not make ore. To the west, the vein tails out and is apparently terminated.

(3) 325-FOOT LEVEL - As shown on Plan 1, three oreshoots have been developed in the #4 vein with averages as follows:

- (a) 65' averaging 1.34 oz. across 25.5"
- (b) 210' " 1.075 oz. " 20.8"
- (c) 90' " 0.843 oz. " 13.7"

In addition, the following two shoots have been developed in #3 vein:

- (a) 20' averaging 0.713 oz. across 23.2"
- (b) 40' " 0.658 oz. " 32.6"

The five oreshoots contain an indicated total gold content of approximately 61 ounces per vertical foot.

On the #4 vein, the east drift encountered a fault approximately parallel to the vein and in this section, the vein does not make ore. Prior to the date of examination, the vein had been fairly strong in several faces but appeared to be fading out again. It is difficult to distinguish the fault from the vein fracture but the fault appears to enter the drift from the south side, and going east, to gradually cross the vein fracture to the north. It is possible that it is the same fault that crosses #2 vein to the east (See Plan 2).

The mine manager states that there was a small fault crossing 301E drift, as shown on Plan 2, and that there was evidence of faulting crossing 305 drift. For the present, it is difficult to estimate the possible effects of this faulting on the #4 vein oreshoots.

As stated above, two oreshoots have been developed in #3 vein. The vein pinched for a few rounds but opened up again, and at the time of examination the vein was sub-ore but was yielding encouraging assays. It has turned east, approximately parallel to #4 vein, and it is quite possible that further drifting may develop additional oreshoots.

(4) 425-FOOT LEVEL - Only a limited amount of drifting has been done on the #4 vein. A length of 40 feet averaged 1.61 ounces across 17.4 inches. The vein then entered a "silicified" zone containing a large amount

of carbonate and did not make ore. After passing through this section, the vein split into two branches from 4 to 7 feet apart and both make ore. The manager is undecided as to the manner in which the veins will be mined and for the present, they have combined the average values in both veins to give a section 50 feet long averaging 0.619 ounces across 38.9 inches. Since Feb. 1, several rounds were taken out which were ore grade but the veins were converging and at the time of examination, the veins in the face were badly broken up and did not make ore.

Drifting west, a heavy water flow was encountered, and it was necessary to cement. There appears to be little doubt that the high-grade west oreshoot on the 325' and 525' levels will continue through the 425-foot level.

No drifting has been done on #3 vein.

(5) 525-FOOT LEVEL - In the writer's previous report of Nov. 29, 1937, mention was made of a low-grade shoot encountered in the #2 vein on the third and fourth levels, west of the oreshoots. It is pleasing to note that on the fifth level, the shoot has improved considerably, and a length of 235 feet averages 0.635 ounces across 11.65 inches. Including development costs this ore would be marginal but with the development work done, it can be mined at a good profit.

At the time of the previous examination, the east drift had intersected a quartz stringer which apparently represented the downward continuation of the #4 vein. Drifting east on this vein, a fault was encountered with a heavy flow of water and necessitated grouting. For various reasons, the management decided to go around this section and intersect the vein further to the east. At the new point of vein intersection, the drift was driven both east and west, and, on Feb. 1, 50 feet averaged 0.944 ounces across 15.8 inches. Since that date, the east face has entered the "silicified" zone corresponding to the

condition on the level above and does not make ore. The west drift is being driven back to the fault and is making very high-grade ore. The fault fracture appears to be fairly dry.

Drifting west from the first point at which the #4 vein was intersected, the drift encountered the apparent downward continuation of the high-grade shoot obtained on the 325-foot level. The approximate location is shown on Plan 1. The shoot has not been averaged but from inspection of individual assays, it will no doubt be as good or better than the shoot on the 325-foot level.

(6) GENERAL - In the previous report, mention was made of a diamond-drill hole intersection obtained at the 525-foot horizon and approximately 300 feet north of #2 vein. Values were low but the vein material looked promising. Since the previous examination, the vein has been intersected at two other points along the strike but values have been very low. A fourth hole is being drilled but the prospects of finding commercial ore are definitely less promising than on the previous visit.

ORE RESERVES

In the previous report, ore reserves were estimated as closely as development results at that date permitted, and there has not been sufficient new development to warrant revising this estimate. However, there are certain features that are worthy of note.

At the time of the previous examination, on the 225-foot level, #3-4 vein development indicated a total gold content for this vein system of 42 ounces per vertical foot. As shown above, recent development has increased this figure to 51 ounces. On the 325-foot level, development to date of the #3-4 veins indicates a gold content of 61 ounces per vertical foot, with a good possibility of increasing this figure. On the remaining levels, the limited

amount of development indicates a reasonable expectation of obtaining results comparable with the above. Also, the average grade and widths of new development are exceptionally good. Another pleasing feature is that on the 525-foot level, the new #2 vein west oreshoot indicates an additional 13 ounces per vertical foot in this vein.

In general, the ore reserve position of the mine appears substantially stronger than on the occasion of the previous examination. However, referring to Plan 1, there is a suggestion that the central shoot of the #4 vein might be shortening with depth, and until the effect of faulting on this vein is determined by further development, the writer would emphasize that the present apparent improvement should be regarded with caution.

PRODUCTION

Current production is at the rate of approximately \$50,000 per month with heads of about 0.6 ounces. For the present, the manager plans to maintain production at about this figure but in the writer's opinion, it is a reasonable expectation that monthly production will be increased in the near future.

CURRENT DEVELOPMENT

At the time of the writer's examination, preparations were being made to sink the shaft another 500 feet to open up four new levels. The level interval will be increased from 100 to 125 feet. The counter-balance has been altered to permit sinking through the counter-balance compartment. The shaft sinking will take from four to five months, and due to limited power, the manager plans to maintain only two machine shifts on lateral development during this period.

SHARE VALUATION

In the previous report, trading range of the company's shares was estimated as follows:

		Annual Earnings 3.8¢ Per Share	Annual Earnings 7.6¢ Per Share
(1)	Normal low in dull market, 8 times earnings	\$0.30	\$0.61
(2)	" high " strong " 13 " "	0.49	0.99
(3)	Extreme " " " 16 " "	0.61	1.22

The higher of the above estimated annual earnings was based on the assumption that #3-4 vein system would continue to develop at the same rate as indicated on the 225-foot level, namely 42 ounces per vertical foot. As discussed above under Ore Reserves, although there are uncertain factors, there is a reasonably good possibility that this figure may be exceeded to a substantial extent. Also, on the 525-foot level, new development has increased the indicated gold content for #2 vein. In general, the ore reserve picture appears considerably improved since the previous report.

Due to shaft sinking, lateral development will be greatly curtailed during the next four or five months and from a stock-market viewpoint, it is unlikely that the property will make favourable news at a rapid rate during this period. However, the general picture is good, and as the present intense market interest in the Little Long Lac district is likely to have a favourable effect on other mines in the general vicinity, the writer would recommend holding the stock for higher prices than present market quotations of approximately \$1.00 per share.

F. R. Burton

FRB/RN

Toronto, Ont.,
March 2, 1938.



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Paper by G. Mackay, Manager, Leitch Gold Mines Ltd.
Delivered at Meeting at Lakehead Branch, C.T.M.A.,
held at the Shoreline Hotel, Port Arthur, May 14, 1962.

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THE LEITCH MINE

Assessment
file

It is probably fitting that I should have prepared this resume of operations at the Leitch Mine at this time since we have just completed 25 years of continuous production. I am not going to recount a lot of figures and statistics or give a lot of technical details but will try to outline the historical highlights and some of the problems peculiar to this particular operation.

The Leitch Mine is the type of small mining enterprise of which there were many and which served Canada's economy so well in the depression years of the 30's. It is the type of operation that would have a tough time getting started today under the load of high costs, taxes, labour Union demands, and requisite facilities, etc. Nevertheless, it has provided employment for some 125 people throughout its life and has been a successful operation as the record indicates.

The Mine is situated about 6 miles from the Hamlet of Beardmore and 3 miles east of Lake Nipigon.

The Leitch Mine

The Record - Financial

Start of Milling 1937 - 25 years

Production	\$24,700,000
Dividends	4,800,000
Wages & Salaries (Local)	9,000,000
Materials, Supplies	4,000,000
Hydro	2,000,000
Outside Exploration	852,000
Taxes	1,775,000
E.G.M.A. 48-54	460,000

Mining

Shafts	1 Mile
Crosscutting & Drifting	18 Miles
Raising	6 Miles
Diamond Drilling (Surface)	75,000 feet
Diamond Drilling (Underground)	111,000 feet
Milled	806,000 Tons
Tons milled per foot of lateral advance	8.5

Delivered at Meeting at Leitchhead Branch, C.T.M.M.
held at the Sheraton Hotel, Port Arthur, May 14, 1960.

-1-

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Diamond Drilling (Surface)	75,000 feet
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Milled	806,000 Tons
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The No. 1 Vein was discovered in 1935 by Jim & Felix Cryderman who ran a picket line east on the ~~strike~~^{stake} of the Sand River Vein. The find was made under a license to prospect on the ground of the ~~Leitch Estate~~ which had been staked early in the century for iron by the late ~~P.A. Leitch~~. An option was taken by the K.J. Springer interests and surface exploration and diamond drilling was carried on throughout 1935. Two narrow, short high grade veins were indicated by the initial work.

A 3-compartment shaft was started late in 1935 and was completed to the 3rd level at 325 feet in May 1936. Power was supplied by a Ruston Hornsby Diesel Engine and hoisting was done by air. Lateral development during the summer revealed small tonnages of high grade ore on the three levels and it was decided to proceed with the construction of a mill. A contract was signed with Ontario Hydro and a 450 KVA substation was erected. A 6 mile branch transmission line was built from the Hydro line serving the Little Long Lac mine in Geraldton. This was financed jointly by Sand River and Leitch and was taken over later by the Hydro. Power was turned on in June 1936.

Construction of a 60-Ton-per-day mill was started in September 1936 and it started operating in January 1937. The first brick was poured on February 1, 1937 and, incidentally, the 1000th brick was poured January 16, 1961. During mill construction the shaft was sunk two more levels to the 525 foot level. A 42" x 30" double drum electric hoist was installed in 1937 and served as the ore and service hoist to the 14th level at 1650 ft. To this point hoisting was done in cars.

In succeeding years the shaft was deepened in stages, 4 and 5 levels at a time, and the vein system was developed to include five different producing veins. Mill tonnage was gradually increased to about 90 tons per day with some strain on the milling facilities.

During the winter of 1939/40 a diamond drill hole was put down from the 9th Level to determine the depth of the diabase sill which is so prominent a geological feature of this area. The upper contact of the sill was intersected at 1870 feet below surface. One of the problems in drilling this hole was keeping it from flattening too much and 20 wedges were used in a length of 300 feet. The original contract with Boyles Bros. called for an angle from the horizontal of not less than 70° but this could not be maintained.

A compromise was agreed on that the hole stay within a line from the collar of not less than 70°. Luckily (for the Driller) the diabase was reached before the hole ran beyond this limit. Wandering of holes in the bedded greywacke has been

a continuing problem. Recently it has been largely solved by the use of AX equipment, limiting the rate of feed to not less than 400 revolutions per inch of advance, and limiting the footage on bits to 40 feet.

In 1944-45 a larger hoist was installed on surface and a 100 foot steel head frame erected to replace the old wooden structure. The hoisting system was changed to hoisting in 2½ ton skip-cage combinations.

In 1946 the shaft was deepened to establish the 15th level and penetrated about 100 feet into the diabase. It was not until 1948 that the shaft was carried through the diabase to its present bottom depth of 3005 feet and three levels were established below the sill, the bottom or 19th at 2875 feet.

The diabase sill, as at Sand River and Northern Empire, proved to be about 600 feet thick and a formidable obstacle. It is hard to drill and break and is subject to spalling and cracking after being opened up. Associated with it and the rocks above and below the contact we encountered highly salt water and methane gas. In driving the second exit raise we had two explosions of methane. The mine is very wet above the sill and the ground water coming off the 14th and 15th levels contains as much as 4½ % salt. Below the sill the mine is dry but many inclusions of salt are found in the veins and wall rocks in various fractures. On account of the salt the mine water is highly corrosive and is a major factor in the high maintenance cost of all underground equipment. Similar occurrences of salt water and methane associated with diabase dykes and sills have been noted at other mines in Ontario and Michigan.

On account of the general rake westward of the vein system a winze located about 1200 feet west of the main shaft was sunk from the 19th Level. The first stage of sinking opened up three levels in 1953 and this was followed by sinking stages in 1955 and 1957 to reach the present bottom level, the 30th, at 4525 feet below surface.

In 1951 and 1952 the mill and crusher house were enlarged with the addition of a 7' x 6' Ball Mill and auxiliary equipment to increase the capacity to 120 tons per day and improve extraction. Ore in the vicinity of the diabase sill proved to be highly refractory and tailings losses were high while treating this material. The enlarged mill brought the losses to reasonable limits and allowed for increase in production. Extraction has gradually improved as we have retreated from the sill.

Geology

The Leitch vein system can be described briefly as a system of narrow quartz fissure and cross fracture veins in steeply dipping bedded greywacke which in the vicinity of the veins is highly sheared and altered. The main shear in which the No. 2 Vein is located cuts the bedding at about 30° horizontally and 25° vertically. The shear is related to a small drag fold on the flank of a major drag fold of sediments around greenstone. Closer to the greenstone the sediments consist of a series of interbanded slates, iron formation, greywacke etc. and are highly folded and crumpled. Further out the rocks enclosing the veins are bedded greywacke and grit and are only very slightly folded in long flexures. west
side

The veins are of two types, straight fissure veins and highly contorted cross fracture veins. The fissure veins dip from 65° to 85° while the folded veins dip from 40° to 80° . Widths vary from a few inches to 5 feet with an average width of about 20 inches.

The walls of the veins are well defined but are badly fractured with numerous steep slips and flat joints. Superimposed on the vein system is a complicated system of faults which displace the veins at various attitudes from a few feet to as much as 100 feet.

Mining

Development mining has been carried on at Leitch by conventional methods which have as far as possible for a small mine kept abreast of current practice in the industry. Recent shaft sinking jobs have utilized the Cryderman shaft mucker and Leitch holds the distinction of being the first mine to use this device on an actual sinking job. Lateral development is now done by air leg drills using $7/8$ " carbide tipped integral drill steel. Good use has been made of a two-boom jumbo on long crosscuts. In drifting, the vein is carried on the hanging-wall and the part of the round in waste is blasted by the drilling crew coming off. This is mucked out and the vein is blasted separately by loading and blasting the side holes. This reduces the dilution of development ore and helps to maintain grade.

Over 90% of the ore from stopes has been extracted by the resuing method. The vein is blasted in flat lifts onto a poplar plank floor and mucked by hand or slusher into cribbed mill holes. The floor is lifted, chutes and manways are raised

and waste is slashed from the foot wall by blasting holes drilled concurrently with the holes in ore. The floor is re-laid and the cycle repeated. Average height of lift is about 6 feet. Details of the method are described in the C.I.M. volume on Mining in Canada.

The main problems of mining at Leitch are the highly twisted sections of some of the veins and the blocky ground conditions. The latter are increasing with depth and require extensive rock bolting and timbering for ground control.

Drilling in stopes is done by stopers using 7/8" quarter-octagon steel and carbide insert detachable bits. Efficient methods of grinding shanks and bits have been developed. Footage runs to 300 feet per bit and 900 feet per shank attachment.

MILLING

The mill is presently treating about 110 tons per day, after sorting 30 tons per day from the run-of-mine ore, by amalgamation and cyanidation. The crushing plant comprises a 15" x 24" Jaw Crusher and a 3' Symons Short Head Crusher, Scalping Screen, Dewatering Drag Classifier, Fine Screen and the accompanying conveyor belts. Ore delivered to the Fine Ore Bin passes through 1/2" x 1" opening on the Fine Screen.

Ore is ground in two stages to about 90% minus 325 mesh. The primary mill is a 7' x 6' AC Ball Mill in closed circuit with a Dorr Simplex Classifier. Heavy mineral and coarse gold is removed by a Denver Jig in the ball mill discharge and the concentrate is treated by amalgamation. Grinding is done in cyanide solution and most of the extraction takes place in the ball mill. The classifier overflow goes to a hydro-separator the underflow of which goes to the 5' x 8' AC Regrind Mill in closed circuit with a Dorr Duplex Classifier. The overflow from this classifier is also pumped to the hydro-separator.

The hydro-separator overflow goes to the cyanide circuit via the 13' x 33' two-compartment thickener. Thickener overflow together with the first filler solution goes to precipitation. Thickener underflow goes to two stages of agitation and filtration the final filler cake being mill tailings. Except for the fine grind required to release fine gold from sulphides the milling process presents no problems. Grinding costs are high as are overall costs on account of the low tonnage treated.

The high grade of the Leitch ore has made the operation possible throughout its life. Without the grade it would have been impossible to mine such narrow veins economically. Factors aiding the success of the mine have been the slick walls making it possible to break the ore cleanly from the walls, the ease of distinguishing the white quartz ore from the waste thus helping mining and sorting and the continuity of the ore shoots from one level to another.

The accompanying slides show some of the operations and the setting of the plant and buildings.

- Alteration* - veins are bordered by up to 12" of highly sericitized and silicified gte. mineralized with fine dissemin. sulphides. Grade of vein shows no relationship to quartz.
- Quartz* - in general dark coloured gte. carries gold whereas light coloured gte. is low grade or barren. Ore veins are characterized by block and ribbon structures; low grade or barren veins are not. The sulphide content of ore veins is about 2 percent. Sulphides are py and tetrahedrite.

Leitch Gold Mines Limited

by

Stewart A. Ferguson



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Location of the Area

The property is in Eva and Summers townships on the eastern side of Lake Nipigon. Highway 580 leaves Trans Canada highway No. 11 at Beardmore one mile east of Beardmore and extends 5 miles west to the mine.

The writer visited the property during January ¹⁹⁶⁵ ~~of this year~~ and collected selected level plans and sections of the mine. During ^{August 1965} ~~the past field season~~ two weeks were spent at the property remapping the outcrops adjacent to the area where underground workings exist.

Mineral Exploration

In 1934 a gold discovery was made by Russell Cryderman on the property that ^{later} ~~became~~ was operated by Sand River Gold Mining Company Limited and in the following year Russell and James Cryderman made another discovery on the adjacent property which became Leitch Gold Mines Limited. Part of this property consisted of patented claims held by the P.A. Leitch estate as the claims had previously been staked as an iron prospect.

Leitch Gold Mine was in production from 1936 until February 1965. The adjacent property of Sand River Gold Mining Company Limited was in production from 1947 until 1942. In 1944 Undersill Gold Mining Company Limited took over the Sand River property and deepened the shaft to 2,656 feet with the deepest levels at 2,300, 2,460 ~~feet~~ and 2,610 feet. Leitch Gold Mines purchased the Undersill property in 1954 and carried out the mine development from the Leitch shafts and underground workings.

Leitch Gold Mines No. 1 shaft extends from surface to the 2,875 foot level, and a wing from this level extends to the 4,525 foot level. A flat lying diabase ^{Sheet} ~~is~~ about 600 feet in thickness cuts through the older rocks and the associated veins so that no levels were established from 1,800 feet to 2,575 feet. On the deeper levels the ore shoots on No. 2 and no. 3 veins had plunged westward into the claims formerly held by Sand River Mining Company.

No. 1 Shaft 3.006 ft

General Geology

Acid to intermediate metavolcanic rocks form the oldest group of rocks and are overlain by sediments. The sediments consist mainly of thick bedded greywacke with associated narrow slaty bands and some sections of argillite. Iron formations occur within the sediments and ^{vary} varies from a well ab banded jasper-hematite with some associated magnetite to a hematite bearing red argillite. The iron formations vary in width up to a maximum of 80 feet. The conglomerate beds occur in one part of the stratigraphic section and on an outcrop on Highway 580 two beds are present. The best exposed bed is 5 feet in thickness and contains two beds of greywacke each 6 inches in thickness. The pebbles are from 1 to $1\frac{1}{2}$ inches in diameter and are fairly well rounded. There are some pebbles of quartz-feldspar porphyry, felsite, chert and quartz.

One small diorite dike was observed and the largest diabase dikes are up to 100 feet in width. A diabase dike 6 feet in width was encountered in the mine workings and intersected one of the veins. A diabase sheet about 500 feet in thickness dips gently toward the east and was intersected in the mine workings from 1,871 to 2,470 feet from surface.

Economic Geology

The gold mineralization is contained within quartz veins which range in width from 4 inches to 18 inches, and many parts of the veins are contorted with thickened portions in the bends of the folds. The quartz is light grey to white in colour and is faintly banded due to inclusions of whist. Visible gold occurred on surface and in parts of the mine but much of the ore did not contain visible gold and in most places ^{ides} sulphides were present in very small amount. Pyrite, tetrahedrite and sphalerite have been identified as occurring in small quantities. The gold content is greatest in the narrower parts of the veins and where widths up to 4 feet were encountered the gold content was generally below ore grade.

Production Statistics

Mine	Years	Gold	Silver	Value	Dividends	Average Grade
		ounces	ounces	dollars	dollars	dollars
Leitch	1936-1963	796,784	29,609	28,590,899	5,360,588	35.89
Sand River	1937-1942	50,065	3,628	1,863,840		11.81
Total		846,849	33,237	30,454,739	5,360,588	

Litch Gold Mines Limited

Mill closed in April. — 10 tons from mine

1936-1963	<u>Slack</u>	— Mine producing in <u>646 tons</u>	
Tons	Au	Ag	Value
880,205		29,609	
796,784		28,590,889	— Decimals
			5,360,588

Grade	to 1960	30.12
	1961	38.67
	1962	53.21
	1963	56.34

Sand River Gold Mining Company Ltd

1937-1942	oz	oz	Total value	Grade for
Tons milled	oz	Aq		
157,870		2.625		11.51
	50,065		1,863,840	

1954- — page 48 (vol 64) 1955 pt 2

purchased the Underhill property
 enabled the company to continue the
 development of the ore bodies in the
 No 2 & No 3 veins

1. Lick

Prod 1937 - 75 tons feed

1952 wet to 140 tons daily

Shaft 3006 ft - level to 2875 ft.

Change below 19th (2875 ft level) to solid rock

11 new levels at 150 ft intervals

Dulling to ~~solid rock~~ No. 2 vein below 30th

level - No. 2 vein originates on the 28th

~~at~~ 30th level and being exposed on the 28th + 29th

* Note attached to Dec 1 1935 edⁿ

This drawing was compiled from several white prints of drawings, and as the print was folded, the present drawing may not be absolutely correct in detail, but is sufficiently so to illustrate development. The vertical projection has been superimposed slightly on the surface plan to show the dip of the drawing.

PLAN I

VERTICAL PROJECTION OF DRILL HOLE INTERSECTIONS

SURFACE PLAN

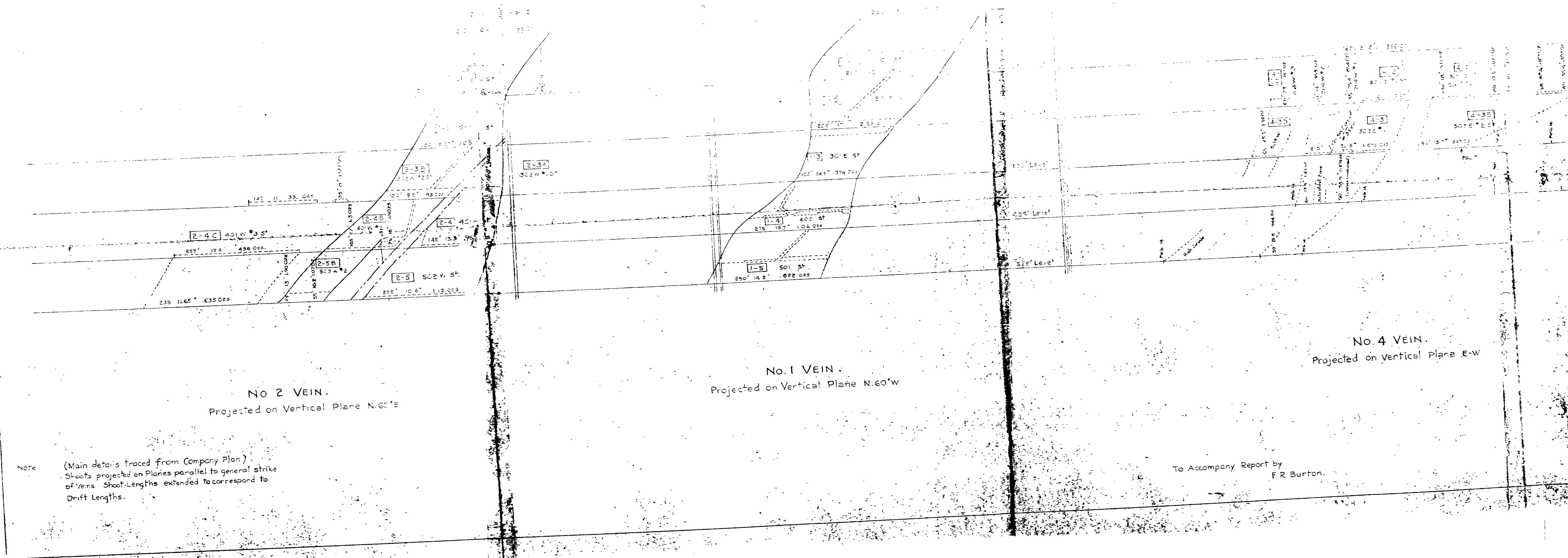
LEITCH GOLD MINES LTD.
BEARDMORE-ONT.

SCALE: 1 in. = 20 FT. OCT. 8-1935

map compiled Dec. 1, 1935

63' 40' 01





Note
(Main details traced from Company Plan.)
Shoots projected on Planes parallel to general strike
of veins. Shoot lengths extended to correspond to
Drift lengths.

No. 2 VEIN.
Projected on Vertical Plane N. 60° W

No. 1 VEIN.
Projected on Vertical Plane N. 60° W

No. 4 VEIN.
Projected on Vertical Plane E-W

LEITCH GOLD MINES LTD.
BEARDMORE, ONT.
LONGITUDINAL SECTION ILLUSTRATING ORE SHOOTS.

To Accompany Report by
F. R. Burton.

Scale: 1" = 20'

Feb. 1, 1938

63,4801

E 1/2 H.F. 8

T.B. 13712

T.B. 13711

T.B. 13710

A.L. 415

LEITCH GOLD MINES LTD.

GEOLOGICAL PLAN

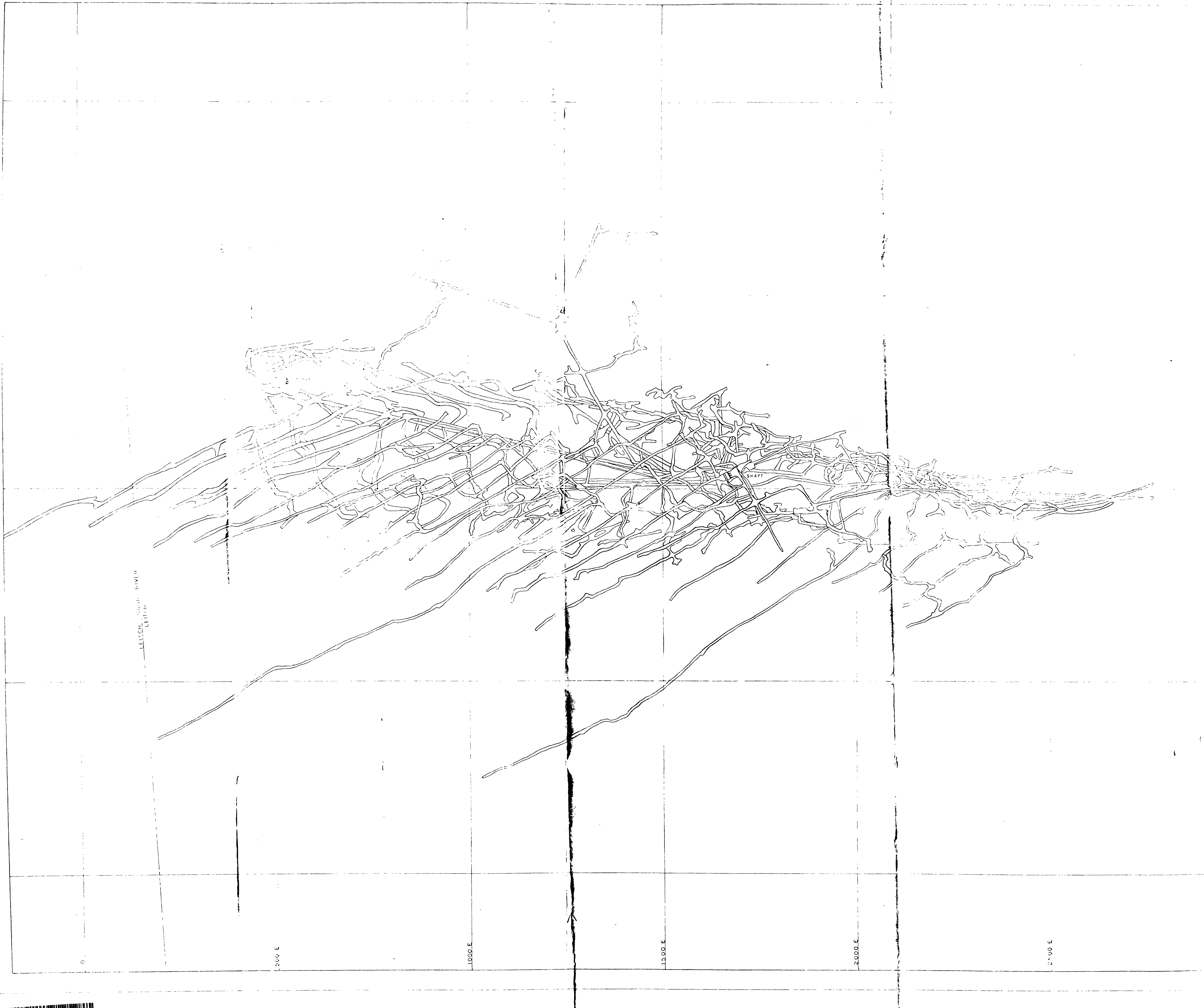
CLAIMS T.B. 13710, 13711, 13712, E 1/2 H.F. 8

SCALE 1"=100'

63-4861

APRIL 1961





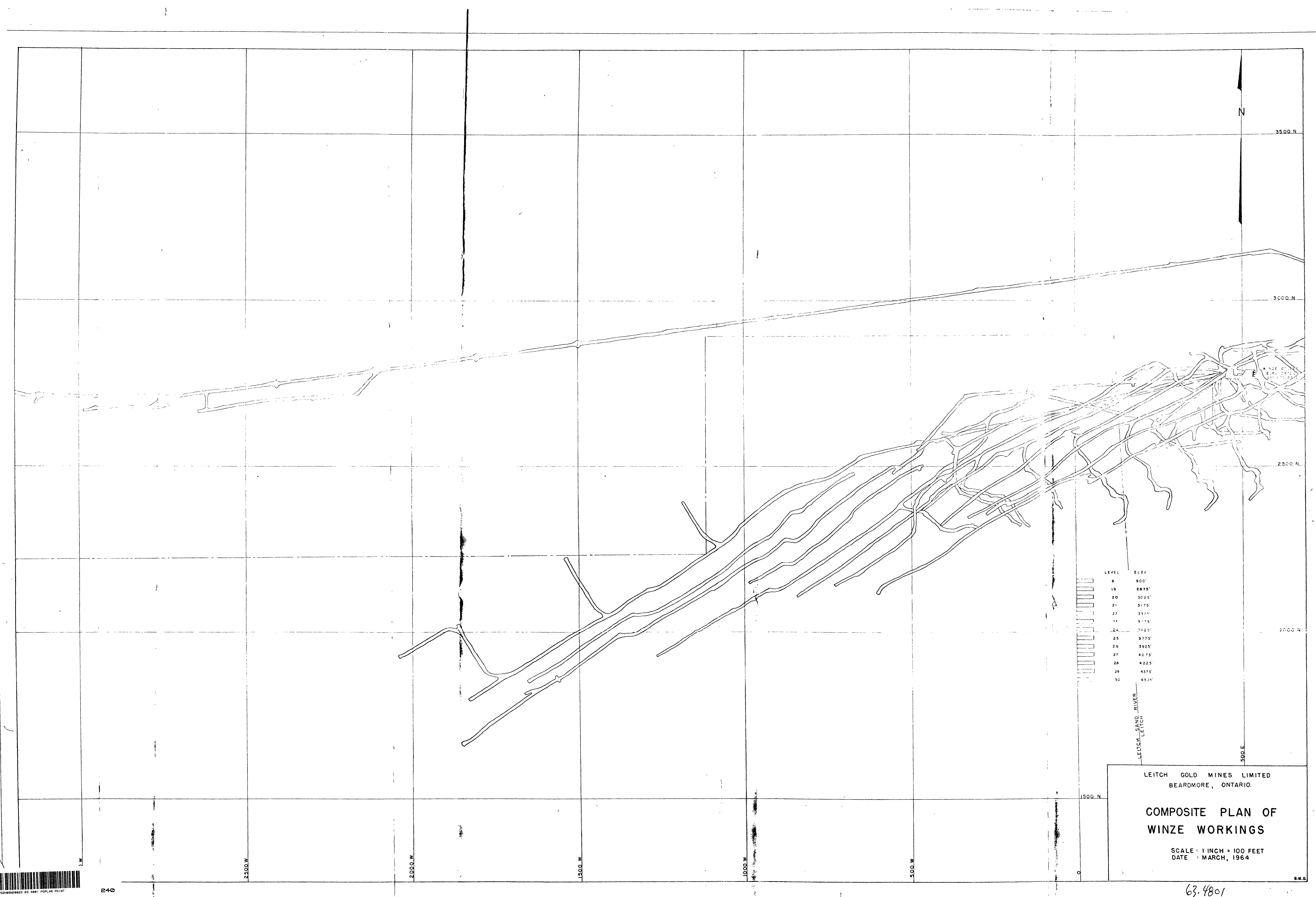
1	4075'
2	4075'
3	4075'
4	4075'
5	4075'
6	4075'
7	4075'
8	4075'
9	4075'
10	4075'
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22	4075'
23	4075'
24	4075'
25	4075'
26	4075'
27	4075'
28	4075'
29	4075'
30	4075'

LEITCH GOLD MINES LIMITED
SEAROMORE, ONTARIO.

COMPOSITE PLAN OF
MAIN SHAFT WORKINGS

SCALE 1 INCH = 100 FEET
DATE MARCH, 1964

63.4801



18 LEVEL (2725')

19 LEVEL

20 LEVEL

21 LEVEL

22 LEVEL

23 LEVEL

24 LEVEL

25 LEVEL

26 LEVEL

27 LEVEL

28 LEVEL

29 LEVEL

30 LEVEL (4525')

Recommended

Drill Holes

LEITCH GOLD MINES LIMITED.

LONGITUDINAL SECTION OF # 2 VEIN

N 60° E

SCALE: 1"=100

63.4801

DRAWN BY: E BUK
DATE: JUNE 19





LEITCH GOLD MINES LIMITED.

30th - 4525 - LEVEL

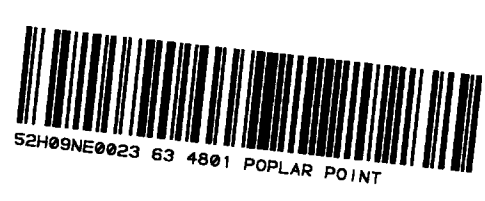
SCALE: 1" = 20.0'

SW 2

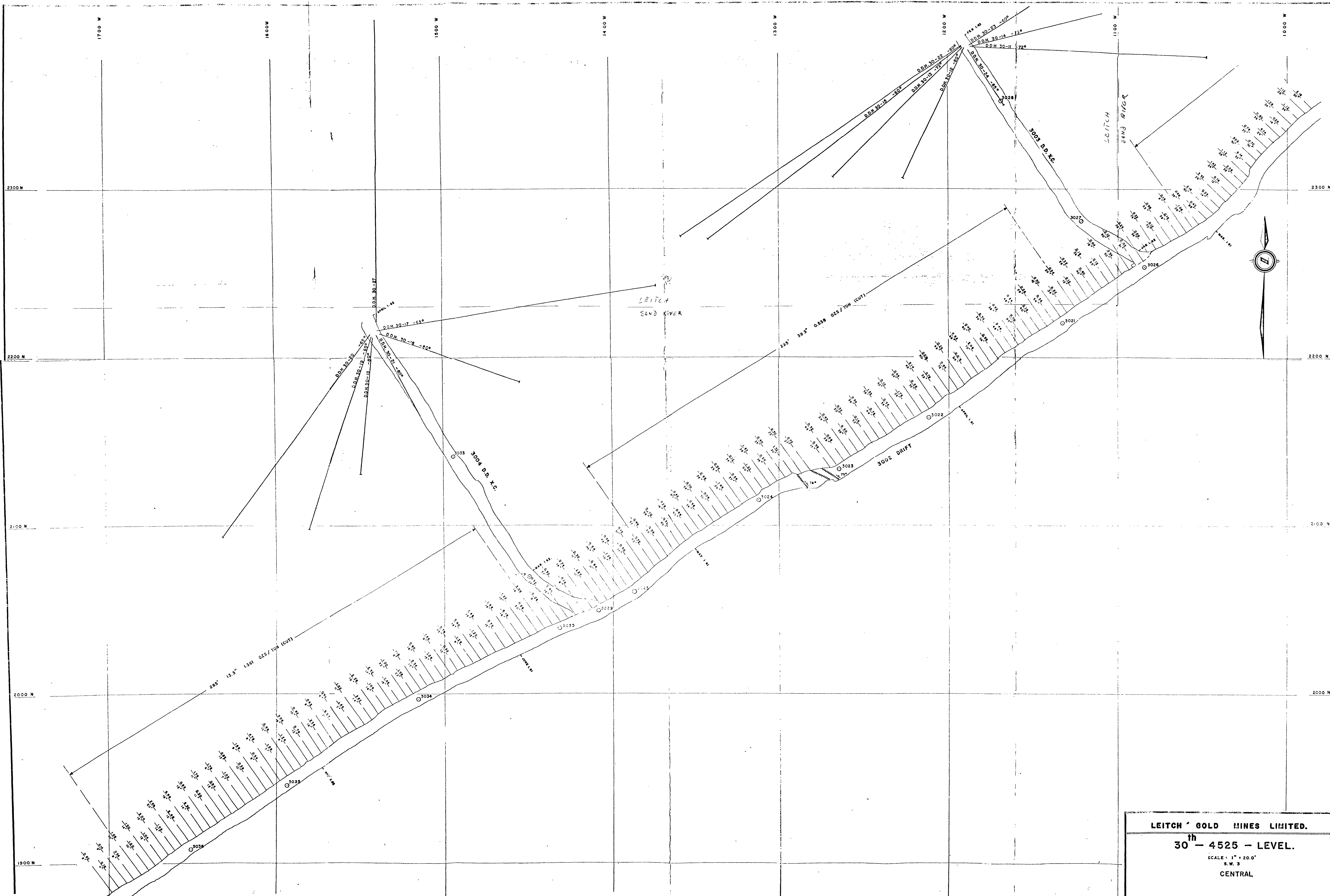
EAST

DRAWN BY: E. BULL

DATE: JUNE 1975



63.4801



LEITCH GOLD MINES LIMITED.

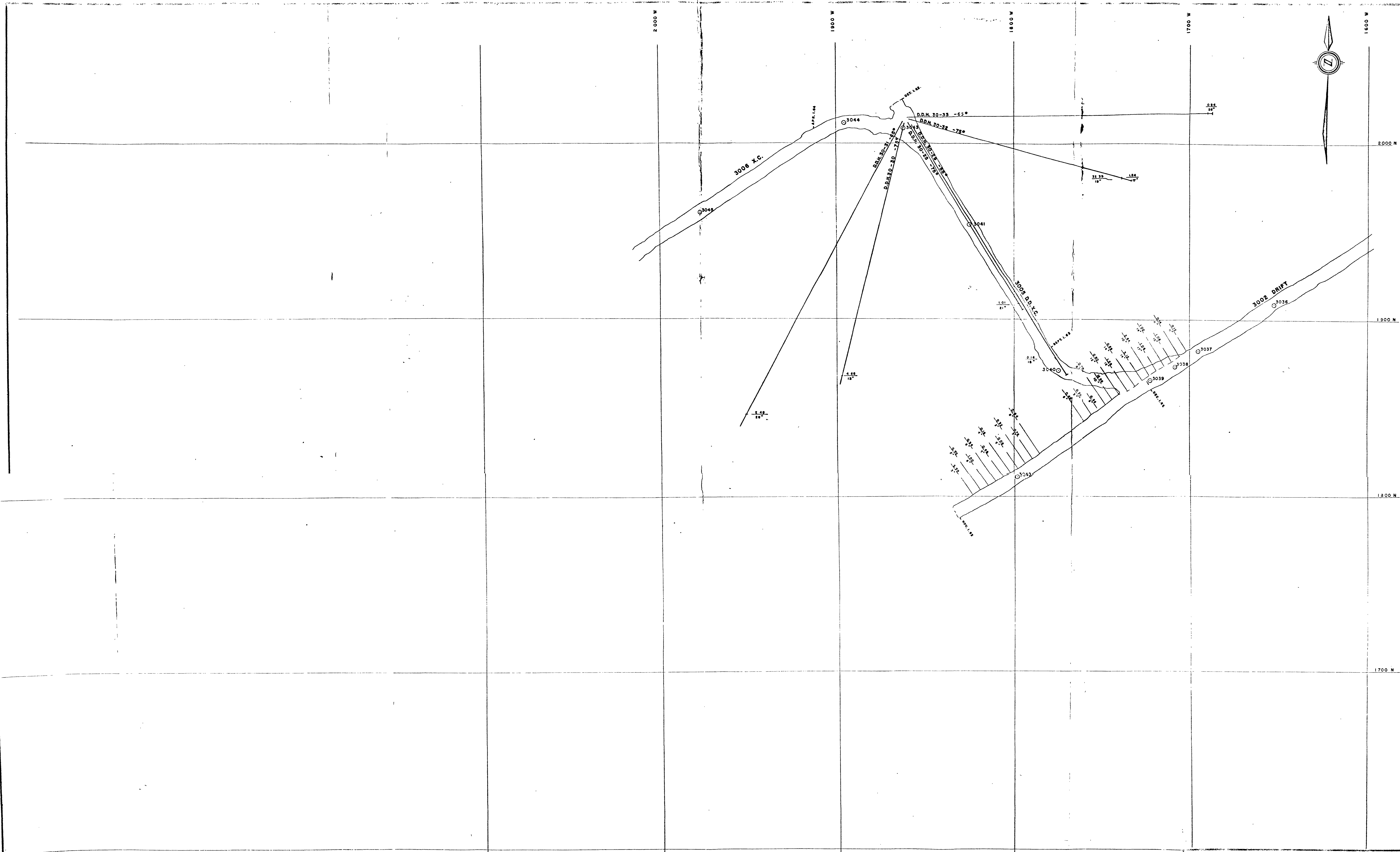
30th - 4525 - LEVEL.

SCALE: 1" = 20.0'
S.W. 3

CENTRAL

63-4801

DRAWN BY: E. BURL
DATE: JUNE 18, 79



LEITCH GOLD MINES LIMITED.

30th - 4525 - LEVEL

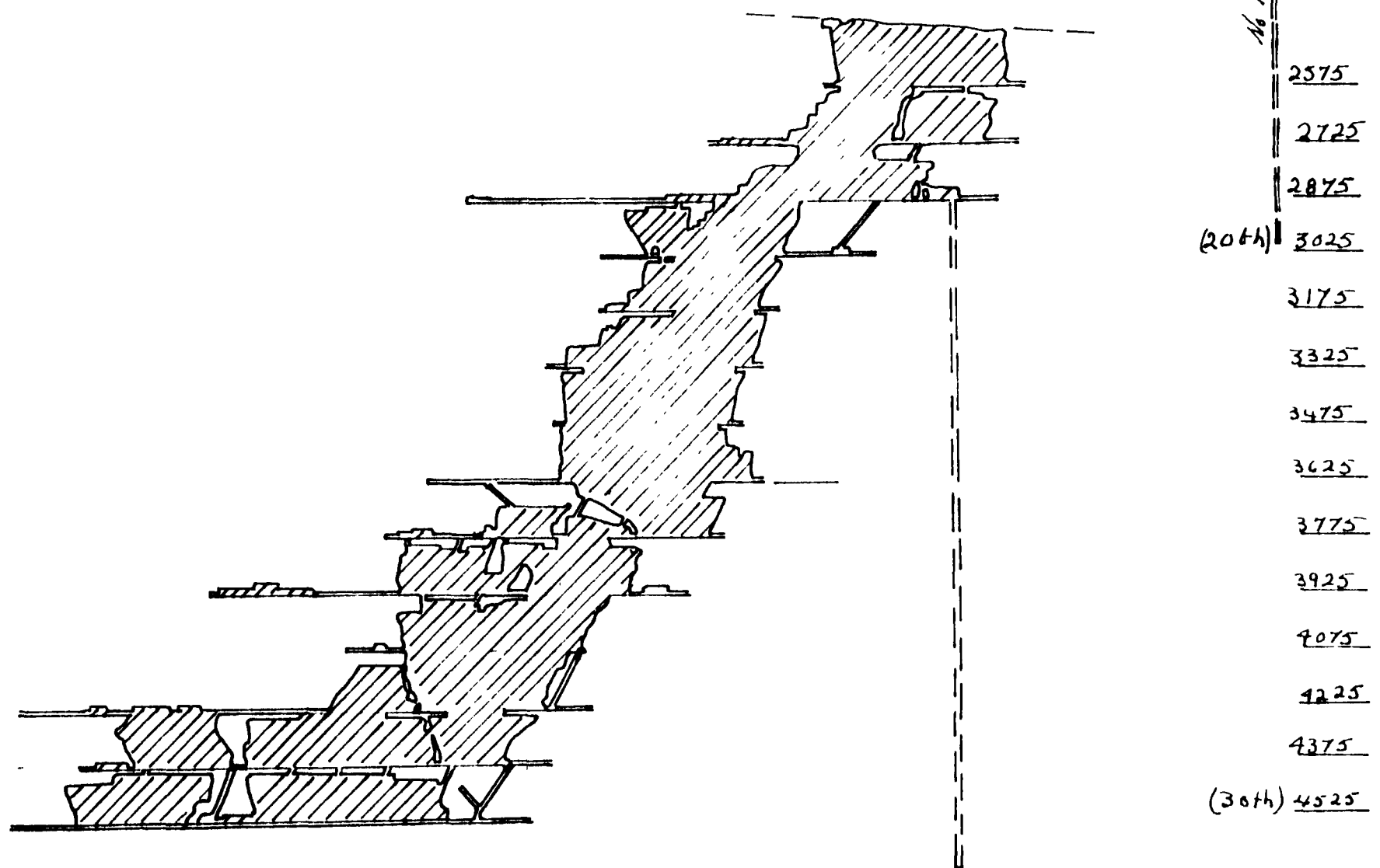
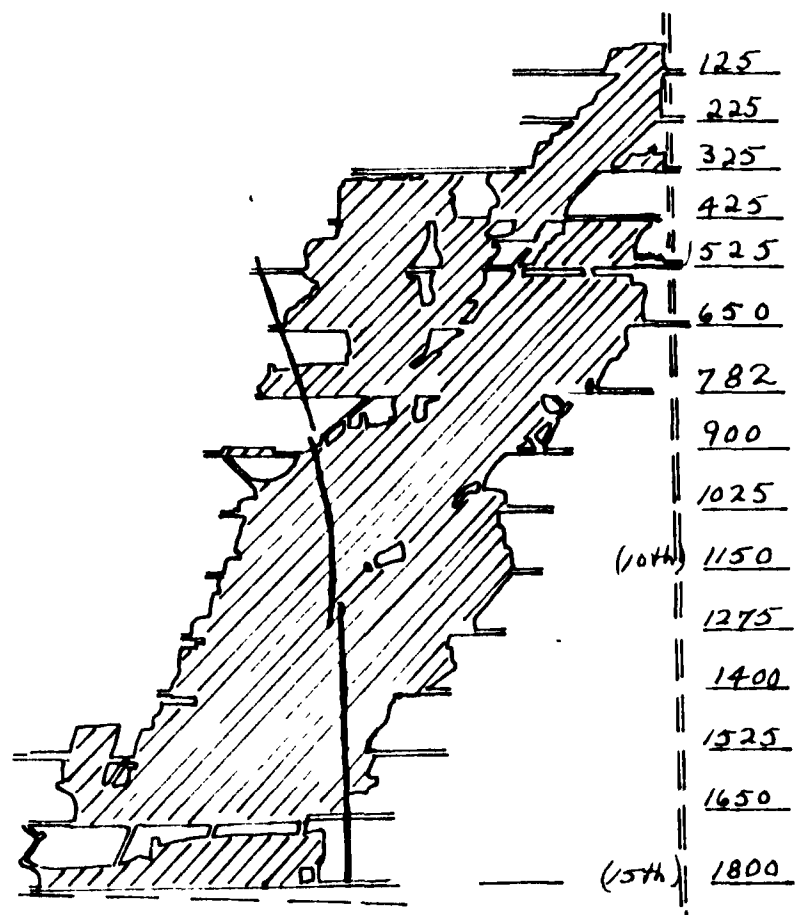
SCALE: 1" = 20.0'
S.W. 4

WEST

63.4801

DRAWN BY: E. BURL
DATE: JUNE 19, 78





63.4801



52H09NE0023 63 4801 POPLAR POINT