

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

FLIN FLON, MANITOBA

020153

January 9th, 1950.

Mr. F.J. Hemsworth,  
Department of Mines,  
PRINCE RUPERT, B.C.

Dear Sir:

As requested in your letter of January 3rd I enclose the following information on the drilling of our Gem Claims in Northern British Columbia:

Drawing A-381, Diamond Drill Plan,  
Drawing A-382, Diamond Drill Cross-  
Sections  
A Geological Report and Drawing A-383,  
Surface Geological Map.

A copy of an affidavit which accompanied our application for Certificates of Work. This shows details of the drilling, the men working on drilling and geological mapping and total expenditures.

The results of drilling were disappointing and we have made no plans for returning to this location.

Yours truly,



J.A. Haskin.

Encl.

Dominion of Canada,  
 Province of British Columbia,  
 To Wit,

I, Joseph A. Haskin, of the Town of Flin Flon, in the Province of Manitoba, free miner, make oath and say:-

1. That I am the Chief Engineer of Hudson Bay Mining and Smelting Co., Limited and am familiar with the work done by its subsidiary, Hudson Bay Exploration and Development Company Limited, on the Gem 1 to 38 Mineral Claims situate thirty miles east of McNaughton Lake in the vicinity of Latitude 59° 55', Longitude 130° 25' in the Stikine Mining Division.

2. That the following table shows the diamond drilling done between June 19 and August 9, 1949.

Hole	Dip	Depth	Started	Finished
1	-36°	187	June 21	June 23
2	-33°	349	June 23	June 29
3	-50°	124	June 30	July 2
4	-33°	378	July 2	July 7
5	-36°	485	July 7	July 13
6	-35°	600	July 14	July 22
7	-35°	518	July 23	August 1
8	-35°	294	August 2	August 6
Total		2935		

3. That the following table shows the men engaged in diamond drilling, the dates on which they worked and the total wages paid to them:

Kenneth A. Camey - Engineer - June 19 to August 9 - 52 days x \$13.10 -	\$681.20
Arthur Wold - Drill Foreman - June 19 to August 9 - 52 days x \$13.10 -	\$681.20
Donald Atkin - Driller - June 19 to August 9 - 52 days x \$13.10 -	\$681.20
Leonard Wold - Driller - June 19 to August 9 - 52 days x \$13.10 -	\$681.20
John Dutka - Helper - June 19 to August 9 - 52 days x \$11.90 -	\$618.80
John Dewhurst - Helper - June 27 to August 9 - 44 days x \$11.90 -	\$523.60
Maurice Moreau - Helper - June 19 to June 24 - 6 days x \$11.90 -	\$ 71.40
Stephan Soroka - Mechanic - June 19 to August 9 - 52 days x \$8.71 -	<u>\$452.92</u>
Total	\$4391.52

The men listed above all worked twelve hours a day.

4. That the following table shows the men engaged in geological mapping, the dates on which they worked and the total wages paid to them:

George C. Camsell - Senior Geologist - June 19 to 26 and July 2 to August 9 - 47 days x \$10.81 -	\$508.07
Andrew Troop - Junior Geologist - June 19 to July 14 26 days x \$10.00 -	\$260.00
Maurice Moreau - Junior Geologist - June 25 to July 14 - 20 days x \$10.00	<u>\$200.00</u>
	\$968.07

This is an average expenditure of \$25.48 on each of the Gem 1 to 38 Mineral Claims.

5. That the total expenditures on the above diamond drilling and geological survey of the Gem Mineral Claims were \$35,700..

6. That I have caused metal identification tags to be affixed to the posts of the claims as noted below:

Claim	Tags	Claim	Tags
Gem 25	A23847	Gem 31	A23853
Gem 26	A23848	Gem 32	A23854
Gem 27	A23849	Gem 35	A23843
Gem 28	A23850	Gem 36	A23844
Gem 29	A23851	Gem 37	A23845
Gem 30	A23852	Gem 38	A23846

Sworn before me at the  
of  
in the Province of British  
Columbia this  
day of September, A.D. 1949.

APPENDIX I

DIAMOND DRILL LOGS

A handwritten signature in black ink, appearing to read "Foster", is located in the bottom right corner of the page.

Hole No. RP1

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1006 + 00  
Dep. 1015 + 00

Started October 23, 196

Completed October 23, 19

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPL
0 - 100	Phyllite Very weak pyrite Water 65-100'		

Hole No. RP2

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1004 + 92  
Dep. 1015 + 00

Started October 25,

Completed October 25,

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE
0 - 10	Overburden		
10-30	Phyllite                      Very weak pyrite		
30-40	Phyllite Quartzite            Moderate Pyrite		
40 - 50	Quartzite                      Weak Magnetite		
	Mud at 55		

Hole No. RP3

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1003 + 80  
Dep. 1015 + 00

Started October 26, 1968

Completed October 26, 1968

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE	AS
0 - 20	Overburden			
20-25	Quartzite			
25-50	Phyllite Trace pyrite			
50-55	Phyllite and quartzite Very weak pyrite			
55-60	Phyllite Very weak pyrite			
60 - 70	Quartzite Weak magnetite ?			
	Mud at 70'			

Hole No. RP4

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1003 + 00  
 Dep. 1015 + 00

Started October 27, 1968

Completed October 27, 1968

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
 Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE	ASS.
0-25	Overburden			
25-95	Phyllite 45-50 Possible quartz vein nothing to weak pyrite			
95-100	Quartzite weak-very weak pyrite			
100-105	] Phyllite Weak to very weak pyrite			
105-110	Quartzite Weak to very weak pyrite			
110-120	Phyllite weak to very weak pyrite			
120-135	Quartzite Weak pyrite			
135-140	Phyllite and Quartzite Weak pyrite			
140-145	Phyllite Weak pyrite			
145-150	Quartzite Weak pyrite			
150-170	Phyllite Very weak pyrite			
170 - 200	Limestone Weak pyrite			
	Lost return air and cuttings			



Hole No. RP5

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1003 + 35  
Dep. 1015 + 00

Started October 28, 1968

Completed October 28, 1968

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE
0-25	Overburden		
25-65	Phyllite Trace to very weak pyrite		
65-80	Quartzite phyllite Very weak pyrite to nothing		
80-85	Phyllite " " " " "		
85-90	Quartzite phyllite Weak pyrite		
90-95	Phyllite Trace pyrite		
95-120	Quartzite Very weak pyrite		
120 - 130	Limestone and quartzite Weak pyrite and magnetite ??		
Lost return air and cuttings			

Hole No. RP6

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1002 + 90  
Dep. 1013 + 00

Started October 29, 19

Completed October 29, 19

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE
0-27	Overburden		
27-40	Quartzite Trace pyrite		
40-45	Phyllite Very weak pyrite		
45-55	Quartzite phyllite Trace pyrite		
55-60	Quartzite Weak pyrite		
60-80	Phyllite Trace pyrite		
80-90	Quartzite and Muscovite		
	Water at 80'		

Hole No. RP7

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1002 + 25  
Dep. 1011 + 00

Started November 5, 1968

Completed November 5, 1968

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE	ASSAY
0-25	Overburden			
25-55	Quartzite slightly calc. 35-40 very weak pyrite			
55-60	Phyllite Trace pyrite			
60-65	Quartzite phyllite Very weak pyrite			
65-90	Quartzite " " "			
90-95	Quartzite & Phyllite Trace pyrite			
95-105	Phyllite			
No cuttings returned				

Hole No. RP 8

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. J 1002 + 10  
Dep. ✓ 1013 + 00

Started November 5, 1968

Completed November 5, 1968

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°

Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE
0-40	Overburden		
40-55	Quartzite and Quartz Phyllite Possible overburden  Mud		

Hole No. RP 9

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1003 + 00  
Dep. 1017 + 00

Started November 6, 1968

Completed November 6, 1968

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE
0-25	Overburden		
25-30	Granite ? and Phyllite		Very weak pyrite
30-55	Phyllite		
	Mud		

Hole No. RP 10

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 1002 + 05  
Dep. 1015 + 00

Started November 6, 1968  
Completed November 6, 1968

Elevation Collar \_\_\_\_\_  
Datum \_\_\_\_\_

Depth \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE	ASSA
0-20	Overburden			
20-100	25-30 Quartz fragments			
	45-50 " "			
	60-75 " "			
	95-100 " "			
	Lost return air and cuttings			

Hole No. RP 11

Sheet No. \_\_\_\_\_

# DIAMOND DRILL LOG

Location: Lat. 10° + 00  
Dep. 10° + 00

Started November 7, 1968

Completed November 7, 1968

Elevation Collar \_\_\_\_\_

Depth \_\_\_\_\_

Datum \_\_\_\_\_

Direction at Start: Bearing 180°  
Dip -45° to South

DEPTH	FORMATION	SAMPLE No.	WIDTH SAMPLE
0-25	Overburden		
25-200	? Gossan 80-85		
	25-75 Nothing		
	75-200 Very weak pyrite .		

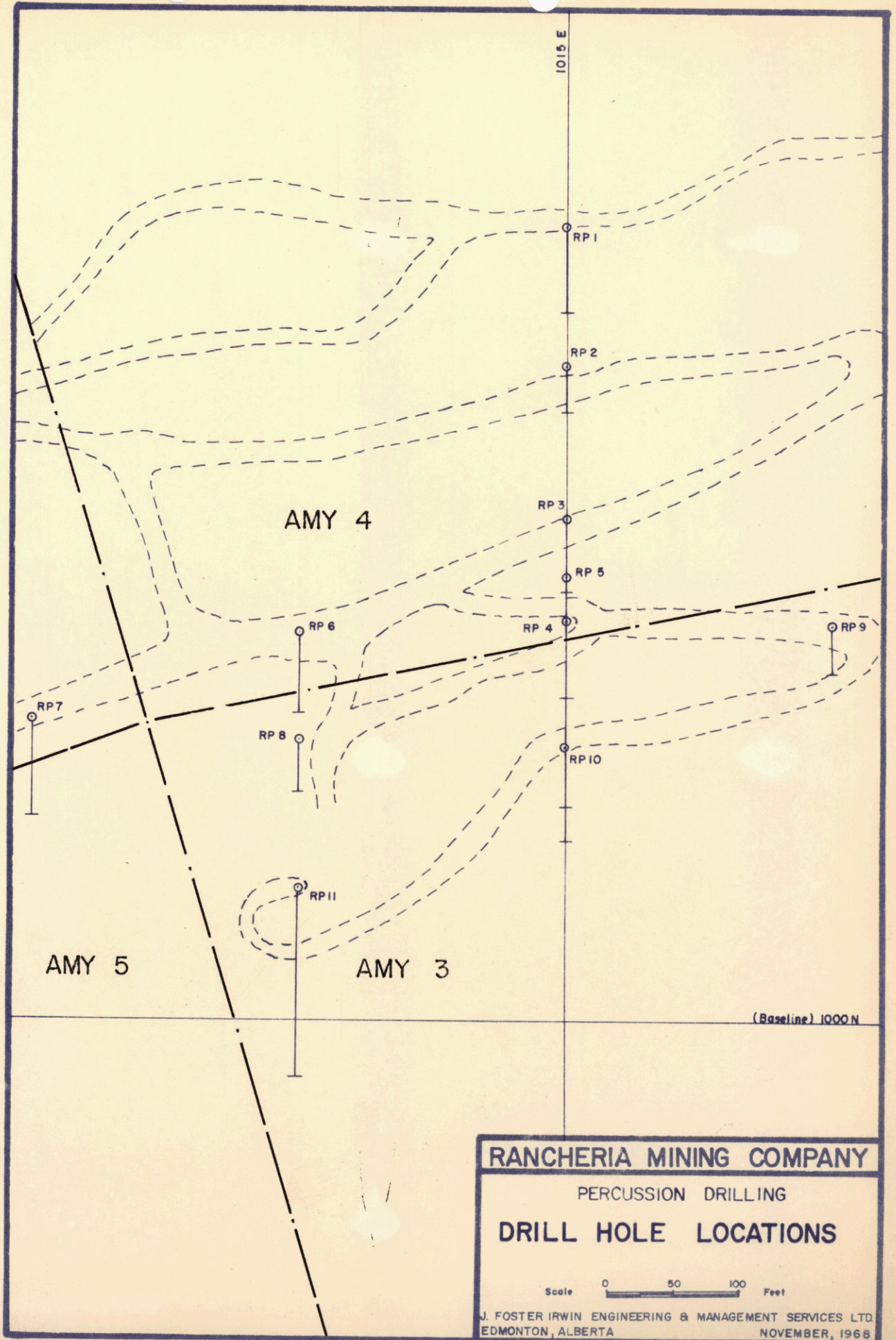


FIG. 2



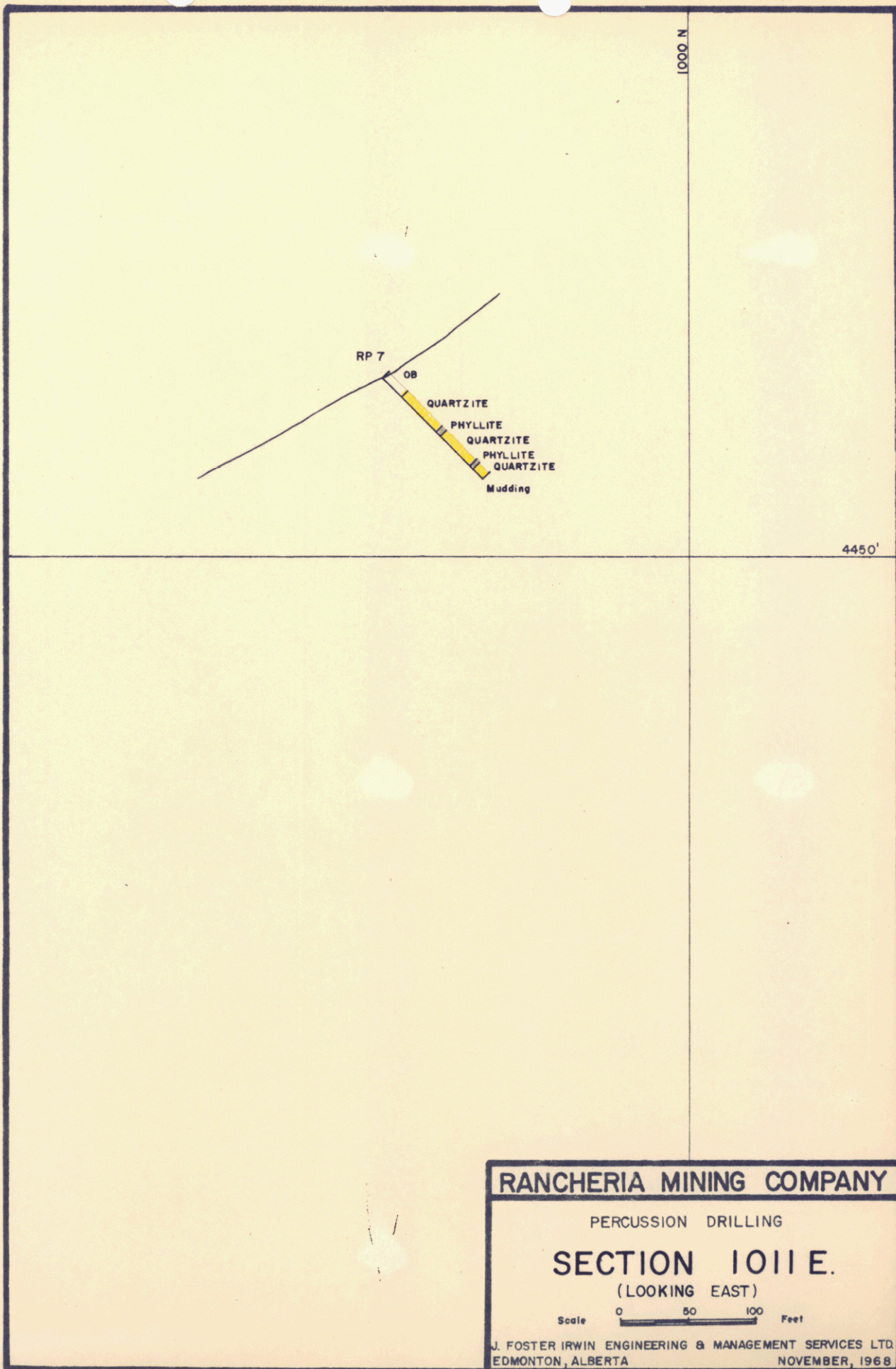


FIG. 3

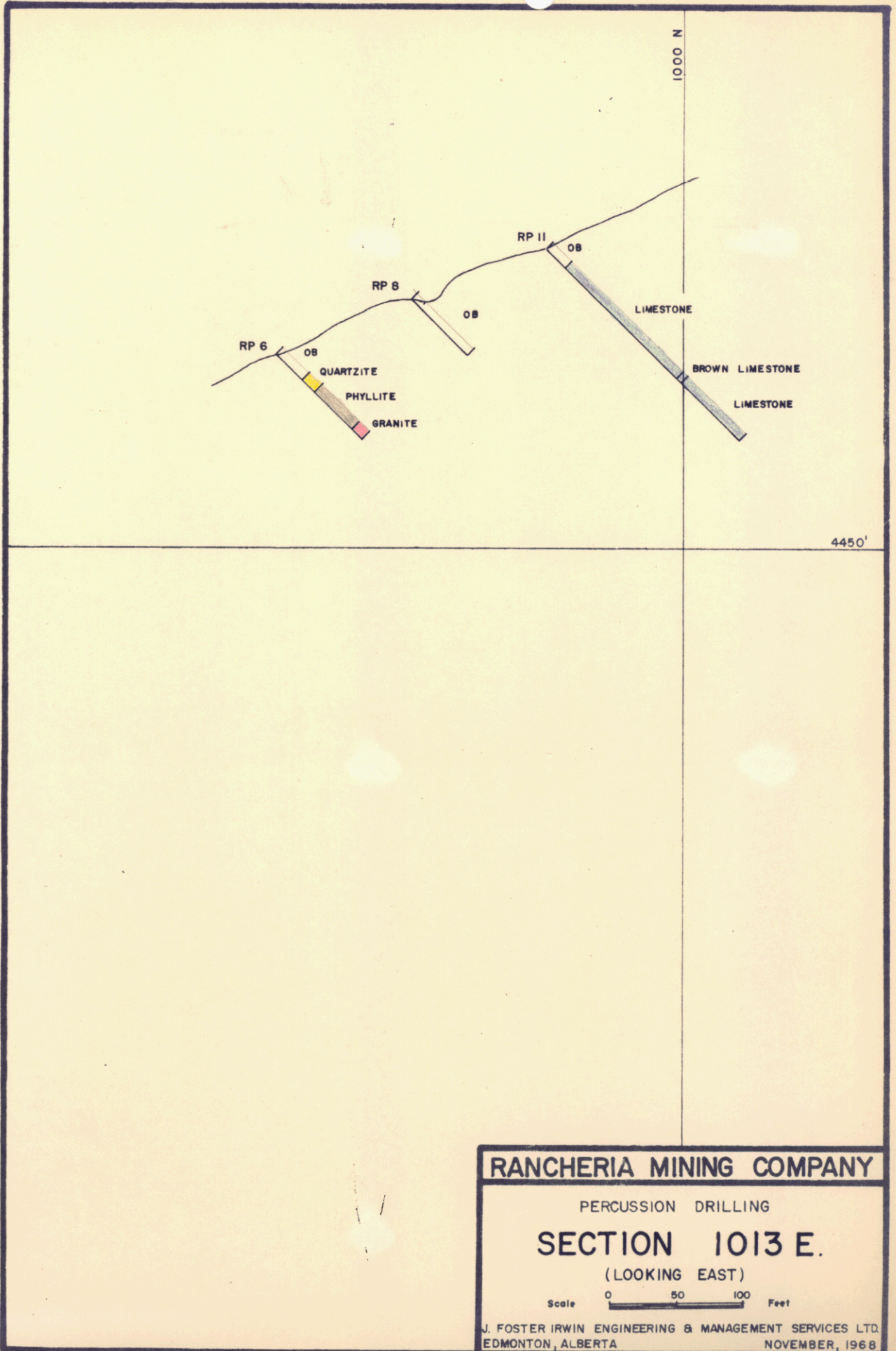
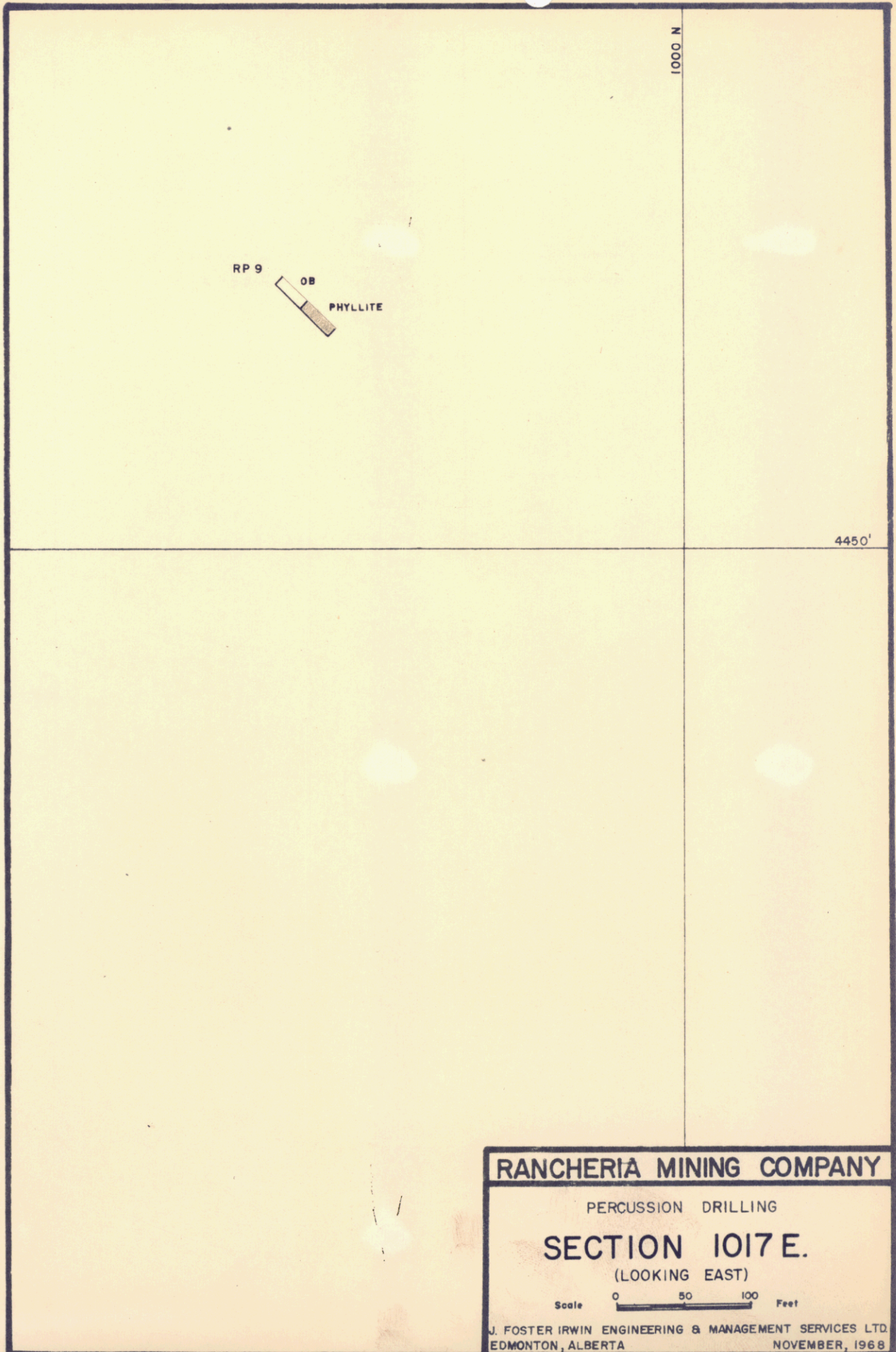


FIG. 4



**RANCHERIA MINING COMPANY**  
PERCUSSION DRILLING  
**SECTION 1017 E.**  
(LOOKING EAST)  
Scale 0 50 100 Feet  
J. FOSTER IRWIN ENGINEERING & MANAGEMENT SERVICES LTD.  
EDMONTON, ALBERTA NOVEMBER, 1968

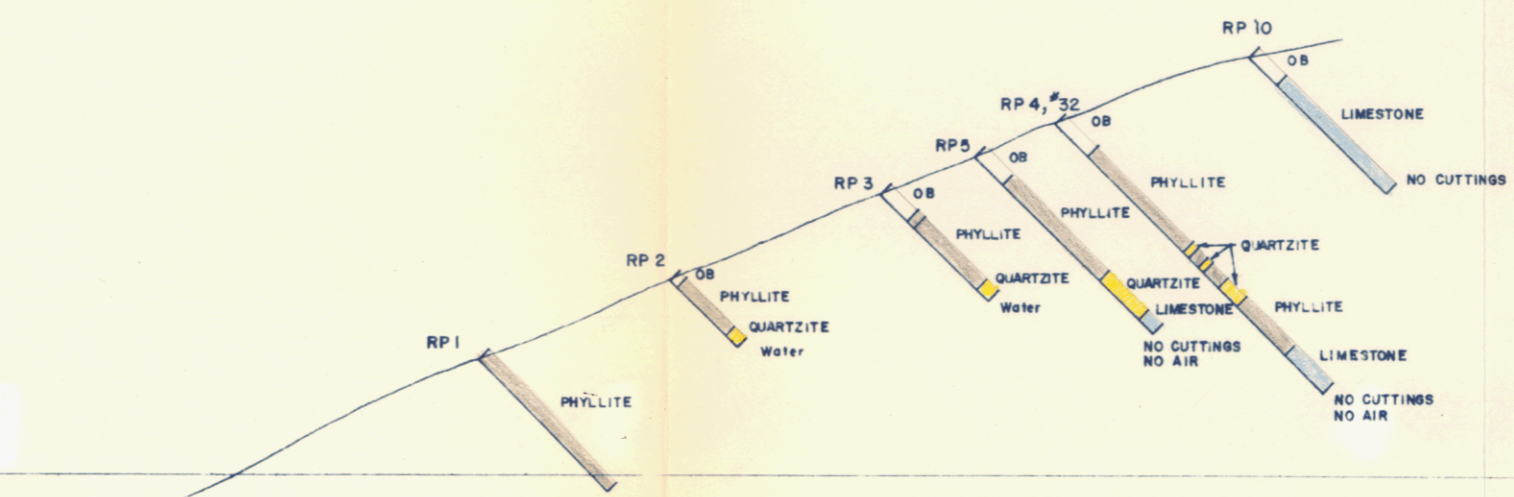
FIG. 6

- 16 -

APPENDIX II

PERCUSSION DRILLING

(Baseline) 1000N



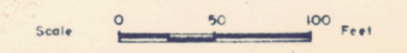
4450'

**RANCHERIA MINING COMPANY**

PERCUSSION DRILLING

**SECTION 1015 E.**

(LOOKING EAST)



J. FOSTER IRWIN ENGINEERING & MANAGEMENT SERVICES LTD.  
EDMONTON, ALBERTA NOVEMBER, 1968

FIG. 5

SUMMARY OF EXPENSES AND THEIR DISTRIBUTION  
 RE DRILLING PROGRAM AND SP SURVEY  
 RANCHERIA MINING COMPANY LIMITED  
 SEPTEMBER TO NOVEMBER 1968

DATE	INVOICE NO.	TRANSPORTATION	RENTALS		OPERATING		DIRECT LABOUR	SUPERVISION & ENGINEERING	TEL & TEL & MAIL	APPLICABLE INVOICE AMOUNT
			CAMP	EQUIPMENT	CAMP	EQUIPMENT				
Sept. '68	1009 & 1016	\$ 669.81	\$ 70.00	\$ 553.05	\$ 802.12	\$ 327.82	\$ 225.78	\$4,235.32	\$ 57.47	\$ 6,941.37
Oct. '68	1019 & 1022	1,735.65	288.00	4,345.57	61.25	5,328.71	3,032.00	1,613.50	76.36	16,481.04
Oct. & Nov. '68	1031	753.45		3,371.74	1,117.04	1,937.88	3,834.00	3,032.13	411.05	14,457.29
Dec. '68	1051	511.65	465.00	2,927.58	70.58	844.20	-	667.78	362.05	5,848.84
Jan. '69	1059	84.00	-	2,930.18	-	85.00	-	-	58.80	3,157.98
Feb. '69	1069	-	-	2,905.18	-	98.00	-	-	24.50	3,027.68
Mar. '69	1085	477.84	-	-	-	172.02	-	-	-	649.86
Apr. '69	1090	-	-	(5,835.36)	-	-	-	-	-	(5,835.36)
		<u>\$4,232.40</u>	<u>\$823.00</u>	<u>\$11,197.94</u>	<u>\$2,050.99</u>	<u>\$8,793.63</u>	<u>\$7,091.78</u>	<u>\$9,548.73</u>	<u>\$990.23</u>	<u>\$44,728.70</u>

*ib*

1040/16W

1040-4

S9 130 NE

AMY-

ORIGINALLY LOCATED AS GEM  
IN SEPT. 1948

REPORT

by J. St. GODDARD

ON THE

RANCHERIA MINING COMPANY LIMITED

AMY CLAIM GROUP

NORTHERN BRITISH COLUMBIA

August, 1964

W.H. Cross

**RANCHERIA MINING COMPANY LIMITED, AMY CLAIMS, NORTHERN BRITISH COLUMBIA**

Summary and Recommendations

1. On November 25, 1963 I made a report on the Amy group of claims held by Rancheria Mining Company Limited. In this report I made the following recommendations:

- a. That at least 500 feet of drifting be done on the 4950 level to test the continuity and grade of a vein and replacement zone known as the "Camp Creek" deposit. Previous trenching and diamond drilling of the deposit had shown that silver, lead and zinc values occurred in the vein zone over a length of at least 600 feet, over a width of up to 8 feet, and to a vertical depth of at least 300 feet.
- b. That lines be cut on the surface to act as a base for a detailed geological, geochemical and geophysical survey.
- c. That prospect trenches be dug to explore zone of gold-silver bearing quartz float that exists in a number of places to the west of the "Camp Creek" deposit.

2. By August 1, 1964 a total of 377 feet of underground work has been done on the 4950 level. The work is classified as follows:

Adit crosscut	182 feet
Footwall drift	103 feet
Sulphide ore zone	92 feet

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Total	377 feet
-------	----------

3. The sulphide zone extends along the full length of the drift; it strikes north-west and dips about 60° south. The zone looks quite strong and sulphide mineralization, mainly sphalerite and galena, extends over the full width of the drift and for a distance of at least 3 to 5 feet in the footwall.

4. Face samples in the drift to date give an average of 27.4 oz. of silver, 7.5% lead and 7.4% zinc per ton over an average drift width of 5.9 feet and for a length of 65.9 feet. These results were checked against muck samples over the same distance which averaged 29.3 oz. of silver, 8.9% lead and 6.2% zinc.



The two sets of values are conservative as no adjustments have been made for specific gravity differences between low and high-grade samples.

5. The silver to lead ratio of 103 surface samples gave 6:1. The silver to lead ratio of 93 face samples gave an average of 4.5 and 10 muck samples representing about 300 tons of the sulphide zone gave 4.2:1. These ratios suggest that a reasonably high grade silver-lead concentrate might be made for shipping. Polished section studies show that the silver also occurs in the mineral freibergite. The presence of this mineral could explain the high silver values in areas of high zinc and low lead.

6. A 14,000 foot base line along part of the zone considered favourable for the occurrence of sulphides has been completed. Cross lines are being cut at 300 foot intervals on a base for detailed geochemical and geological and geophysical surveys.

7. Recommendations

In view of the encouraging results on the development of this property to date, the following work should be undertaken:

- a. The surface surveys should be completed by the end of September. Any favourable mineralized zones located by these surveys and the areas of mineralized float known to occur west of the Camp Creek deposit should be opened up as far as is possible this year.
- b. About 700 feet of additional drifting should be completed to the east of the 4950 foot adit. It is probably not practical to drive west of the adit under Camp Creek on this level, because of the permeable nature of the limestone which will allow creek waters in, and because mining backs will be less than the 70-100 feet that exist east of the creek and therefore will not block out any significant quantity of ore.
- c. If the 4950 level indicates that a mineable sulphide zone could exist at Camp Creek, it is suggested that a new 1000 foot cross cut be driven to intersect the downward extension of the sulphide zone at the 4700 foot level. Provision should be made for at least 1000 feet of drifting on this new level.
- d. If the 4700 foot level is successful, provision should be made for two raises to connect between levels in order to establish vertical continuity of the ore. The raises would be located so they could be used in the mining of the deposit.
- e. Hanging wall crosscuts should also be driven on the 4700 foot level to create stations for diamond drilling of the deposit below the 4700 foot horizon.

- 7. f. Reject pulps from samples assayed in Whitehorse should be sent to Toronto so that assay checks can be made in an independent laboratory.
- g. A suite of ore samples should be collected immediately so that studies can be started on the mineralogy of the ore as a prelude to mill recovery tests. Preliminary mill tests can be made this winter using a composite of the sample pulps as feed.

Cost of Proposed Program

It is expected that the work could be done in six months. The cost of the work proposed above as estimated by D.A. Campbell, the mine manager, and based on the cost experience he has had to date on Rancheria is as follows:

Costs

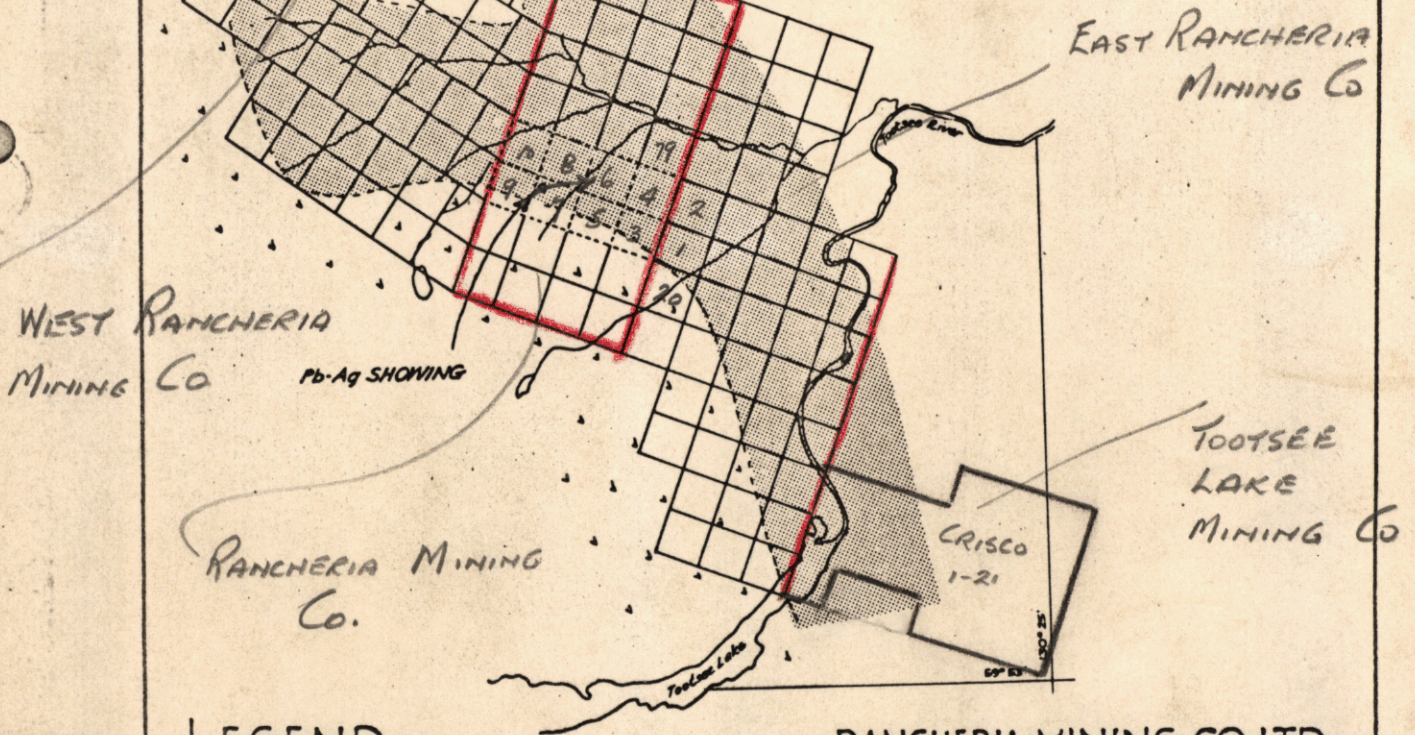
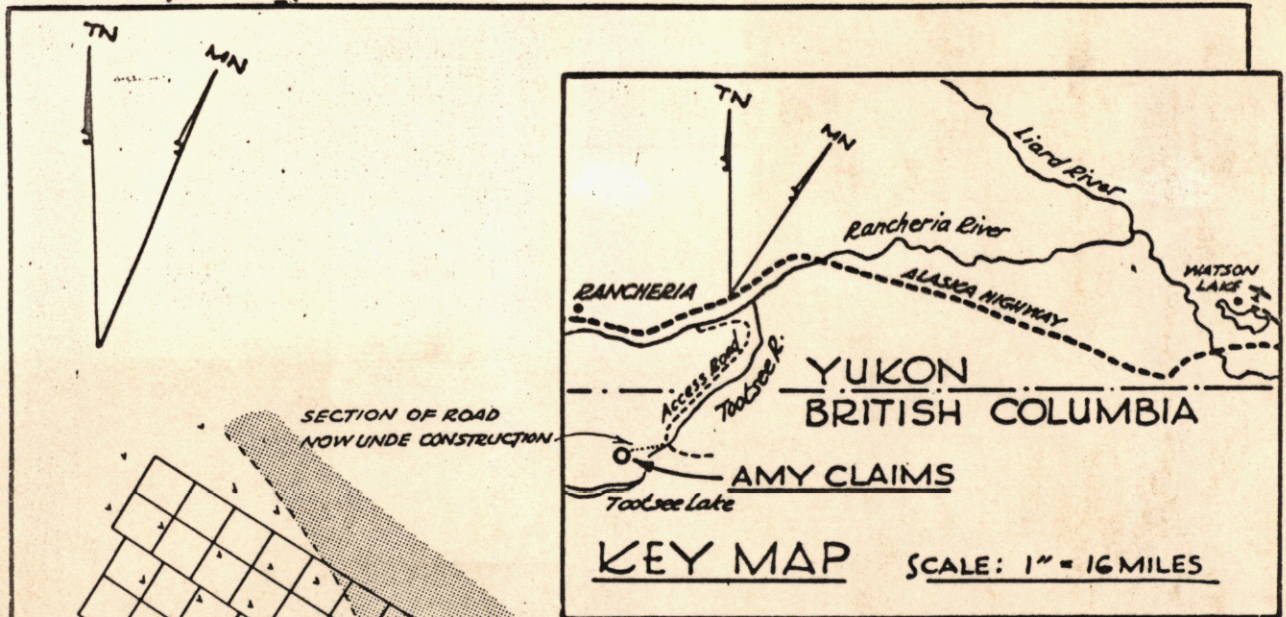
i. Development cost	
Drifting 4950 level	700 feet @ 55.00 = \$ 38,500
Adit 4700 level	1000 feet @ 55.00 = \$ 55,000
Drifting 4700 level	1000 feet @ 55.00 = \$ 55,000
Two crosscuts for drilling	700 feet @ 55.00 = \$ 38,500
Two Raises ( 6 x 5 )	550 feet @ 125.00 = \$ 68,750
Diamond Drilling	2,400 feet @ 7.50 = \$ 18,000
	<b>Total</b> \$273,750
Contingency 15%	41,065
	<hr/>
	<b>\$314,815</b>

Cost per month =  $\frac{314,815}{6} = \$52,469.00$

ii.

Overhead costs	Per Month
Mining Plant	2750
3 Trailers	1650
Jeep Station Wagon	150
2 New Rock Drills	333
2 New Slopers	353
Mine Track	400
Pipe 2"	333
Pipe 4"	333
	<hr/>
carried fwd.	<b>\$6,282</b>

1040/16W  
1040-4



LEGEND

Granite

Sediments (mainly)

RANCHERIA MINING CO. LTD.  
GEOLOGICAL-CLAIM LOCATION MAP  
SCALE: 1" = 1 MILE

E·D·B·AUG. 8, 1963

Nov / 64

Rancheria Mining Company Limited,  
19 Melinda Street,  
Toronto 1, Ontario.

Gentlemen:

Herewith, as requested, is my engineering assessment of the Rancheria Mining Company Project. The property consists of 138 Mining Claims located west of mile 701 Alaska Highway and in the vicinity of Tootsie Lake.

GENERAL

My discussions, conclusions and recommendations are based on a personal visit to the property in April 1964; to a study of the findings and reports by Dr. W. H. Gross, Consulting Geologist for the project; and to discussions held with Mr. D. A. Campbell, Resident Engineer in charge of the 1964 program.

Details as to geology, topography and analytical results to date are very adequately covered in Dr. W. H. Gross' report dated August 1964. It is my intention only to discuss and project these results and to outline a program for continued development of the property.

PROGRESS TO DATE

Surface trenching and diamond drilling has established the existence of a mineralized vein extending at least 500 feet along strike and to a depth of 300 feet. The vein contains economic values in silver, lead and zinc and is open along strike and to depth. Further, geochemical sampling and float prospecting indicates a strike potential of much greater length than the indicated 500 feet.

( 14 )

I, W.H. Gross, of the City of Toronto, Province of Ontario do hereby certify that I am a Geologist residing at 25 Whitney Avenue, Toronto 5, Ontario. I certify that I obtained my B.Sc. Degree in Geology from the University of British Columbia in 1940, and my Ph.D. Degree from the University of Toronto in 1950. I have practiced my profession since graduation and have worked in many parts of the world including the northern British Columbia area near where the Amy Group of claims are located. I have visited the Amy group in person and have studied maps, reports, and assay data pertaining to the property which are on file in the Rancheria Mining Company Limited office. During the course of my work I was offered, and saw fit to purchase, \$3,000 worth of units at \$15 per unit in the 3rd Itai Mountain Grubstake.

Signed *W. H. Gross*

W.H. Gross, P.Eng.

Toronto, Canada  
August 3rd, 1964

In 1964 an adit was driven to the vein at the 4950 foot horizon and a drift length of 103 feet was excavated. For a length of 92 feet of the drift the face samples averaged 27.4 ounces of silver, 7.5 percent lead and 7.4 percent zinc. Car samples for the same length returned 29.3 ounces of silver, 8.9 percent lead and 6.0 percent zinc. The mineralization covered full drift width and wall slashes indicated an additional 3 to 5 feet of mineralization in the foot wall. The East or advancing face is in good grade material. The west face shows a strong mineralized shear with values that are below grade.

The underground headings lie some seventy feet below the surface pits and cover about 20 percent of the strike length indicated on surface.

#### ECONOMICS

Silver has been in short supply for several years. There is no reason to suspect that this shortage will be relieved in the near future. It can therefore be assumed that the present price of silver will be at least maintained for some time and a probable continued rise is indicated.

The prices of lead and zinc are at present resisting a pressure for increased prices. Although any major upward trend is not anticipated it is expected that present prices will not decrease in the foreseeable future.

Several features are important in a silver, lead and zinc prospect. In order to operate a small to medium sized mine in a remote area it is necessary to produce a medium to high grade silver concentrate that will carry the higher transportation costs. To achieve such a concentrate it is essential that the silver lead

ratio be well in excess of 2 ounces of silver to one percent lead. In the case of zinc the ratio required would be closer to 3.5 to 1.

The preliminary results at Rancheria with an indicated 4:1 ratio are within a medium grade concentrate category.

A further bonus in the zinc concentrate is the possibility of cadmium or bismuth showing up in the concentrate. The presence of cadmium can greatly enhance the sales value of the concentrate.

It is important that early bench testing should be carried out on the underground samples to determine.

- (1) Grade and recovery of a lead, zinc, silver concentrate.
- (2) " " " " " lead silver concentrate.
- (3) " " " " " zinc silver concentrate.
- (4) Grade of cadmium, bismuth or indium that may be carried in the concentrates.

In providing samples for testwork from near surface excavations it is important to know if any of the silver is oxidized. If such is the case abnormal silver losses will be experienced in flotation tests. Such losses will not occur where samples are taken from below the oxidation horizon.

#### SUMMARY AND RECOMMENDATIONS

Both the strength of the vein, as described by Dr. Gross, and the good silver lead ratio - approximately 4 ounces of silver to one percent lead - are very encouraging.

Assuming that the vein underground will stand up to the minimum 500 foot length indicated/ on surface, then a mineralized zone in the range of 450 to 500 tons per vertical foot is possible. If vertical continuity can be demonstrated and the grade and tonnage

stand up or improve then the mineralized zone has the potential of a small silver lead mining operation.

Added potential lies in the indications, by geochemical sampling and float prospecting, of considerable greater length of strike than the 500 feet outlined by surface sampling, trenching and diamond drilling. This added potential is not of immediate concern but does indicate the possibility of developing a lead silver camp in the Tootsie Lake Area.

I would therefore recommend

- (1) that a step by step underground development of the present known mineralized zone be undertaken along with preliminary metallurgical testing.
- (2) that the 138 claims be divided into two and possibly three groups; one to include the present underground work with protection along strike and dip; and one or two groups to contain the remainder of the claims. The reasoning behind this recommendation being that, with a potential operation lying in the known mineralized zone it is important to expend all available resources within the company to develop this potential. The remaining claims have a geological potential only and funds spent on preliminary prospecting represents a much greater speculative risk. Also, due to topography and the deep gulch formed by camp creek, exploration to the west will require separate access and separate camps for some considerable period of time.



( 4 )

Overhead costs

Per Month

8. ii.

brought fwd. \$6,282

Assay office and miscellaneous  
Freight

5,000

1,000

15% Contingency

\$12,282

1,842

\$14,124 per month

iii. Surface Exploration

\$8,500 per month

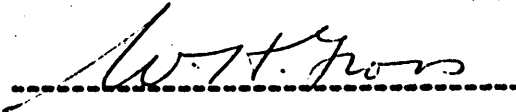
iv. Head Office

\$3,000 per month

v. Legal and Accounting

\$400 per month

Total Cost Per Month = \$78,493



Signed W.H. Gross P. Eng.

To carry out the underground development I would divide the program as follows.

Phase One

Continue the underground excavation to the East an additional 275 feet and 75 feet to the West including sufficient slashing to determine width.

Phase Two

From near or at the new West face of the drift drive a 50° raise up the mineralized zone to surface. At the same time using a surface diamond drill recheck the vein extensions to the West.

Phase Three

From a point on the drift approximately 100 feet from the 4950 crosscut sink a 45° prospect shaft to the 4875 foot horizon looking to the east and down the mineralized zone. The length of the shaft approximately 110 feet. From the bottom of the shaft drive 75 feet of drifts to ascertain grade and width of the zone at this horizon.

On the basis of the above results, along with the metallurgical test work, it should be possible to ascertain whether a mining operation is feasible and to plan such an operation.

The present camp and plant facilities, except for minor equipment additions, are available on the property.

The estimated cost and elapsed time for each phase is as follows:

Phase One - Elapsed time two months

350 feet of headings including slashes	\$ 22,000.00
Analytical and testing	1,500.00
<del>Head Office and travel</del>	<del>7,000.00</del>
Capital expenditure, rentals and repair	6,000.00
Supplies, contingencies, etc.	<u>3,500.00</u>
	\$ 40,000.00

Phase Two - Elapsed time one month

100 feet of open raise	\$ 7,000.00
Analytical and testing	2,500.00
Head Office and travel, etc.	3,500.00
Capital expenditure, rentals and repair	3,000.00
Diamond drilling	12,000.00
Supplies, contingencies, etc.	<u>2,000.00</u>
	\$ 30,000.00

Phase Three - Elapsed time three months

110 feet of open shaft	\$ 9,000.00
75 feet of drifting	6,000.00
Analytical and testing	1,500.00
Head Office and travel, etc.	→ 10,500.00
Capital expenditure, rentals and repair	6,000.00
Contingency	<u>2,000.00</u>
	\$ 35,000.00

Estimated elapsed time for program - 6 months

Estimated cost of program - \$ 105,000.00.

Respectfully submitted,

T. R. Clarke and Associates

Toronto, Ont.  
November 15, 1964

T. R. Clarke B.Eng. P.Eng.

GEOLOGICAL REPORT

GEM CLAIMS

British Columbia.

(To accompany Map A-383)

1040/  
16W

A geological and topographical survey was made of the 38 claims comprising the Gem Group during the field season of 1949. The Gem Group of claims is located 17 miles southeast of the Pine Lake Airstrip at mile 722 on the Alaska Highway.

The group of claims was mapped on a scale of 200 feet to the inch by transit and stadia traverses. Control points were established on prominent topographical features and on outcrops wherever possible during the course of these traverses. Geological mapping was carried out by short pace and compass traverses from established claim corners and control points. Elevations of all established stations were carried from a base elevation on the diamond drilling reference line. Intermediate elevations were obtained by means of an aneroid barometer-altimeter. Much of the area is drift covered and most of the outcrop is exposed on high ridges and along creek beds.

The underlying rocks on the Gem Group (see accompanying Map A-383) are principally argillaceous sediments with thin beds of dark quartzite and crystalline limestone. The argillaceous sediments are extensively altered to phyllites. The general strike of the formations is N 45° W and the average dip is 60° to the South. The beds of crystalline limestone are not continuous across the group as far as could be observed. Three areas of limestone were mapped; one on claims No. 25 and No. 26 in the northwest corner of the group, a second on claim No. 4 where the main mineral showing occurs, and a third on claims no. 6 and No. 8 in the southeast corner

of the group. It is possible that these areas are enlarged parts of a narrow continuous bed. These sediments have been intruded on the south and west sides of the group by fresh granite which is characterized by the presence of large well-formed feldspar crystals. This granite mass extends across all or part of 18 claims of the group, as shown on accompanying map A-383. A smaller sill-like body of the same granite outcrops on Claims No. 19, No. 21, No. 22, and No. 23.

A quartz vein cuts the sediments on Claims no. 13 and No. 15. It strikes N 87° E and is 1700 feet long with an average width of 75 feet. This vein contains no mineralization.

Mineralization appears to be localized in two sections. On Claim No. 12 several pieces of float containing disseminated sphalerite and galena were found by the prospectors. Trenching failed to disclose anything necessitating diamond drilling. On Claim No. 4 trenching exposed a limestone replacement zone well mineralized with galena and sphalerite. Diamond drilling on this formation has disclosed a zone continuous for at least 570 feet but too narrow and low in grade to be of commercial importance.

Preliminary arrangements for the program were supervised by J. A. Haskin and the work was under the direction of A. Koffman. The geologist in charge of the party was K. A. Gamey and mapping was done by G. Camsell, A. Troop and M. Moreau.

KAG:MH

Enc. - Map A-383

September 6, 1949.

*K. A. Gamey*

K. A. Gamey

*AK- AK*

J. A. Haskin,  
Licensed Engineer.