

REPORT
on
THE MANITOU PROPERTY
LILLOOET N. D.

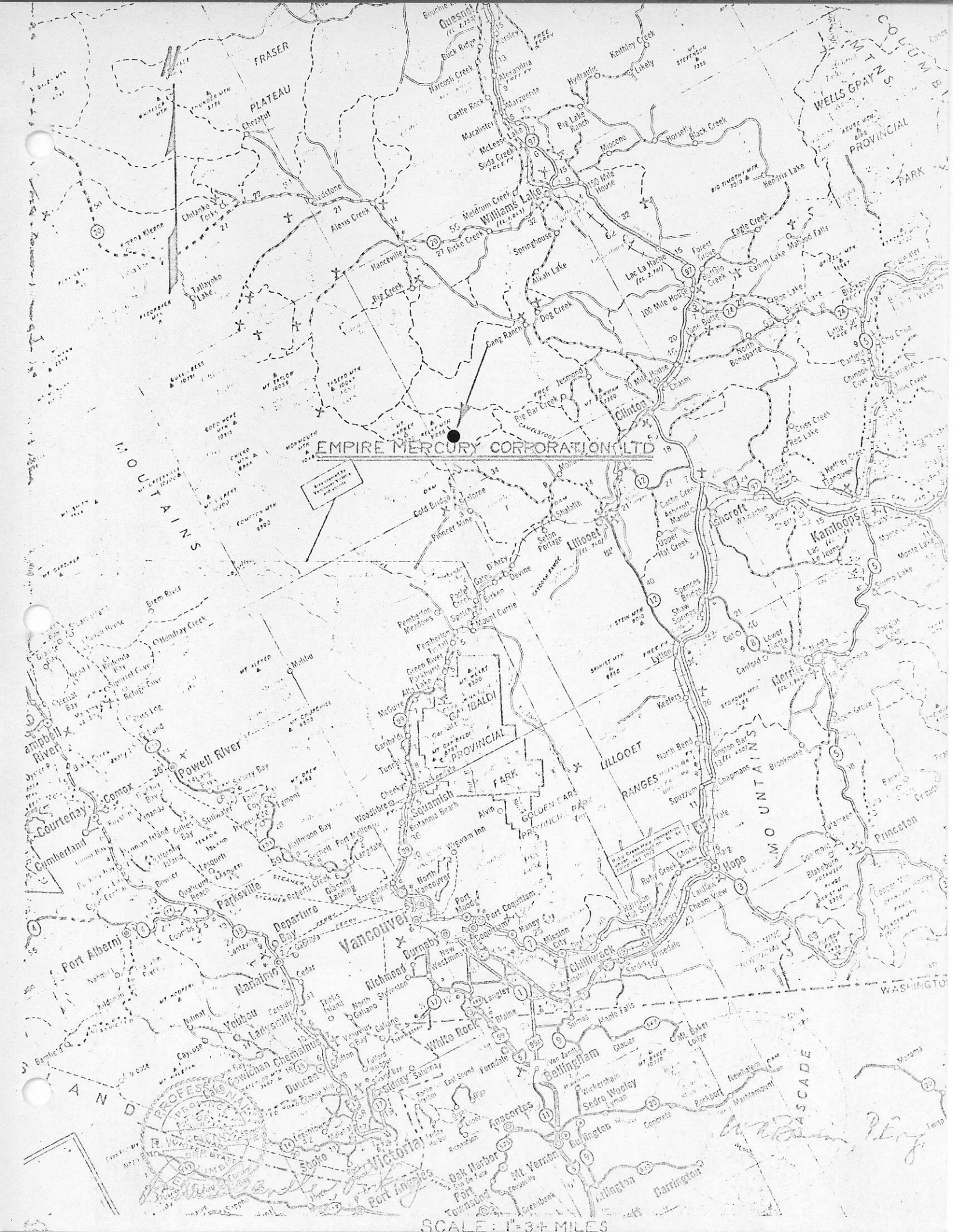
for
EMPIRE MERCURY CORPORATION LTD.

by

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Vancouver, B.C.

November 21st, 1969.



EMPIRE MERCURY CORPORATION LTD

MOUNTAINS

MOUNTAINS

AND

SCALE: 1" = 3 1/2 MILES

William P. King

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	1
SCOPE	2
LOCATION AND ACCESS	3
PROPERTY AND OWNERSHIP	3
HISTORY	3
GEOLOGY AND MINERALIZATION	5
1969 UNDERGROUND DRILLING PROGRAM	7
RECOMMENDATIONS	10
COST ESTIMATE	11
CERTIFICATES	12

LIST OF ILLUSTRATIONS

Location Map - 1" = 34 miles	- Fig. 1 - Frontispiece
Geological Map - Underground - 1" = 20'	- Fig. 2 - In envelope at back
Geological Map - Surface - 1" = 100'	- Fig. 3 - In envelope at back

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Manitou property is a few miles north of Carpenter Lake, between Lillooet and Gold Bridge, in a region of British Columbia containing numerous cinnabar occurrences. Since the discovery of cinnabar about 1936, interest in the Manitou property has fluctuated with the price of mercury. In the early years of World War II, a small tonnage of ore grading approximately 7 pounds of mercury per ton was produced. In 1965 and 1966 an extensive program of percussion drilling, under the direction of the late Dr. A.C. Skerl, was reported to have disclosed widespread mercury values. These results, which were not confirmed in the 1969 program, are discussed herein.

Interbedded sedimentary and volcanic rocks with a general northwesterly strike underlie the Manitou property. Cinnabar mineralization is related to the faulting and generally occurs in bands of fine to medium grained, green and purple andesite. The mineral accompanies quartz-carbonate stringers and is distributed sporadically in the principal andesite band, which is about 80 feet wide in the main or 4000 level adit. Concentrations occur mainly along the hanging-wall of the andesite.

Narrow felsite dykes are associated with and parallel easterly striking faults. Fracturing in the andesite band appears to be related to the easterly-striking Relay fault zone, which itself is mineralized in a random manner.

Underground sampling by R.W. Phendler, P.Eng. of four crosscuts in the 4000 level adit returned 3.19 lbs. mercury (Hg) per ton across an average width of 26.0 feet.

During six weeks in September and October 1969, 1544' of underground BQ wireline diamond drilling was carried out, mainly in an attempt to test the Main zone on and below the 4000 level. Drilling results confirm that a grade of approximately 3 lbs. of mercury per ton across 25-30 feet can be expected in this zone. Other nearby, mineralized bands of andesite were discovered by the drilling and require investigation. Core recovery was originally low but, with the introduction of drilling mud, it reached a satisfactory 85-90% within the mineralized andesite.

Other mercury bearing zones on the Manitou property are the Relay, Empire, Grizzly, and Unnas zones (See Fig. 3). All warrant some exploratory work.

It is recommended that soil sampling, trenching, surface and more underground diamond drilling be carried out. Total expenditure for this work is estimated to be \$126,500.

SCOPE

The Manitou property of Empire Mercury Corporation was first examined by the writers between July 18th and July 30th, 1969. As a result of this examination underground diamond drilling was recommended and this was carried out between September 17th and November 3rd, 1969.

LOCATION AND ACCESS

The Manitou property is in the Tyaughton Creek valley, about twenty-five miles northeast of Gold Bridge and fifty miles northwest of Lillooet, British Columbia. Access is by fair gravel road from the Lillooet-Bralorne Highway.

Elevation of the property is about 4000'; topography and vegetation are moderate.

PROPERTY AND OWNERSHIP

According to company records there are 74 claims, some owned outright and some optioned. Mr. Edwin Phillips of Gold Bridge controlled the property prior to Empire Mercury Corporation's acquiring it.

HISTORY

The Manitou prospect has been officially recognized since 1936 when it was described in detail in the Annual Report of the Minister of Mines of British Columbia. Dr. J.S. Stevenson examined and mapped the underground workings in 1940 and reported his findings in Bulletin No. 5 of the B.C. Department of Mines.

Production took place between 1940 and 1942 when 156 tons of mercury ore were shipped that averaged about seven pounds of mercury per ton.

In 1965 Mr. E. Phillips, the owner, negotiated an option agreement with Empire Mercury Corporation. As a result, exploratory

work carried out by this company. This consisted of underground and surface geological mapping and sampling, bulldozer trenching and percussion drilling. At least 142 angled, percussion holes were drilled on a grid pattern, presumably on the mistaken assumption that the cinnabar was widely disseminated. Procedures were haphazard, sampling and recording of results were incomplete. For the first six months of the program, all holes were drilled dry and were terminated when water was encountered. During this period samples were taken at ten-foot intervals and assayed on the site. The drilling technique differed somewhat when water was used. The holes were drilled dry until water was encountered and were continued wet until the water was lost. Samples taken during the wet drilling were dried over wood fires. It is estimated that less than half the samples taken during the entire program were dried in this manner and possibly suffered a loss of mercury through volatilization. No records were kept and now there is no way of knowing which samples went through the drying procedure and which did not. In any event, assay records of the percussion drilling are unreliable and cannot be used to evaluate the mineralization. Total drilling on the property was at least 23,450 feet, according to reports by Dr. A.C. Skerl (1967) and R. Adamson (1969).

GEOLOGY AND MINERALIZATION

The Manitou property is underlain by interbedded sedimentary and volcanic rocks of the Ferguson group, which are considered to be of Permian age. The sediments consist of ribbon chert, slate, argillite and arkosic sandstone, and the volcanics consist of purple and green andesite. These formations trend northwesterly and are intruded by easterly-striking felsite dykes and irregular serpentine masses.

Steeply-dipping, northwest trending faults parallel the regional attitude of the formations and easterly-striking faults are associated with the parallel felsite dykes mentioned above. These faults may have been channelways through which the mineralizing solutions moved.

The sedimentary formations are generally unmineralized, presumably because of their physical nature. The dense, fine-grained, competent andesites fractured well and, hence, the calcite-cinnabar mineralization occurs therein.

The principal zones on the Manitou property are the Relay and the Main. The Relay zone strikes east-west across the trend of the rock formations. It can be followed for about 2000' and is irregularly mineralized, principally where the host rock is andesite. None of the four Relay edits is presently accessible but J.S. Stevenson's maps show a variety of rock types including some favourable andesite. Dip of the Relay fault is about 60° S.

The Main zone is not a fault zone but a band of northwesterly trending, fractured andesite that is mineralized. Some cinnabar-calcite stringers strike northwesterly. Drifting was carried out for 450' along strike of the mineralized andesite band which, at the adit level, has a width of about eighty feet.

Samples taken on the 4000 level by R.W. Phendler, F.Eng. during the July, 1969, examination are summarized as follows:

<u>Location</u>	<u>Width</u>	<u>Lbs. Mercury per ton</u>
#1 Crosscut	10.0'	15.6
#2 Crosscut	20.0'	3.2
#3 Crosscut	15.0'	2.6
#4 Crosscut	60.0'	1.1
Average	26.0'	3.19

In the 4000 level adit the mineralized fractures show a vague northwesterly trend. Near the portal of the 4000 level adit, however, east-west fracturing is evident, apparently sympathetic to the Relay fault.

The Empire zone (See Fig. 3) lies about 800' east of the principal showings and may be an extension of the mineralized Relay fault. Exposed a few hundred feet north of the camp buildings, it is associated with narrow felsite dykes.

The Grizzly zone is about 3000' southeast of the Empire zone and here the cinnabar mineralization is associated with an easterly-striking felsite dyke. About seventy feet of andesite is exposed in an open cut but little cinnabar is visible. In 1966, eight

percussion holes were drilled parallel to the zone and are reported to have intersected mineralization. One chip sample taken by R.W. Phendler, P.Eng. assayed 1.0 lbs. Hg per ton across 10.0'.

The Unnas zone lies about 3200' south of the Empire zone and shows some cinnabar mineralization in both andesite and firm sandstone. The ground is well fractured. All percussion holes here were reported lost before completion. During the present program 120' of bulldozer trench was sampled by R.W. Phendler, P.Eng. and the best 45' averaged 6.9 lbs. Hg per ton.

1969 UNDERGROUND DRILLING PROGRAM

Between September 17th and November 3rd, 1969, BQ wireline diamond drilling was carried out in the 4000 level adit of the Manitou property. The purpose of the program was to determine whether the andesite band on which the 4000 level was driven (i.e. the Main zone) is sufficiently well mineralized to warrant additional exploration and development.

Underground sampling on crosscuts indicates that the mineral zone grades between 2.5 and 3.0 pounds of mercury across 20-30' width. Flat hole drilling from the 4000 level adit substantiates this and down-hole drilling shows that the mineralization persists down dip at least one hundred feet below the level.

Based on drill holes at the north end of the adit, it appears that a serpentine body cuts off or possibly interrupts

the mineralized andesite in this direction. East and west of the Main zone, exploration drilling disclosed the presence of two other, parallel, cinnabar-bearing andesite bands. These merit further testing.

In all, eleven underground holes were drilled, totalling 1544'. With the introduction of drilling mud and modern drilling techniques, core recovery, which in the early part of the program was quite poor, was satisfactory within the mineralized andesites. The accompanying underground map (Fig. 2) shows all holes drilled with rock types and mineral intersections. On the following page is a summary of the drill holes with mercury assays in pounds per ton.

<u>D.H.</u>	<u>BEARING</u>	<u>DIP</u>	<u>DEPTH</u>	<u>FOOTAGE</u>	<u>WIDTH</u>	<u>LBS. Hg/TON</u>
40-01	S59°W	0°	75'	0.0- 3.0 3.0- 5.5 71.0- 75.0	3.0' 2.5' 4.0'	2.6 1.0 1.4
40-02	N60°E	0°	75'	0.0- 7.5 7.5- 17.0 17.0- 23.0	7.5' 9.5' 6.0'	8.2 0.8 0.4
40-03	S60°W	0°	150'	0.0- 5.7	5.7'	9.2
40-04	N60°E	0°	210'	0.0- 23.0 105.2-112.3 116.7-122.6	23.0' 7.1' 5.9'	0.7 2.4 1.7
40-05	S88°E	-40°	246'	52.0- 59.4 115.0-136.2 115.0-140.0	7.4' 21.2' 25.0'	0.9 3.2 2.9
40-06	N51°E	-40°	208'	49.5- 62.0 112.0-116.8 145.4-155.0 166.2-172.0	12.5' 4.8' 9.6' 5.8'	2.1 1.4 2.6 1.0
40-07	N20°E	-40°	151'	Lost in fault zone		
40-08	N14°E	0°	160'	Lost in fault - Serpentine area		
40-09	S64°W	-30°	194'	67.0- 71.0 113.0-120.2 152.5-168.0 168.0-178.0 183.8-189.2	4.0' 7.2' 15.5' 10.0' 5.4'	0.6 0.5 1.1 0.7 1.0
40-10	N61°E	0°	50'	0.0- 5.0 5.0- 11.0	5.0' 6.0'	2.8 0.8
40-11	N61°E	0°	<u>25'</u>	Fault zone - Argillites		
Total footage			1544'			

The most significant hole is 40-05 which intersected the Main zone about 100' below the 4000 level. At this depth the andesite is 52' wide and the hangingwall 21.2' assayed 3.2 pounds mercury per ton. This is somewhat better than D.H. 40-09 which intersected the Main zone about 50' below the level; here the andesite is 100' wide with a 20' band of chert in the middle. The mineralization is concentrated in the hangingwall portion of the andesite band, which has a 65° dip to the west.

RECOMMENDATIONS

Drilling results on the Main zone are sufficiently encouraging that a series of surface holes should be drilled to intersect it 200' and 400' below the 4000 level. Underground diamond drilling of the Relay zone should be undertaken.

Exploratory work, including surface diamond drilling, should be carried out on the Empire, Grizzly and Unas zones (See Fig. 3).

Soil sampling is recommended for the entire claim group. This should be followed by bulldozer trenching in areas where the soil is found to contain abnormal amounts of mercury.

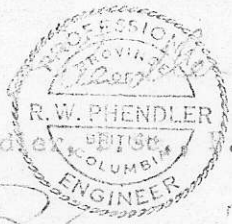
COST ESTIMATE

Surface diamond drilling - BQ - 5000' @ \$15/ft.	\$75,000
Underground diamond drilling - BQ - 1000' @ \$15/ft.	15,000
Soil sampling	10,000
Bulldozer trenching	5,000
Engineering, geology and supervision	<u>10,000</u>
	\$115,000
10% contingencies	<u>11,500</u>
	\$126,500

Respectfully submitted,

BACON & CROWHURST LTD.

R.W. Phendler, P. Eng.
 R.W. PHENDLER, P. Eng.



W.R. Bacon, P. Eng.
 W.R. Bacon, Ph.D., P. Eng.

CERTIFICATE

I, Roy William Phendler, of the City of Vancouver in the Province of British Columbia, hereby certify as follows:

1. That I am a registered Professional Engineer in the Province of British Columbia, No. 4421.
2. That I am a graduate of McGill University, Montreal, Quebec, with a Bachelor of Science degree in geology.
3. That I have practiced my profession as geologist continuously for the past seventeen years in Quebec, Ontario, Saskatchewan and British Columbia in Canada; in some of the western U.S.A.; Mexico; and Peru and Colombia in South America.
4. That I have no interest directly or indirectly in Empire Mercury Corporation Ltd. nor do I expect to receive any.
5. That the information contained herein was compiled as a result of numerous visits to the property as follows: July 18-22, July 30, September 29th - October 1st, 1969.

R. W. Phendler, P. Eng.

R.W. Phendler P. Eng.



Vancouver, B.C.
November 21st, 1969.

CERTIFICATE

I, William R. Bacon, with business address at
102 - 1111 West Georgia Street, Vancouver, 5, British Columbia,
DO HEREBY CERTIFY THAT:

1. I am a consulting geological engineer.
2. I am a graduate of the University of British Columbia with B.A.Sc. (1939) and M.A.Sc. (1942) degrees in Geological Engineering.
3. I am a graduate of the University of Toronto with a Ph.D (1952) degree in Economic Geology.
4. I have practised my profession for thirty years in Canada, South America and Australia. During the past twenty years, the majority of my time has been spent in British Columbia; it includes seven years (1949-56) as geologist with the B.C. Department of Mines.
5. I have personally examined The Manitou Property in the Lillooet M.D. for Empire Mercury Corporation Ltd.
6. I have no interest, direct or indirect, in the property or securities of the above company, nor do I expect to acquire any such interest.


W.R. Bacon, Ph.D, P.Eng.

Vancouver, B.C.
November 21st, 1969.