

93B Gibraltar Mines

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September 3, 1968

Gibraltar Mines Ltd.,
509 Richards Street,
Vancouver 2, B. C.

Dear Sirs :

This is a summary report based on a personal examination of the mineral property in question and of a careful study of reports, drill logs and assays completed over the past few years.

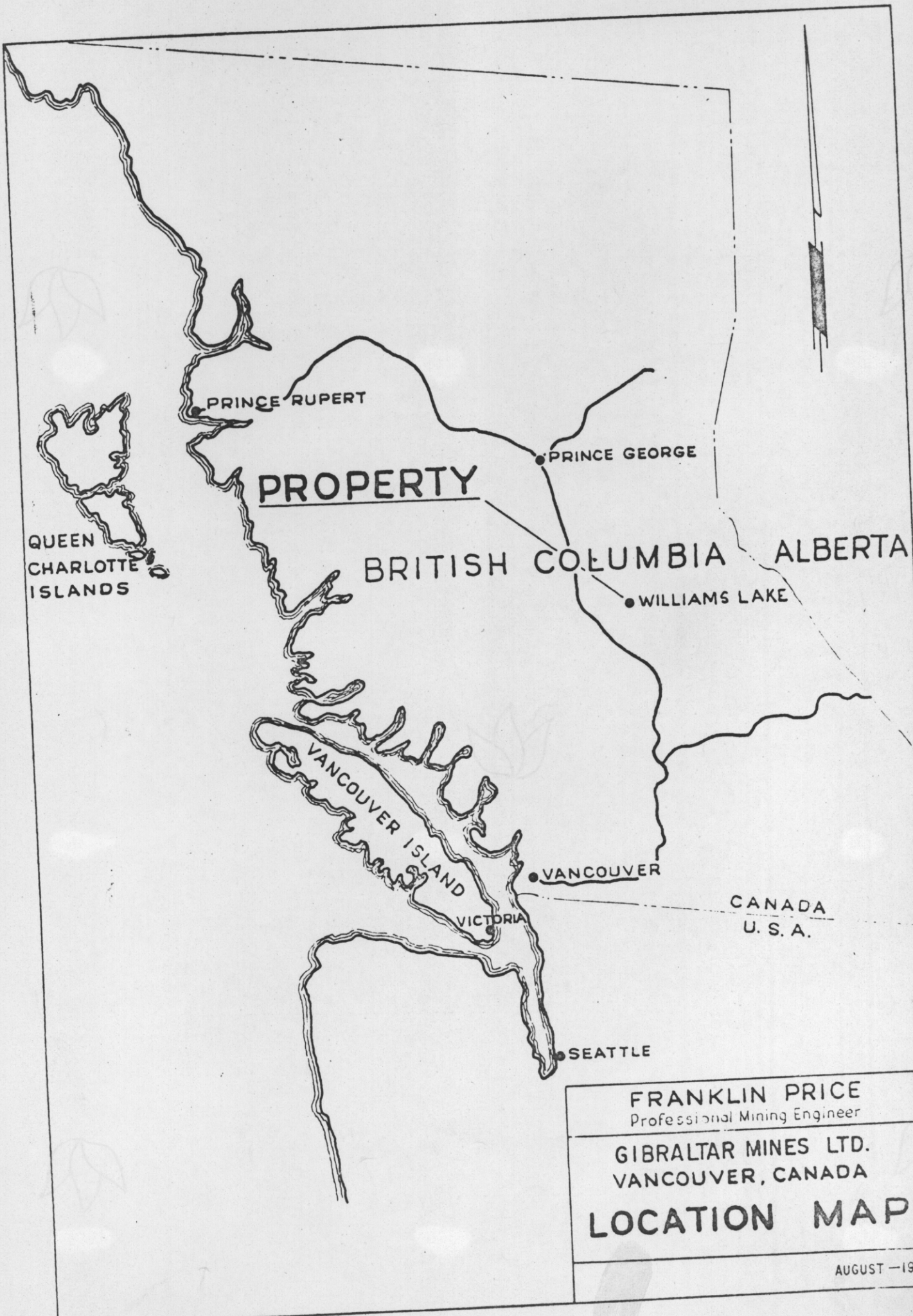
Mr. James J. Doherty, P. Eng., has worked with me on this report and also accompanied me when I visited the property on July 1, 1968. I acknowledge his able assistance.

In this summary report we have used the reports and data shown on the reference page. The conclusions and recommendations, however, are my own.

Respectfully submitted,

Franklin L. C. Price.

flcp/h



PROPERTY

QUEEN
CHARLOTTE
ISLANDS

PRINCE RUPERT

PRINCE GEORGE

BRITISH COLUMBIA ALBERTA

WILLIAMS LAKE

VANCOUVER ISLAND

VANCOUVER

VICTORIA

CANADA
U. S. A.

SEATTLE

| |
|--|
| FRANKLIN PRICE Professional Mining Engineer |
| GIBRALTAR MINES LTD. VANCOUVER, CANADA |
| LOCATION MAP |
| AUGUST - 1968 |

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Location Map

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Geology

Geochemical

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INTRODUCTION:

Gibraltar Mines Ltd. of Vancouver, British Columbia, own and control 173 mineral claims, in the Cariboo Mining District, nearly 400 miles north of Vancouver. Limited exploration work has been conducted over these claims for nearly ten years and, during this period, a sum of about \$600,000.00 has been expended. The work has been: Surveying, geophysical, geochemical, and drilling, which indicated a deposit of copper of 14 million tons grading 0.52% copper. This tonnage does not include the East zone or the higher grade zones that may be worked by conventional underground mining. The 14 million tons may be increased by recommended drilling as the zone is open on both the west and south limits.

The economics of this mineral deposit are changing each year, as the cost of mining decreases and the price of copper is increasing. Therefore, it is recommended that additional and detail exploration surveys be completed to determine the true potential of this large copper deposit.

It is recommended that a sum of \$570,000.00 be available in order to complete fill-in drilling along the perimeter of the West zone, exploration drilling in the East zone, and also bulk sampling to be followed with pilot mill testing as the main zone is outlined.

LOCATION:

The block of claims is located in the Cariboo Mining District, nearly 400 miles north of Vancouver, British Columbia, Canada. The property is just five miles east of the village of Marguerite on the east side of the Fraser River. Gravel roads

cross the claim area and access to any part of the property is good.

The West ore zone (adit area) is only 7 miles by a good gravel road from the paved highway at McLeese Lake. The town of McLeese Lake is only 34 miles north of Williams Lake, B. C. The Canadian Pacific Air Lines and the Pacific Great Eastern Railway make daily stops at Williams Lake.

The exact location of the property is $122^{\circ} 18'$ West longitude and $52^{\circ} 31'$ North latitude.

HISTORY:

The large copper showing is exposed along the left bank of Granite Creek. It was first discovered about 1927 and, at that time, was reported in the B. C. Minister of Mines report as the "Hill" property. It was not until 1950 that any serious work was done. An adit was driven southeast into the main copper showing during the late 1950's. The adit was 110 feet and exposed chalcopyrite and pyrite. Samples are reported to show copper values of 1.3% along the full length of 110 feet. Various mining companies carried on sporadic exploration programmes commencing in 1955.

Major Mines Ltd. of Vancouver completed a series of ten short diamond drill holes near the adit, and also a series of 20 short EX holes during the years 1955 to 1957.

In 1962, Keevil Mining of Toronto acquired the property and in 1963 they started exploration work of a geochemical nature, a few lines of I. P. and two diamond drill holes.

Gibraltar Mines then took over the property in early 1964 and immediately started a drilling programme. Limited work was carried out in 1964, 1965 and 1966. They had completed 52 holes before they optioned the entire block of claims to Cominco and Mitsubishi Mining.

The exploration work over the next two years was managed by Cominco personnel and they continued this work until November 1967.

In early 1968, Gibraltar Mines continued this drilling completing five holes in 1968 and additional work is now recommended.

EXPLORATION:

1. Geophysical.

(a) Magnetometer Survey:

Although an aerial magnetometer survey had shown the claims area to be uniformly "flat" in magnetic deviation, a ground survey was conducted over the EV 5 to 12 claims where a roof pendant was known to occur. Five weak anomalous zones were outlined in a general east-west line across the EV 5, 7, 8 and 10 claims. Preliminary prospecting of this area has shown that there is iron, zinc, and copper mineralization present, but no detailed work has been done.

Additional magnetometer work was completed by Cominco engineers in 1967. This survey was carried out mainly on a spot check basis in areas of significant I. P. response. The result of this work is attached on the magnetometer drawing attached to this report.

Gibraltar Mines also made an additional magnetometer study in early 1968 when they started the work on the northeast mineralized zone. This survey was designed to cover the area from the zero point on the base to 35 north and to 28 east. The results were not significant.

(b) Geomag Survey:

A geomag survey by Electronic Geophysical Surveys Ltd., Vancouver, B. C., was conducted over parts of the Zenith 1, 2, 3 and 4 claims in February 1965. The interpretation and report by D. L. Hings concluded that further investigation was warranted in the northern portion of the area surveyed.

(c) Fracture Density Study:

Gibraltar Mines retained Mr. D. A. Chapman of Vancouver to complete a Fracture Density study of the area and, particularly, the claim block. He concluded that three regional strikes seemed to control density patterns of the apparent fracture system. These he outlined:

- (i) a possible major stress axis oriented about 270° - 280° azimuth.
- (ii) a conjugate system (normal) striking between 350° and 10° azimuth.
- (iii) resultant shear fractures that strike approximately 320° - 330° azimuth.

He recommended further work on the northeast zone:

"I believe that a stock of the younger intrusive may be found to the east of the baseline at approximate coordinates of 5000 E and 3000 N. It could well be the source of the geochem anomaly. I would recommend this area for detailed geological and geophysical examination".

(d) Induced Polarization Survey:

In 1962, the Keevil Mining group conducted a programme of mapping, soil sampling and I. P. covering an area from 12 W to 44 E, and from 44 N to 16 S. In 1963, Hunttec carried out another I. P. survey and this time it was restricted from 8 W to 12 E and from 10 N to 10 S. They discovered a narrow anomalous zone that broadened to the west. It was on this anomaly that Gibraltar Mines commenced their 1966 drilling programme.

Cominco contracted the I. P. work to McPhar Geophysics and the 1967 survey was carried out using a McPhar frequency type system. Lines were run NE - SW at 1,000 foot spacings, and measurements taken at 300 foot intervals with three receiver readings from each transmitter location. In addition, several intermediate lines were surveyed to detail the stronger anomalies and the more interesting features were checked with 200 foot electrode intervals. Anomalous effects were measured on every traverse. They ranged from very broad weak zones to narrow strong features. Although there are several isolated anomalies, the major responses could be correlated into six main zones. The I. P. zones are indicated on the attached drawing together with the drilling that was done to test these zones.

2. Geochemical.

The geochemistry work was started by the Keevil Engineers in 1962. At the same time that the grid was completed and line cutting started they took soil samples. It is believed the samples were appraised by the rubianic

acid method and soil from each sample retained. The area that indicated high copper content was then rechecked by using the same sample and appraising it on the atomic absorption spectrophotometer machine. The area was also checked with the I. P. instrument.

The grid was extended by the Cominco men in 1967, as they did a total of 63 line-miles across the claims. The Cominco engineers used the A. A. Spectrophotometer and they used soil sampling to check high I. P. readings. The Cominco results are tabulated on the attached drawing and the readings reported in parts per million of copper.

SURVEY CONTROL:

Base lines were run N 45° W, and cross lines perpendicular to them. Base lines and important connecting cross lines were guided by transit and picket, a combination that gave maximum speed and reasonable accuracy. Cross lines were turned off with the transit and run by picket. A compass was used where picket lines intersected a tree of merchantable size. This combination of techniques gave reasonable accuracy and good control on subsequent mapping and surveying. A total of 63 line-miles was added to the grid in 1967.

Because of the large number of overlapping claims and intervening open fractions on the Gibraltar property, it necessitated a thorough ground survey and document search to adequately determine the actual claim boundaries. This involved locating the posts in the field and tying their position into the nearest picket on the grid system by either pace and compass, or chain and compass. These

locations were then plotted and the claim boundaries established by referring to the actual record forms issued for the claims involved. The work revealed that several claims were all or in part invalid due to prior staking, and also several internal fractions were discovered.

The Gibraltar property currently comprises a total of 173 claims which are held by Estey Agencies Ltd. and/or Gibraltar Mines (P. T. Bowes).

Elevation control was established on the base line and the elevation of the collar of drill holes is based on altimeter readings referred back to the base line.

PROPERTY:

The Company has control of a block of 173 mineral claims in the Cariboo Mining Division. The claims are :

| <u>Claim Name</u> | <u>Record Nos.</u> | <u>Date of Expiration</u> |
|-------------------|--------------------|---------------------------|
| Xaire 1 - 2 | 26004 - 05 | July 23, 1969 |
| Pan 1 - 5 | 25791 - 95 | May 4, 1969 |
| Pan 7 - 9 | 35738 - 40 | February 1, 1969 |
| Pan 11 - 12 | 35743 - 44 | " " " |
| Zephyr 1 - 16 | 25574 - 89 | January 9, 1969 |
| Zephyr 3 - 5 Fr. | 34972 - 74 | March 3, 1969 |
| Z 1 Fr. | 31861 | January 26, 1969 |
| Z 2 Fr. | 34969 | March 3, 1969 |
| A1 1 - 20 | 28447 - 66 | July 2, 1969 |
| A1 21 - 22 Fr. | 28467 - 68 | July 2, 1969 |
| A1 23 - 24 Fr. | 34970 - 71 | March 3, 1969 |
| IT 1 - 2 | 32619 - 20 | February 14, 1969 |
| IT 4 - 6 | 32622 - 24 | " " " |
| IT 8 - 13 | 32526 - 31 | " " " |
| EV 1 - 14 | 31054 - 67 | October 19, 1969 |
| EV 15 - 20 | 31739 - 44 | January 17, 1969 |
| EV 21 - 22 | 36364 - 65 | June 14, 1969 |

| <u>Claim Name</u> | <u>Record Nos.</u> | <u>Date of Expiration</u> |
|-------------------|--------------------|---------------------------|
| Bud 1 - 6 | 32100 - 05 | January 17, 1969 |
| Bud 7 - 8 | 36362 - 63 | June 14, 1969 |
| Dot 1 - 2 Fr. | 34975 - 76 | March 3, 1969 |
| Dot 1 - 5 | 34977 - 81 | " " " |
| VE 1 - 10 | 34947 - 56 | February 14, 1969 |
| VE 12 | 34958 | " " " |
| VE 14 - 22 | 34960 - 68 | " " " |
| Lynne 1 - 2 Fr. | 36697 - 98 | July 13, 1969 |
| Lynne 3 | 36699 | " " " |
| Lynne 6 Fr. | 36702 | " " " |
| Val 1 - 12 | 33849 - 60 | March 18, 1969 |
| Val 14 | 33862 | " " " |
| Val 16 | 33864 | " " " |
| Val 19 - 27 | 33867 - 75 | " " " |
| Val 35 | 33883 | " " " |
| Val 37 | 33885 | " " " |
| Val 39 | 33887 | " " " |
| Val 41 | 33889 | " " " |
| Val 43 | 33891 | " " " |
| Val 45 | 33893 | " " " |
| Val 47 | 33895 | " " " |
| Val 49 | 33897 | " " " |
| Bay 1 - 3 | 42310 - 12 | April 4, 1969 |
| Flo 1 - 2 Fr. | 43172 - 73 | August 3, 1969 |
| Flo 3 - 4 Fr. | 43289 - 90 | August 29, 1969 |
| Pine Tree 1 - 2 | 43029 - 30 | July 4, 1969 |
| Pine Tree 3 | 43088 | September 6, 1968 |
| Pine Tree 4 - 6 | 43489 - 91 | " " " |

Gibraltar Mines also owns an option from Coast Silver Ltd.

This gives Gibraltar the exclusive right to purchase a block of mineral claims to the west and adjoining the Gibraltar property. The claims covered by this option are :

| <u>Claim Name</u> | <u>Record Nos.</u> |
|-------------------|--------------------|
| Jan 1 | 29710 |
| Jan 3 - 6 | 29711 - 14 |
| Summit 1 - 8 | 29702 - 09 |
| Summit 1 Fr. | 42378 |

All Cariboo Mining Division.

This property has been under option for several years and over \$ 90,000 has been expended by Gibraltar on the claims. The next work commitment is that Gibraltar must spend \$50,000 by April 1, 1969 and of this Gibraltar has already spent \$18,000 toward that sum.

DRILLING:

The following drilling list will show how the drilling has been interrupted by lack of capital and change in engineering and geological direction. The work has been limited by only checking a certain anomaly or geological structure and never completing the zone to delimit the mineralization.

OUTLINE OF DRILLING

1956 - Major Mines Ltd.

| <u>Hole</u> | <u>Location</u> | <u>Bearing</u> | <u>Dip</u> | <u>Depth'</u> |
|-------------|----------------------------|----------------|------------|---------------|
| 1E | Adit | | | 320 |
| 2E | 40' from face | | | 276 |
| 3E | Adit | | | 544 |
| 4E | 50' N. E. - adit | | | 158 |
| 5E | Lost hole | | | Lost |
| 6E | Adit | | | 144 |
| 7E | 20' from face | | | 98 |
| 8E | Near portal | | | 460 |
| 9E | 420' N. 70° W. from portal | | | 544 |
| 10E | 500' N. 70° W. from portal | | | 346 |

Later Major Mines completed 20 short holes, however no accurate results are available. In a report summarising exploration work on the drilling, Mr. R. Clothier in 1957 stated that his average grade from adit and drill samples was 1.15% copper.

1963 - Keevil Mining Company

| | | | | | |
|--------|-----|----------|---------|-------|-----|
| 63 - 1 | 4 E | 0 + 25 S | N 45° E | - 70° | 431 |
| 63 - 2 | 4 E | 0 + 75 N | N 45° E | - 60° | 364 |

1964 - Gibraltar Mines Ltd.

| | | | | | |
|--------|-------------------|--|--|-------|-------|
| 64 - 1 | 70' S. E. of adit | | | - 90° | 1,175 |
|--------|-------------------|--|--|-------|-------|

1965 - Gibraltar Mines Ltd.

| <u>Hole</u> | <u>Location</u> | <u>Bearing</u> | <u>Dip</u> | <u>Depth'</u> |
|-------------|-------------------------|----------------|------------|---------------|
| 65 - 1 | 400' W of adit | | - 90° | 151 |
| 65 - 2 | 2 + 50 E 1 + 10 N | | - 90° | 224 |
| 65 - 3 | 112' N W of hole 63 - 2 | S 60° W | - 60° | |

1965 - Percussion Drilling by Gibraltar Mines Ltd.

| | | | |
|--------|-----------|-----------|-----|
| M - 1 | 0 + 20 E | 0 + 50 S | 80 |
| M - 2 | 0 + 20 E | 1 + 50 S | 90 |
| M - 3 | 1 + 20 E | 1 + 50 S | 170 |
| M - 4 | 2 + 00 E | 1 + 50 S | 170 |
| M - 5 | 2 + 00 E | 0 + 00 | 150 |
| M - 6 | 1 + 60 E | 0 + 00 | 150 |
| M - 7 | 1 + 60 E | 0 + 50 N | 140 |
| M - 8 | 2 + 80 E | 1 + 10 N | 110 |
| M - 9 | 2 + 70 E | 0 + 40 N | 140 |
| M - 10 | 2 + 80 E | 1 + 40 S | 100 |
| M - 11 | 3 + 60 E | 2 + 00 S | 100 |
| M - 12 | 3 + 60 E | 1 + 40 S | 140 |
| M - 13 | 3 + 60 E | 1 + 50 N | 100 |
| M - 14 | 5 + 20 E | 2 + 00 N | 140 |
| M - 15 | 6 + 20 E | 1 + 80 S | 150 |
| M - 16 | 5 + 20 E | 1 + 50 N | 100 |
| M - 17 | 6 + 00 E | 0 + 00 | 150 |
| M - 18 | 8 + 50 E | 0 + 70 S | 150 |
| M - 19 | 0 + 00 | 0 + 10 S | 100 |
| M - 20 | 6 + 50 E | 2 + 50 S | 120 |
| M - 21 | 8 + 00 E | 1 + 75 S | 100 |
| M - 22 | 10 + 00 E | 10 + 65 S | 100 |
| M - 23 | 12 + 00 E | 10 + 60 S | 100 |
| M - 24 | 8 + 50 E | 1 + 90 S | 100 |
| M - 25 | 9 + 50 E | 1 + 00 S | 100 |

Hole No. 1 showed the best values in the bottom 10 feet, from 70 to 80, which assayed 0.515% copper. Hole No. 5 cut a good section from 30 to 50 feet, averaging 0.53% copper, and from 80 to 100 feet the mineralization assayed 0.45% copper. Hole No. 6 cut good mineralization from 20 to 80 feet, assaying 0.65% copper, and finished with 20 feet averaging 0.36% copper. Hole No. 7 was excellent from 10 to 140 feet of depth, and from 70 to 110 feet the average grade was 0.71% copper. The 20 feet beneath this section was badly broken and cuttings were lost, indicating a well mineralized zone. The bottom 10 feet assayed 0.35% copper. Hole No. 9 was an excellent hole from collar to bottom at 140 feet. The lowest two 10-foot sections averaged 1.25 and 1.685% copper. Hole No. 10 cut good mineralization from 30 to 60 feet, averaging 0.51% copper. Hole No. 16, from 50 to 100, the bottom, averaged 0.38% copper.

Heavy concentrations of pyrite were cut in Holes Nos. 17 and 18, but copper content was low.

Hole No. 19, from 20 to 80 averaged 0.39% copper.

Holes 20 to 25 were prospect holes, yielding low values.

In general, the percussion drilling results were satisfactory for shallow testing, and grade results are believed to be below those which would be found by diamond drilling.

1966 - Gibraltar Mines Ltd.

| <u>Hole</u> | <u>Location</u> | | <u>Bearing</u> | <u>Dip</u> | <u>Depth</u> |
|-------------|-----------------|-----------|----------------|------------|--------------|
| 66 - 1 | 16 E | 16 N | S 45° W | 45° | 170 ✓ |
| 66 - 2 | 2 + 50 E | 2 + 00 S | N 30° E | 45° | 307 |
| B - 1 | 20 E | 11 N | N 45° E | 45° | 1,011 ✓ |
| B - 2 | 20 E | 16 N | N 30° E | 45° | 921 ✓ |
| B - 3 | 15 + 20 E | 14 + 70 N | N 30° E | 45° | 586 ✓ |
| B - 4 | 24 + 75 E | 17 + 50 N | N 30° E | 45° | 506 |
| B - 5 | 4 W | 3 + 50 S | N 45° E | 45° | 529 |
| B - 6 | 4 W | 3 + 50 S | N 45° E | 60° | 469 |
| B - 7 | 21 + 75 E | 20 + 00 N | North | 45° | 561 ✓ |
| B - 8 | 8 W | 4 + 50 S | N 45° E | 45° | 550 |
| B - 9 | 8 W | 2 S | N 45° E | 45° | 561 |
| B - 10 | 18 + 75 E | 23 N | N 30° E | 45° | 439 ✓ |
| B - 11 | 8 W | 7 N | N 45° E | 45° | 573 |
| B - 12 | 6 W | 4 S | N 45° E | 45° | 571 |
| B - 13 | 18 E | 23 N | | 90 | 316 ✓ |
| B - 14 | 12 W | 4 S | N 45° E | 45° | 551 |
| B - 15 | 12 W | 4 S | | 90 | 712 |
| B - 16 | 16 E | 0 + 40 N | N 45° E | 45° | 541 |
| B - 17 | 16 E | 8 S | N 45° E | 45° | 367 ✓ |
| B - 18 | 14 W | 2 S | | 90 | 657 |
| B - 19 | 12 W | 0 + 00 | | 90 | 767 |
| B - 20 | 14 W | 4 S | | 90 | 507 |

1966 - Cominco Ltd.

| | | | | | |
|--------|------|----------|---------|-----|-------|
| C - 21 | 18 W | 6 S | | 90 | 671 |
| C - 22 | 18 W | 2 S | | 90 | 556 |
| C - 23 | 18 W | 10 S | | 90 | 696 |
| C - 24 | 14 W | 10 S | | 90 | 370 |
| C - 25 | 10 W | 10 S | | 90 | 627 |
| C - 26 | 6 W | 9 + 50 S | N 45° E | 45° | 695 |
| C - 27 | 8 W | 9 S | N 45° E | 45° | 350 |
| C - 28 | 22 W | 8 + 50 S | | 90 | 660 |
| C - 29 | 26 W | 2 S | | 90 | 650 |
| C - 30 | 10 W | 35 N | | 90 | 574 |
| C - 31 | 10 W | 27 N | | 90 | 526 |
| C - 32 | 22 W | 16 S | | 90 | 771 |
| C - 33 | 14 W | 16 S | | 90 | 642 |
| C - 34 | 16 W | 15 N | | 90 | 367 |
| C - 35 | 40 E | 14 N | | 90 | 687 |
| C - 36 | 32 E | 30 N | N 45° E | 45° | 456 ✓ |
| C - 37 | 70 E | 32 S | | 90 | 194 |

1967 - Cominco Ltd.

| <u>Hole</u> | <u>Location</u> | <u>Elev.</u> | <u>Bearing</u> | <u>Dip</u> | <u>Depth'</u> |
|-------------|-----------------------|--------------|----------------|------------|---------------|
| MM - 1 | 4 + 00 W 0 + 00 N | 2787 | | - 90° | 401 |
| MM - 2 | 4 + 00 W 4 + 00 N | 2877 | | - 90° | 392 |
| MM - 3 | 0 + 00 W 4 + 00 N | 2853 | | - 90° | 403 |
| MM - 4 | 4 + 00 E 4 + 00 N | 2858 | | - 90° | 407 |
| MM - 5 | 7 + 65 E 4 + 00 N | 2913 | | - 90° | 399 |
| MM - 6 | 8 + 15 E 0 + 00 N | 2871 | | - 90° | 410 |
| MM - 7 | 120 + 00 E 91 + 50 S | 2569 | N 45° E | - 45° | 104 |
| MM - 8 | 120 + 00 E 90 + 20 S | 2559 | N 45° E | - 60° | 400 |
| MM - 9 | 90 + 00 E 33 + 00 N | - | N 45° E | - 45° | 402 |
| MM - 10 | 140 + 00 E 146 + 25 S | - | N 45° E | - 45° | 319.5 |
| MM - 11 | 40 + 00 E 31 + 00 S | - | N 45° E | - 45° | 351 |
| MM - 12 | 35 + 00 E 54 + 00 S | - | N 45° E | - 45° | 143 |
| MM - 13 | 35 + 00 E 51 + 00 S | - | | - 90° | 160 |
| MM - 14 | 0 + 00 E 3 + 50 S | 2768 | N 45° E | - 45° | 404 |

1968 - Gibraltar Mines Ltd.

| | | | | | |
|--------|-----------|--|---------|-----|---------|
| 68 - 1 | 22 W 5 S | | | 90 | 440 |
| 68 - 2 | 24 W 3 S | | | 90 | 250 |
| 68 - 3 | 4 S 14 W | | N 45° E | 45° | 400 |
| 68 - 4 | 21 N 16 E | | | 90 | 1,044 ✓ |
| 68 - 5 | 21 N 8 E | | | 90 | 613 ✓ |
| 68 - 6 | 17 N 12 E | | N 45° E | 70 | |

Coast Silver Drilling

The Gibraltar Company has drilled a series of 13 diamond drill holes on the Coast Silver claims. These claims are under option to Gibraltar and drilling has been carried out along the western extension of the west ore zone where it extends into Coast Silver property.

The drilling is outlined here and the drill maps are included in this report.

| | | | | | |
|---------|----------------|--|---------|-----|-------|
| CS - 1 | 41 W 12 S | | | 90 | 345 |
| CS - 2 | 49 W 15 + 35 S | | | 90 | 316 |
| CS - 3 | 49 W 10 + 75 S | | | 90 | 500 |
| CS - 4 | 24 W 30 N | | | 90 | 663 |
| CS - 5 | 24 W 30 N | | N 45° E | 45° | 476 |
| CS - 6 | 28 W 29 N | | N 45° E | 45° | 496 |
| CS - 7 | 28 W 29 N | | | 90 | 457 |
| CS - 8 | 32 W 30 + 25 N | | N 45° E | 45° | 434.5 |
| CS - 9 | 32 W 26 + 25 N | | N 45° E | 45° | 500 |
| CS - 10 | 26 W 25 N | | N 45° E | 45° | 433 |
| CS - 11 | 40 W 3 N | | N 45° E | 45° | 300 |
| CS - 12 | 42 W 3 + 50 N | | N 45° E | 45° | 283 |
| CS - 13 | 46 W 2 + 50 N | | N 45° E | 45° | 347 |

GEOLOGY

Jurassic quartz diorite intrudes Permian and Triassic sedimentary and volcanic rocks in the general area of the Gibraltar Mines property. Tertiary sediments and volcanics cover extensive areas of the older rocks. The major portion of the Gibraltar claim group is underlain almost entirely by quartz diorite. An inferred extension of the Fraser River fault system runs through the west side of the intrusive body in the vicinity of Cuisson Lake. Outcrop is sparse with many large areas having none at all.

On the basis of subtle statistical differences in colour, texture, percentage of mineral constituents and degree and type of alteration, four varieties of quartz diorite have been mapped.

- (i) Typical quartz diorite - pale creamy, yellowish green, medium to coarse grained; composed of epidotized plagioclase, irregular to prismatic chlorite pseudomorphs after amphibole, and contains 10 - 20% granular quartz.
- (ii) Mafic quartz diorite - light green, fine to medium grained; contains 10 - 20% chlorite and normally less than 10% interstitial quartz.
- (iii) Feldspathic quartz diorite - intergradational between typical and mafic quartz diorite. Buff coloured, it generally has a lack of epidotized feldspar, and has interstitial type quartz.
- (iv) Silicified quartz diorite - creamy-grey, 15 - 25% granular quartz, and numerous intersecting veins and veinlets of quartz.

Zones of sericite-chlorite schist represent highly sheared quartz diorite. In the southern part of the mapped area, granodiorite intrusions are found. They appear to represent later, but genetically related bodies.

The intruded rocks consist mainly of metamorphosed calcareous sediments. Conglomerate, limestone, laminated chlorite

carbonate schists, and skarn were noted in several areas.

The regional grain is northwest-southeast and considerable block faulting is suggested. The most consistent joint sets have attitudes of N 25° E by 70° N W and N 50° W by 70° S W. Locally sheared zones up to 30 feet wide with quartz veins and minor associated chalcopyrite and pyrite occurring parallel to the second joint set. Primary foliation is locally well developed. It strikes northwesterly and dips at shallow to moderate angles to the southwest.

The most widespread alteration is extreme chloritization of amphibole and extensive epidotization of plagioclase. Juhas believes the alteration to be deuteric and thus there is no reason to expect associated concentrations of sulphide minerals in the quartz diorite pluton. It is believed that sulphide mineralization represents one of the final phases in the history of the pluton. Therefore, residual quartz and sulphide minerals were injected into the sheared zones in the already consolidated and deuterically altered quartz diorite.

Pyrite and chalcopyrite are the predominant sulphides. Secondary chalcocite occurs locally and occasional molybdenite has been seen. Assays for molybdenite in the best mineralized sections averaged less than 0.01% MoS₂. *

ORE RESERVES

During the past few years and as the drilling has progressed, many engineers have completed studies on reserves from 15 to 30 million tons as various cut off and grade control. We believe that the property has only been considered from a large low-grade open pit producer and the possibilities of an open pit for a few years and then

* Cominco Report dated
December 15, 1967.

conventional underground mining has not been considered. We believe that underground mining methods of 1-1/2% to 2% copper grade should be considered in any evaluation, and maps have been prepared of the west zone to indicate this tonnage.

The most accurate tonnage developed by drilling to date in my opinion, is the study made by the Cominco engineers in December 1967. They calculated the reserve in the west zone to be 14 million tons grading 0.52% copper with an open pit strip ratio of 4:1. Of this 14 million ton reserve a total of 1.2 million tons grading 0.65% copper would be available at a strip ratio of 1:1 and a total of 3.7 million tons grading 0.61 copper at a ratio of 2:1. All of these figures include the one half million tons available in the adit area that is estimated to be 0.60% copper with a strip ratio of 1:1. This tonnage may be easily confirmed by the series of plans and sections of each drill hole which are attached to this report. These sections have been checked and then drawn by James J. Doherty.

RECOMMENDATIONS:

With widespread copper mineralization found over large sections of the Gibraltar Mines property and with a considerable diamond drill tonnage of open pit ore indicated, a further large scale exploration programme is warranted.

The following programme recommended for Gibraltar Mines Ltd. is divided into three stages and calls for a total outlay of \$570,000.00. The programme and use of funds are dependent on results, and some flexibility and modifications to the programme may be necessary as the work progresses.

This exploration programme calls for considerable diamond drilling, bulldozing trenches on anomalies where overburden permits, and percussion drilling.

Near the completion of the surface diamond drilling an underground bulk sampling and underground diamond drilling programme should be undertaken.

On or near the completion of the underground sampling programme, a feasibility report on the property should be made.

It is important that proper engineering and geological controls be established and used throughout this entire programme.

Some concentration of drilling is called for now in the adit and west zone areas, with the object of delimiting these zones if possible, and also further adding to the more readily accessible known ore reserves as well.

Numerous fill in holes are now required in the west zone, and extensions to this zone should be looked for both to the south and to the west.

It is interesting to note that a strike length of some 2,000 feet of +1% copper, with thicknesses from 6.5 to 24.5 feet is indicated in at least 5 adjacent diamond drill holes, namely holes C-26, C-25, C-24, C-23, and C-28, in the west zone.

More drilling is needed, of course, in the vicinity of these holes.

PROGRAMME:

Stage 1

| | | |
|---|-----------|---------------|
| Diamond drill west zone | 10,000 ft | \$ 100,000 |
| " " adit zone | 3,000 ft | 30,000 |
| " " other zones | 4,000 ft | 40,000 |
| Bulldozing and/or percussion drilling | | 5,000 |
| Contingencies | | 5,000 |
| Engineering, supervision, office and overhead | | <u>20,000</u> |
| | Total | \$ 200,000 |

Stage 2

| | | |
|---|-----------|--------------|
| Diamond drilling, fill in holes, all zones | 12,000 ft | \$ 120,000 |
| Bulldozing and/or percussion drilling | | 5,000 |
| Preliminary metallurgical research | | 5,000 |
| Engineering, supervision, office and overhead | | 15,000 |
| Contingencies | | <u>5,000</u> |
| | Total | \$ 150,000 |

Stage 3

| | | |
|---|----------|---------------|
| Underground, bulk sample and milling | | \$ 125,000 |
| Underground diamond drilling | 6,000 ft | 60,000 |
| Preliminary production and milling plans | | 5,000 |
| Engineering, supervision, office and overhead | | 20,000 |
| Contingencies | | <u>10,000</u> |
| | Total | \$ 220,000 |

A "Feasibility Report" by an independent engineering company should start near the completion of Stage 3.

No allowance for the cost of this "Feasibility Report" has been included in this report.

Engineering

From the beginning of the programme it is very important that proper engineering and geological controls be maintained on all work done. This includes the keeping of accurate up to date records on all diamond drilling, assaying and surveying.

Proper log books for these records must be obtained and kept up to date. All pertinent data on previous drilling, assaying and surveying must be entered in the new log books.

Accurate bench marks for elevations must be established and used as soon as possible.

For the proper correlation and interpretation of mineral intersections and geological data between drill holes, it is necessary to have accurate elevations of drill hole collars. It is therefore necessary that a proper survey to establish the elevation accurately, of all drill hole collars, in relation to an established datum elevation, at Gibraltar Mines be done. A transit or a level should be used for this survey, and the survey could start at the adit zone, followed by the west zone.

At present, there are quite a few holes without any elevation at all, and no depth of overburden recorded.

A contour map of the property should be made and obtained from a base using aerial photography.

More assaying for gold and silver should be done, especially in the more massive intersections of sulphides.

Regular dip tests should be made in the diamond drill holes, and records kept of these tests.

Diamond Drilling

With the large amount of diamond drilling required, a minimum of 2 diamond drills should be used at least in Stage 1 and in the early part of Stage 2. This will speed the information needed

and decisions can be made accordingly.

All drilling should be done with wire line equipment by a dependable diamond drilling contracting firm.

One diamond drill should start in the west zone and holes should be drilled on lines 4W, 8W, 16W, 20W, 24W at 1,000 and 1,200 feet south of the base line. Further holes should be drilled at 600 and 800 feet south of the base line, on the above lines, and also on lines 6W, 10W, 14W, 18W, 22W, and 26W.

Holes should be drilled at not more than 200 foot intervals, as far south as results warrant, beyond 1,200 feet from the base line.

More fill in holes will have to be drilled near the base line, and more holes will be needed in the west end of the zone.

Avoid long moves, drill adjacent necessary holes to delimit the zone on each line working from east to west.

The second machine could start on line 16W drilling a -45° hole to pass 100 feet below the intersection of 2.3% copper over 5' in hole C-34. This new hole should also give the dip of the ore. Drill more holes east and west of the above holes, as results warrant.

Drill cross section angle holes along line 16W to investigate the anomalous conditions indicated there and also explore the shear zone located at 2,000 feet north on line 16W.

The adit zone should be delimited by drilling inclined holes north and south of the base line on lines 2E, 6E, 8E, 10E, or as

far east as results warrant. Also drill incline holes on line 2W, north and south of the base line, and an incline hole north of the base line on line 4W.

Drill hole between holes 68 - 4 and 68 - 5 on line 12E and 21N and follow up with holes as required on lines 14E, 10E, 6E, at 1900N and 2300N.

On the Coast Silver property in hole CS-12, there is 20 feet of 1.48% copper from 170 to 190 feet. Drill an angle hole to pass 100 feet below this intersection. Drill more holes east and west of these holes as results warrant.

The adit zone requires more drilling both to the east and to the west. The Huntec zone of + 9 millisecond response, in the vicinity of the adit, extends some 350 feet east of line 8E and westerly to line 4W. This area should be cross-sectioned with angle holes north and south of the base line, bearing N 45E or S 45W, on lines not more than 200 feet apart.

Some of the new holes in the adit area will also serve as a check on intersections in older previous holes, where core recovery was questionable.

More drilling is required in the east zone, and more drilling will be done between the west and east zones.

The extensive anomalous area to the north west of the base line will be checked by diamond drilling, and some interesting drill targets here have been selected to start with.

On the adjoining Coast Silver property, some good copper intersections will be followed up with more drilling.

In selective areas, starting with the adit and west zones, deeper cross sectioning angle holes should be drilled to test for ore at depth.

The possibility of finding deeper ore, suitable for an underground mining operation, possibly in conjunction with an open pit operation, should not be ruled out. Some good intersections at depths to near 600 feet have already been intersected.

REFERENCES

- | | | |
|------------------|------------------------|----------------|
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| Chapman, D. A. | Fracture Density Study | May, 1966 |
| Lipkewich, M. P. | Placer Group Report | February, 1968 |
| Murrell, M. R. | Cominco Report | December, 1967 |
| Reinecke, L. | G. S. C. Memoir 118 | 1920 |

CERTIFICATE OF QUALIFICATION.

I, Franklin Langworthy Carr Price, do hereby certify

that:

1. I am a practising mining engineer with offices at 318 Burrard Building, 1030 West Georgia Street, Vancouver 5, British Columbia.
2. I am a graduate of the New Mexico School of Mines, and have been granted the degree of Bachelor of Science in Mining Engineering.
3. I have been practising my profession as a Mining Engineer for 20 years.
4. I am a member of the Association of Professional Engineers of British Columbia, Certificate Number 4576.
5. I hold licence number 0209800 in the State of Washington as a Professional Engineer.
6. I personally visited the property on July 1st & 2nd, 1968.
7. I have no interest, direct or indirect, in the properties or securities of Gibraltar Mines Ltd., nor do I expect to receive any.

Vancouver, B. C.
September 3, 1968.